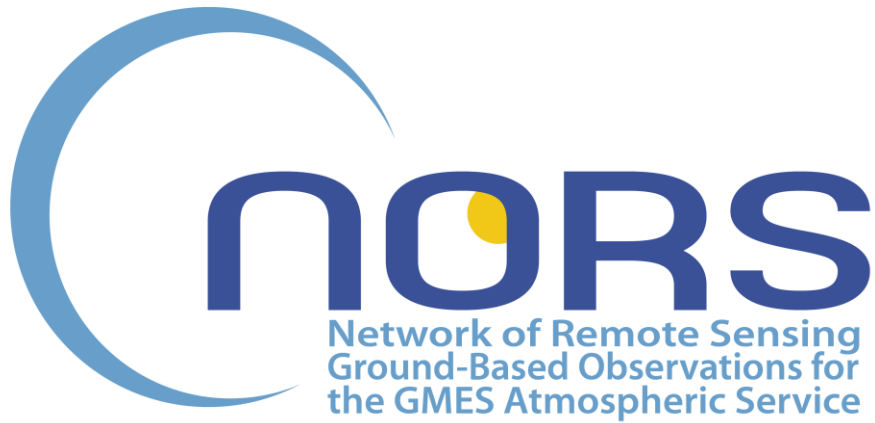




Minutes of all meetings

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Kick-Off meeting

Meeting Minutes

The Kick-Off Meeting of NORS took place on Wednesday 14th December 2011, from 9h30 to 17h, in the meeting room “Green Room” of BIRA-IASB, 3 avenue Circulaire, 1180 Uccle, Brussels, Belgium.

1. Participants

Participant name		Institute short name
Thomas	Blumenstock	KIT
Leo	Breebaart	S&T
Brigitte	Buchmann	EMPA
Geir	Braathen	WMO
Simon	Chabrillat	BIRA-IASB
Martine	De Mazière	BIRA-IASB
Richard	Engelen	ECMWF/MACC-II
Udo	Frieß	UHeidelberg
Manuel	Gil Ojeda	INTA
Sophie	Godin-Beekmann	LATMOS/CNRS
Florence	Goutail	LATMOS/CNRS
François	Hendrick	BIRA-IASB
Stephan	Henne	EMPA
Klemens	Hocke	IAP/UBern
Nathalie	Kalb	BIRA-IASB
Jean-Christopher	Lambert	BIRA-IASB
Bavo	Langerock	BIRA-IASB
Karolien	Lefever	BIRA-IASB
Sander	Niemeijer	S&T
Bernard	Lejeune	ULg
Maud	Pastel	LATMOS/CNRS
Christof	Petri	UBremen
Gaia	Pinardi	BIRA-IASB
Olga	Puntedura Rodriguez	INTA
Andreas	Richter	UBremen
Henrik	Steen Andersen	EEA
Julia	Remmers	MPIC
Oksana	Tarasova	WMO/GAW
Michel	Van Roozendael	BIRA-IASB
Thomas	Wagner	MPIC

2. Agenda

9h30- 9h40

Welcome with coffee / tea

Introduction of all partners and SC members

Logistics of the meeting

9h40 – 10h00

Short reminder of the project

M. De Mazière

- Objectives of the project

- Target products
- Pilot Stations
- NORS data center
- WP structure

10h-10h15

MACC-II

R. Engelen

10h15-10h30

EEA and coordination of GAS in-situ data

H. Steen Andersen

10h30 – 16h20

Discussions per WP lead by coordinator and WP leaders

WP leaders are asked to discuss – if relevant

- existing expertise from the partners
- how they see the path forward to achieve the objectives and to meet the deliverables
- distribution of tasks with the tasks leaders
- who will be responsible for what ?
- what is expected from the partners ?
- immediate needs for extra meetings or teleconferences ?
- needs of GAS – discussion in interaction with SC members
- timing issues

WP1: Project coordination and WP2: Project outreach
will be discussed with last agenda point

10h30 – 10h45

WP3: Rapid data delivery:

K. Hocke

10h45 – 11h

Coffee Break

11h – 12h30

WP4: Advanced characterisation of NORS data products

A. Richter

NOTE: Apart from planned tasks, we want to discuss where the FTIR teams stand with the CH₄ NDACC-TCCON intercalibration and whether we would introduce a CO MIR (NDACC) –NIR (TCCON) intercomparison task.

12h30-13h15 sandwich lunch

13h15 - 13h45

WP 5: Integration of tropospheric products

S. Henne

In particular: EMPA to explain methodology, interactions with partners and what is needed from partners, by when?

13h45-14h15

WP6: Integration of ozone products

S. Godin

In particular: CNRS to explain ideas for methodology, interactions with partners and what is needed from partners, by when?

14h15-14h25

WP7: Reanalysis of time series back to 2003

T. Blumenstock

This WP starts later (M18), not to be discussed in detail now

14h25-14h45

Coffee / Tea

14h45 – 16h00

WP8 & WP9: Web-based validation server for GAS

S&T & all:

Needs, technical options, way forward;

Heritage of GECA (ESA: can partners get access to GECA prototype to see how it works ?)

Where will server be located ?

Interaction with MACC-II for availability of MACC-II analyses of target gases ?

Degree of automation ?

16h-16h20

WP10: Capacity building and sustainability

M. De Mazière

- Additional contact in Korea (IAP/UBern): proposal
- presentation of NORS at NDACC SC meeting => NORS data center approved
- Get satellite data: via MACC-II channels ?
- Data policy from EEA ?

16h20 – 17h00

Project Management and Financial issues (WP 11), incl. NORS logo and Web pages, project coordination (WP1) and outreach (WP2)

Nathalie Kalb

3. Minutes

3.1. Introduction

See: 01_NORS_KO_Introduction_MDM

Martine De Mazière introduces the partners, the members of the Steering Committee and the members of the Project Management Team. Martine asks all partners to designate the person who will participate to the bi-monthly teleconferences. All attendees introduce themselves.

Martine gives an overview of the project.

The aim of the KO meeting is: to clarify the interaction with MACC-II, to clarify the role of EEA and interaction between NORS and EEA, to start individual activities, to clarify collaborations within workpackages and tasks and to give an overview of administrative and financial rules.

3.2. MACC-II

See: 02_NORS_KO_MACC_II_RE

Richard Engelen is member of the Steering Committee as representative of MACC-II. He explains the importance of good interactions between NORS and MACC. He gives an overview of the MACC activities. He explains their use of ground-based data.

- Martine asks if routine validations are integrated in the system. Richard answers that the NRT monitoring is done in-house, the off-line validation is spread out over the various partners and is in MACC-II coordinated by KNMI in the VAL sub-project.
- Oksana Tarasova asks if column averages are also calculated. Richard answers that this is indeed the case. Observations are always matched as closely as possible from the model forecasts, both in time and space.
- Sophie Godin-Beekmann asks how MACC will use the NORS near real time data sets. He says that they consider a delivery time of 5 hours as near real time. When the delivery times are longer, then the data sets are considered validation data sets. The sooner MACC receives the data, the sooner they can be used to detect problems through the on-line verification that is done at ECMWF.

3.3. EEA

See: 03_NORS_KO_EEA_HSA

Henrik Steen Andersen is also member of the Steering Committee. He gives an overview of the activities and aim of the EEA.

- Geir Braathen asks if EEA collects data. Henrik says that EEA only has a coordinating role, they are not a portal.

- Henrik insists on sustainability after NORS. He stresses the importance of showing convincing results to convince the member states to keep funding NORS after the end of the project.

3.4. WP3: Rapid data delivery system

See: 04_NORS_KO_WP3_UBern_KH

Klemens Hocke gives an overview of WP3.

- Geir Braathen thinks that a delivery time of one month is quite long. He thinks that we will need to provide more real time information. Martine De Mazière says that this is not always possible.
- Simon Chabrillat thinks it would be a great added value to include more species (e.g., ClONO₂) and that this would compensate for the relative slowness of NORS data delivery. Martine says that the time and budget constraints don't allow this at the moment, but this is certainly a possibility for the future.
- Richard Engelen reminds us that even if the data are not (near) real time, MACC will use them.
- Henrik Steen Andersen asks how compliant the data are with INSPIRE specifications. Jean-Christopher Lambert says that they are not compliant for the moment, as INSPIRE guidelines are not yet appropriate for our type of atmospheric data and are still being amended.
- Henrik suggests that we should investigate if a shorter delivery time of for example 12 hours or two weeks would be significantly better than one month. If not, then it would be much more useful to concentrate our efforts on other activities than trying to reduce the delivery time.
Fast or rapid delivery is a wrong naming in the GMES context: it should rather be 'delayed delivery'.
- Martine reminds us that one month is a maximum.
- There was a discussion about formats: conversion from HDF to netCDF is not a problem; on the contrary, conversion from HDF to netCDF-CF is not straightforward. R. Engelen says that the stability of the format is more important than the choice of the format itself.

3.5. WP4: Advanced characterisation of NORS data products

See: 05_NORS_KO_WP4_AR

Andreas Richter gives an overview of WP4. He stresses that all other WPs are connected with WP4 and are depending of it. Hence sticking to the timing in WP4 is of extreme importance.

- Task 4.1. Data Formats
 - There is a question about including the effective location of the air mass in the data files, yes or no. S&T would like to have it!
 - It may be useful to provide tools e.g., for reading, writing, ... The GECA tools may be able to help here.
 - Simon Chabrillat points out that it might be useful to have tools written in Python (freeware) rather than Matlab or IDL (expensive licenses).

- Task 4.2. Harmonization of networks/techniques
 - Simon Chabrilat asks if averaging kernels will be provided.
 - The answer is yes for MAXDOAS and FTIR: full averaging kernels are already included in the data files. (Just providing ‘vertical resolution’ is not enough.)
 - Nevertheless it may still be useful to explain to users how to use them.
 - Harmonisation of reporting units for averaging kernels is a useful thing to do
 - The retrieval settings for NO₂, H₂CO should be standardised.
→ for the FTIR: we need to designate someone to lead this activity (**Action Item 1**)
- Task 4.3. Uncertainties
- Task 4.4. Comparison to satellite observations
 - JC Lambert suggest to write validation protocols specifically for FTIR, MAXDOAS, etc.

All tasks start in month 1.

See: 06_NORS_KO_WP4_INTA_OP

Olga Puentedura Rodriguez presents the contributions of INTA to WP 4.

See: 07_NORS_KO_WP4_LATMOS_MP

Maud Pastel presents the contributions of LATMOS to WP4.

See: 08_NORS_KO_WP4_ULg_AR

Andreas presents the contributions of ULg to WP4 on behalf of Emmanuel Mahieu.

Martine De Mazière suggests to replace the task about the assessment of CH₄ in the 4300 cm⁻¹ region which is available in TCCON and NDACC spectra, by a comparison of CO between NDACC and TCCON. The latter option is a request from TROPOMI and Sentinel 5 people. It will require a modification of the grant agreement. REA is favourable to this change. She suggests to have a teleconference in two weeks to discuss this.

Action Item 2: organize teleconference with FTIR people early January 2012.

Action item 2 has been dealt with by Email on 22/12: all FTIR partners are favourable to the change.

So the decision is to replace D4.6 “CH₄ data assessment” by D4.6 “Comparison between CO measurements from TCCON and NDACC”.

The grant agreement will be modified likewise.

See: 09_NORS_KO_WP4_BIRA_MDM

Martine presents the contributions of BIRA-IASB to WP4.

- Michel Van Roozendaal asks if there is a possibility to share tools for error budget calculations as developed for the FTIR with other partners. Martine answers that this may be possible and useful since the tools are based on the Rodgers formulation for error budget evaluations. Anyway, she is open to share the tools.
- Martine asks if the horizontal averaging kernels should be included in the data files. Andreas says it will be difficult for tropo products.
- Jean-Christopher inquires about the validation work that will have to be provided. Martine says it will mostly consist of guidance.

See: 10_NORS_KO_WP4_UH_UF

Udo Frieß presents the contributions of UHeidelberg to WP4.

See: 11_NORS_KO_WP4_IUP_FTIR_CP

Christof Petri presents the contributions of UBremen to WP4.

See: 12_NORS_KO_WP4_MPIC_TW

Thomas Wagner presents the contributions of MPIC to WP4.

See: 13_NORS_KO_WP7_KIT_TB

Thomas Blumenstock presents the contributions of KIT to WP4.

See: 14_NORS_KO_WP4_IUP_DOAS_AR

Andreas skips this presentation due to lack of time.

Action Item 3: Andreas Richter shall identify or verify the responsibilities (task leaders/ task partners) in WP4.

3.6. WP5: Integration of tropospheric products

See: 15_NORS_KO_WP5_EMPA_SH

Stephan Henne gives an overview of WP 5.

- Martine De Mazière asks why Stephan needs the MACC reanalysis? Stephan answers that the MACC analyses assimilate satellite data, not in-situ data, so they are still independent relative to the in-situ data.
- Andreas Richter questions if DOAS and MAXDOAS would be suitable for intercomparison. Stephan says that he really needs good metadata to enable a correct use of the (MAX)DOAS data!

3.7. WP6: Integration of ozone products

See: 16_NORS_KO_WP6_CNRS_SGB

Sophie Godin-Beekmann gives an overview of WP6.

- Martine De Mazière asks about the representativeness of the final product, e.g., in time, space. Sophie answers that the identification of the representativeness of the final data product will indeed be part of the work to be done.
- The final data product will be delivered to the validation WP in HDF format also.

Action Item 4: There must be an interaction with Sophie about the data she needs: which data? How to deliver ?

Action Item 5: C. Petri has verified that there exist microwave data for O₃ from Ny-Alesund and that they can be used in the NORS project. But there are none between 2003 and 2006 because of instrument failure.

3.8. WP7: Reanalysis of ground-based time series back to 2003

This WP starts later (M18) and will not be discussed in detail now.

3.9. WP8 & WP9: Web-based validation server for GAS

See: 17_NORS_KO_WP8-9_S&T_SN

Sander Niemeijer presents the background experience of S&T and the projects they are involved with. He presents GECA. He explains the principle of the GECA toolset and focuses on its utility for NORS. He mentions the internal format used in GECA (set of GEOMS-based metadata conventions on top of netCDF) : it would be good to stick to this same format ? HDF4/HDF5 is also possible but less efficient.

He gives an overview of WP8.

- Andreas Richter notices a lot of overlap with the MACC-II project. He wonders if we should integrate this work in the interface of MACC. Martine says that we should link with MACC, but also preserve the visibility of NORS. Richard Engelen explains how the interfaces work, indicating that visibility can be maintained even if working with an integrated interface.
- Martine asks where the server will be located. Sander answers that S&T will not host the front-end server due to upload bandwidth constraints, but they can host a back-end server for heavy calculations if needed.
- Andreas asks about the GEOMS standard for level 3 data: Sander says that integration of level 3 datasets in GEOMS has not been properly defined yet.
- Karolien Lefever also wonders about the overlap of this WP with the validation WP of MACC. Henk Eskes should therefore be involved in further discussions about this topic. Martine suggests to have a splinter meeting with S&T, BIRA, MACC and Henk Eskes (**Action Item 6**).

Action Item 6: Martine and S&T to organise a splinter meeting asap.

- Martine asks Sophie Godin-Beekmann if the WP6 final data products could be integrated as well in the WP8&9 validation effort. She should then provide the same data format.
- Sander Niemeijer mentions that error propagation is not yet included in the GECA toolsets because a consensus on the algorithms for this was not available. It needs to be decided to what level of error propagation will be needed in NORS and what approach to use.
- Sander repeats that the information about the air mass location in the GEOMS-formatted data files would be very useful
- Some questions asked by Sander on his slides are discussed:
 - In NORS, we should go less interactive than in GECA and more operational
 - For re-analysis we will use timeseries; for operational validation, we will use a moving timewindow
 - The NORS data will be fetched from the NDACC database, in a repository for the ‘fast delivery’ data (appropriate terminology to be decided). The MACC data are gridded data in GRIB format.
 - R. Engelen will inform us about the owners of the satellite data assimilated in MACC → we will have to fetch them directly from the owners, unless they are in the public domain.

3.10. WP10: Capacity building and sustainability

See: 01_NORS_KO_Introduction_MDM

Martine De Mazière says a few words about WP10.

It has been decided at the NDACC SC meeting that the NORS data server will be the NDACC data server.

Martine asks Henrik Steen Andersen about data policies to integrate the data in the in situ component for GMES. Henrik says that the data policies have to be discussed.

3.11. Project Management

See: 18_NORS_KO_Management_NK

Nathalie Kalb presents the project coordination, project outreach and project management (WP 1-2-11).

The participants to the bi-monthly teleconferences agree to have them on the second Thursday of the month at 10 am.

The question about a possible reviewer is raised:

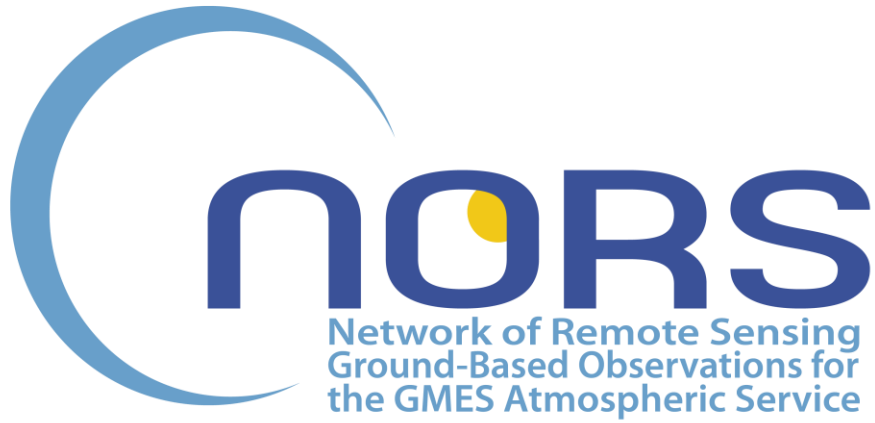
Options are (?):

- H. Kelder
- G. Brasseur
- Y. Meijer
- Y. Goovaerts
- Others ?

Action Item 7 (all): ideas for reviewers ?

End of the meeting.

Martine thanks the partners and the members of the Steering Committee for this fruitful meeting. She reminds us about the importance of timeliness. She insists on WP4, because if this WP is delayed, it will have an impact on the whole project.



WP8 Splinter meeting

6 February 2012

Meeting Minutes

1. Introduction

The WP8 Splinter Meeting of NORS took place on Monday 6th February 2012, from 10h45 to 16h, at KNMI, De Bilt, the Netherlands.

2. Participants

Participant name		Institute short name
Henk	Eskes	KNMI
Vincent	Huijnen	KNMI
Leo	Breebaart	S&T
Sander	Niemeijer	S&T
Bavo	Langerock	BIRA-IASB
Martine	De Mazière	BIRA-IASB

3. Agenda

1. Brief presentations of the NORS, GECA, MACCII-VAL projects.
2. Open discussion on the validation server system in WP8 (in particular User Requirements) and on the possible overlap with MACCII-VAL.

4. Minutes

4.1. Brief presentations of the NORS, GECA, MACCII-VAL projects

MACCII develops global and regional models for the atmosphere. The users of the global models are e.g. EEA, and local air quality models in Europe and some Asian countries (these use global data as boundary conditions). MACCII has a subproject called VAL, which is concerned with the validation of the Near-Real time forecasts and reanalysis runs.

VAL provides 3-monthly reports containing the most important results of the validation of the NRT datastream, and 6-monthly reports with the results of the validation of the reanalysis data. This contains 'executive summaries' which is written by 5 editors (three for the various subjects, and 2 to integrate all) and is intended for the users of the MACCII products. These reports are written manually. Within a few weeks a first version of these reports will be published.

VAL estimates the quality of the MACCII data using a number of 'scores'.

GRIB is the standard format used for MACC models.

The MACCII global models are hosted by ECMWF; the regional models by Meteo France. New models are first run in a parallel mode on a previous year (probably the year 2008) to test their stability.

Remarks

- S&T is interested in the quality-indicators ('scores') used by VAL: what is the best practice for validation. We should liaise with QA4EO & INSPIRE. S&T suggest that it would be interesting to discuss a 'best practice' with these groups.

- S&T and BIRA would like to receive the first 3-monthly reports
- S&T points out that they are able to deal with data format conversion
- H. Eskes points out that it is an option to run a script developed by S&T directly at ECMWF (e.g., for subsetting data).
- Contact persons at ECMWF: Luke Jones and Miha Razinger; contact person at Meteo France: Virginie Maréchal.
- It may also be useful to validate regional models with MAXDOAS data

4.2. Open discussion on the validation server system in WP8 and possible overlap with MACCII-VAL

We distinguish three main user groups: MACCII users , NDACC data providers and MACCII-VAL .

INPUT

- The NORS data files are in GEOMS format and are downloadable from NDACC.
- There should be enough flexibility to allow for a gradual growth in the number of stations in NORS (in the initial phase, the data of 4 stations is processed).
- S&T should have access to the data of NDACC, and would like to have a description of how NDACC keeps track of updates on their database.
- There should be a good link with the MACCII data: if MACCII updates their data, how is NORS aware of this ? S&T asks to provide model version information with the data.
- Questions by S&T about availability of MACCII model parameters on model levels or P-levels.

OUTPUT

- In the URD the contents of the reports delivered by the NORS website should be described. It is important that the contents is similar and tuned with the reports from MACCII-VAL.
- The reports should be made for one target molecule.
- There can be a difference in output depending on the user:
The MACCII-VAL-user would like O3 validation results per instrument/station (every instrument gives O3 columns in a certain height interval), while other users wish to have an O3 profile for the full column.
- MACC VAL users are interested in seasonal averages, specifically for Europe (for more details, see the to be published 3-monthly reports).
- If a report is generated (with comparison plots), the full dataset on which this report is based should be made available (what format?), i.e. a user should be able to regenerate the report out of this data.
- Should NORS facilitate the use of the NDACC database by making available extra features (such as a search engine, catalogues)?
- S&T: there are different possibilities for intercomparison of data: interpolate the profiles, take the nearest neighbour profile, ... A list should be made what the different possibilities are and it should be circulated in the NORS community before making a decision.
- What is the frequency of the NORS reports?
- How to deal with error propagation, e.g., in the resampling of the data (this was not handled in GECA)?

4.3. Actions

BIRA

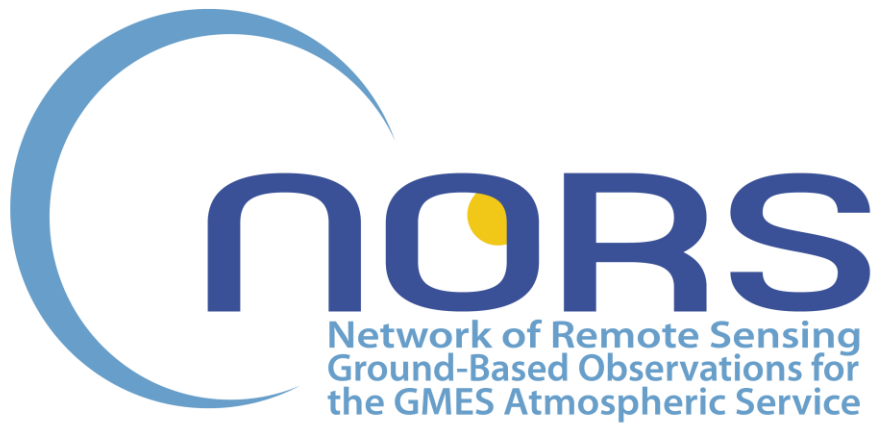
- Responsible for the URD.
- Send a first draft of the URD to S&T and MACCII-Val.
- Contact Jeanette Wild (NDACC) about NDACC and NORS (data access for S&T, extra features e.g. search engine, catalogues).

S&T

- Contact R. Engelen to get in touch with persons in MACC who are responsible for technical issues related to MACC data distribution etc. (Luke Jones and Miha Razinger). Discuss DCIO issues with the NDACC database managers (first Martine will contact NDACC).
- Send a list of possible options in the different steps in the validation processing chain to Martine, such that it can be discussed with the NORS partners.

MACCII-Val

- Send the first public report of the MACCII-Val project to S&T & BIRA.
- Provide feedback on the draft URD.



PMT Teleconference #1

9 February 2012

Meeting Minutes

1. Introduction

The first PMT Meeting was organized in the form of a teleconference on Thursday 9th of February 2012.

The teleconference started at 10h00 and ended at 11h10.

2. Participants

Participant name		Participant short name	Role in project	Institute short name
Emmanuel	Mahieu	EM	WP9 Lead	ULg
Frank	Hase	FH		KIT
Thomas	Blumenstock	TB	WP7 Lead	KIT
Andreas	Richter	AR	WP4 Lead	UBremen
Klemens	Hocke	KH	WP3 Lead	UBern
Sander	Niemeijer	SN	WP8 Lead	S&T
Leo	Breebaart	LB		S&T
Nathalie	Kalb	NK	Project Manager	BIRA-IASB
Martine	De Mazière	MDM	Project Coordinator	BIRA-IASB

Excused:

- Stephan Henne (SH), WP5 Lead, EMPA
- Sophie Godin-Beekmann (SG), WP6 Lead, CNRS

3. Agenda

1. Progress of work packages
2. Status of deliverables
3. First milestone (M 6)
4. Status of action items
5. Report splinter meeting with S&T on 6/2/12
6. Reviewer poll
7. AOB

4. Minutes

MDM welcomes the participants.

4.1. Progress of work packages

The WP leaders have collected the information about the tasks in their WP and represent the task leaders and WP partners at the teleconference.

4.1.1. WP1 Project coordination

All minutes of meetings can be found on the private part of the website (documents). NK will circulate the minutes of the teleconfs for correction and load the final version up on the website.

4.1.2. WP2 Project outreach

The private part of the website contains useful documents, including the minutes and presentations of the KO meeting. To access these documents, one has to create an account (at the bottom of the Login Form). About half of the members of the consortium have already created an account.

NK asks the WP leaders to share their thoughts and suggestions about the website at any stage of the project, to keep it dynamic and in continuous improvement.

NK reminds everybody not to forget to send her all communications about NORS: publications, presentations, etc. These have to be submitted as deliverables and placed on the private part of the website.

Deliverable D2.2 is a NORS flyer:

NK suggests to make a 3-fold brochure with following content:

- Short presentation of the project
- A map with all the stations
- A picture of each of the instruments
- Information about coordinator and partners

The design will follow the design of the website.

NK asks the WP leaders to provide nice pictures of the instruments.

4.1.3. WP3 Rapid data delivery at 4 NDACC stations

Klemens Hocke doesn't expect any problem to generate the GEOMS files for his data.

UBern has a new doctoral student who works on NORS: Ansgar Schanz.

MDM asks if he knows how the other partner institutes in WP3 are progressing. KH will contact them and query about this.

The GEOMS formats are almost finalised. Firstly we have to generate the new GEOMS files for each instrument, then we can test the rapid data delivery. The GEOMS templates are provided by Ian Boyd for each instrument type. The GEOMS routines provided by Ian Boyd should be made available to the entire consortium.

4.1.4. WP4 Advanced characterisation of NORS data products

AR has established the responsibilities per task in this WP.

He will circulate the GEOMS templates/formats for agreement and ask to perform tests.

UBremen still needs to recruit a second scientist for NORS.

MDM asks AR to designate somebody to lead the retrieval strategy for CH₂O and NO₂ in the FTIR teams. EM says that François Hendrick from BIRA has just reprocessed the timeseries of NO₂.

MDM asks EM to inform the entire group about his work strategy for both species in order to initiate this task. AR asks EM to inform the team in Bremen too.

4.1.5. WP5 Integration of tropospheric products

Stephan Henne could not attend the teleconf. He has mailed a brief progress report for WP 5 before the meeting. MDM presents his contribution:

“As some of you noticed. I started looking into data availability in terms of compounds and metadata for the sites Jungfraujoch, Izana, Ny Alesund. This also refers to the surface data. Since I only contacted the PIs this week it is too early to give an overview of the replies.

I also worked a little bit on our model tool, which we still need to adapt for the high resolution runs for Jungfraujoch. Note that when writing the proposal I did not intend to do the simulation with the high resolution version (simply because it was not yet available).

We have a milestone at the end of month 6. Until then a decision will need to be made concerning the selection of the two demonstration sites and the period we will look into. I hope to have a better overview on the data availability by the end of this month, so that I can send a suggestion around in March. So I think there is no difficulty in reaching this milestone.”

4.1.6. WP6 Integration of ozone products

Sophie Godin-Beekmann could not attend the teleconf either. She has mailed a brief progress report for WP 6 before the meeting. MDM presents her contribution:

“The main objective of this work package is to develop a methodology for integrating ground-based data sources to provide consistent ozone vertical distribution time series as well as tropospheric and stratospheric ozone columns at 4 NDACC stations (NyAlesund, Alpine station (OHP), Izaña, La Réunion).

The first step is to evaluate the validity domain of ozone profile data available by using error assessment and vertical resolution. We started our work for the Alpine station with the LIDAR DIAL data at OHP, the MicroWaves data at Bern and the FTIR data at the Jungfrauch. Each instrument has its own vertical resolution. Therefore, adjustments need to be done for the creation of an homogeneous data set.

Because of the high resolution of LIDAR measurements, it is necessary to smooth the data to compare with MicroWave measurements. However, by smoothing the data, a loss of scientific information is inevitably observed. Therefore a compromise has to be established and four cases are under study:

- The first one is to do the comparison without smoothing any data in order to estimate the bias at each altitude.
- The second one is to adjust LIDAR data by using the averaging kernel of MicroWaves measurements.
- The third one, is to adjust LIDAR data with an independent smoothing function.
- The fourth one is to use an integration method.

Concerning FTIR measurements, the use of this data leads to two types of comparison with LIDAR measurements: vertical profiles and partial columns. Thus, a retrieval of vertical profiles from ground-based FTIR is under investigation. This inversion needs to be constrained by some a priori information, spectral microwindows, spectroscopic parameters which have been optimized independently at each station. The partial columns will be defined by pressure levels, and the boundaries will be taking into account the lowest altitudes of valid LIDAR profiles and the sensitivity of the FTIR.

All these comparisons will give us a first idea of the extent of the bias between the different types of measures (task 6.1) and give us an indication of the type of statistical method that should be used to combine these measurements in order to obtain series of ozone vertical profile consistent with total ozone measurements (task 6.2).”

4.1.7. WP7 Reanalysis of ground-based time series back to 2003

This WP has not started yet.

4.1.8. WP8 Web-based server for validation of GAS products using NORS data products

SN briefly reports about the meeting with Henk Eskes who leads the VAL-team in MACC-II. This meeting took place on February 6 at KNMI, with Martine De Mazière and Bavo Langerock for BIRA-IASB; Sander Niemeijer and Leo Breebaart for S&T and Henk Eskes and Vincent Huijnen for KNMI. MACC-II is also starting up. Close interaction between NORS and MACC-II will be useful for both projects.

BIRA will lead the development of the URD (User Requirements Document) and circulate it to VAL of MACC-II. S&T will then develop the design document. They are already preparing to move on quickly once the URD is ready. The draft URD will also be sent to the MACC-II Val –team (via KNMI) to get also their inputs and feedback.

MDM reminds the WP leaders that the deadline for the URD is M6, so they will be asked to share their comments within the next 2 months.

4.1.9. WP9 Validation of GAS products for O3, NO2, CO, CH4, H2CO, aerosol

This WP has not started yet.

4.1.10. WP10 Capacity building and sustainability

No questions about capacity building and sustainability.

4.1.11. WP11 Project management

No questions about project management.

4.2. Status of deliverables (D2.1 Web pages, D2.2 Flyer & ...)

4.2.1. D1.1 Meeting Minutes (M1)

The minutes of Kick-Off Meeting have been submitted as a deliverable.

4.2.2. D2.1 NORS Web pages (M3)

A descriptive document about the NORS website has been submitted as a deliverable.

4.2.3. D2.2 NORS Flyer (M4)

See discussion with WP 2 ⇒ NK will distribute a draft version of the flyer very soon.

4.2.4. D4.1 Data format definitions (M6)

This deliverable has already been discussed. In principle, we have templates for all the instruments/techniques involved in NORS that have been agreed with the corresponding NDACC Working Groups.

Frank Hase, MDM, EM and AR discuss (1) that we should avoid to make significant changes to the agreed templates, and (2), the question whether it is appropriate to add additional information in the HDF files such as the position of the effective airmass. It is concluded that one should avoid to provide redundant information in the files, and that the files should remain general, i.e., it is not wise to add information that is useful only for a particular user group. It is agreed that it is more profitable to provide tools for postprocessing the data, e.g., for calculating the effective airmass location based on the information in the files. MDM thinks this matter should be confirmed within all the NDACC Working Groups and then reported at a next teleconf.

SN needs some more information about the data archive at NDACC: MDM will contact Jeanette Wild and Roger Lin so that SN can exchange information with them.

4.2.5. D8.1 Validation server User Requirements Document (URD) (M6)

This deliverable has already been discussed earlier.

4.2.6. D8.2 Validation server design document (DD) (M8)

S&T will develop this deliverable when the URD will be available.

4.3. First milestone (M6)

The first milestone will be the 30th of April 2012 (M6). We will then have to report about:

- MS2 Formats agreement
- MS3 Rapid data delivery system
- MS4 Selection of O3 data sets
- MS5 Agreement on comparison sites and periods
- MS6 Definition of validation server

All persons indicated as the responsible persons for milestones - will have to fill in the template for the milestone reports that can be found online (<http://nors.aeronomie.be/> > Documents > Other documents > Working documents).

4.4. Status of action items from the KO meeting

AI #	Description	Assigned to	Status
AI-1	Designate someone to lead the standardisation of the retrieval settings for NO ₂ , H ₂ CO in FTIR	Emmanuel Mahieu / Andreas Richter	Open
AI-2	Organize teleconference with FTIR people to decide to replace D4.6 "CH ₄ data assessment" by D4.6 "Comparison between CO measurements from TCCON and NDACC"	Martine De Mazière	Closed
AI-3	Identify or verify the responsibilities (task leaders/ task partners) in WP4	Andreas Richter	Closed
AI-4	Interact with Sophie Godin-Beekmann about the O ₃ data she needs: which data? How to deliver?	Sophie Godin-Beekmann	Open
AI-5	Verify if there exist microwave data for O ₃ from Ny-Alesund and if they can be used in the NORS project	Christof Petri	Closed
AI-6	Organise a splinter meeting with S&T	Martine De Mazière	Closed
AI-7	Submit ideas for reviewers	All	Closed

4.5. Report splinter meeting with S&T on 6/2/12

The outcome of this meeting has already been discussed ⇒ see section 2.1.8

4.6. Reviewer poll

During KO meeting, MDM suggested 4 possible reviewers. Recently, the members of the consortium were asked to vote. This is the result:

- 1 – Y. Goovaerts
- 2 – H. Kelder
- 3 - Y. Meijer
- 4 - G. Brasseur

NK sent the outcome of the vote suggesting Y. Goovaerts as the reviewer for NORS, to the REA Officer for NORS (S. Vermoote). He will take the final decision. (REA will look into the CV's of the suggested experts and decide.)

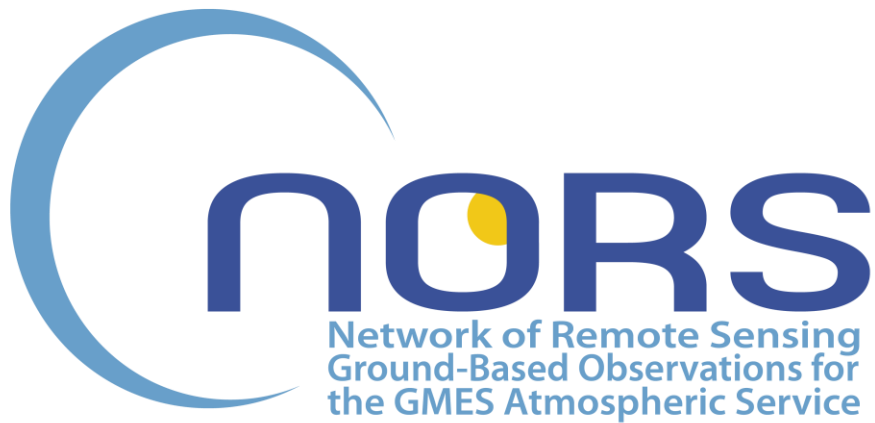
4.7. AOB

- MDM asks if someone would like specific documents to be put on the website. SN asks if someone is interested in the GECA toolset. NK will circulate a description of the toolset to see who would be interested to use it.
- MDM will contact Jeanette Wild to check how and when the NORS data can be accepted by the NDACC database.

End of teleconference.

4.8. Summary of Action Items:

AI #	Description	Assigned to	Status
AI-1	Designate someone to lead the standardisation of the retrieval settings for NO ₂ , H ₂ CO in FTIR	Emmanuel Mahieu / Andreas Richter	Open
AI-2	Organize teleconference with FTIR people to decide to replace D4.6 "CH ₄ data assessment" by D4.6 "Comparison between CO measurements from TCCON and NDACC"	Martine De Mazière	Closed
AI-3	Identify or verify the responsibilities (task leaders/ task partners) in WP4	Andreas Richter	Closed
AI-4	Interact with Sophie Godin-Beekmann about the O ₃ data she needs: which data? How to deliver?	Sophie Godin- Beekmann	Open
AI-5	Verify if there exist microwave data for O ₃ from Ny-Alesund and if they can be used in the NORS project	Christof Petri	Closed
AI-6	Organise a splinter meeting with S&T	Martine De Mazière	Closed
AI-7	Submit ideas for reviewers	All	Closed
AI-8	Send change contract notice to EU/REA about: - replacing D4.6 "CH ₄ data assessment" by D4.6 "Comparison between CO measurements from TCCON and NDACC" - extra station in WP10 in Seoul, Korea in collaboration with IAP/UBern	Nathalie Kalb	Open



SC Teleconference #1

12 April 2012

Meeting minutes

1. Introduction

The first PMT Meeting with Steering Committee was organized in the form of a teleconference on Thursday 12th of April 2012.

The teleconference started at 10h00 and ended at 11h10.

2. Participants

Name		Short name	Role in project	Institute
Martine	De Mazière	MDM	Project Coordinator	BIRA-IASB
Nathalie	Kalb	NK	Project Manager	BIRA-IASB
Klemens	Hocke	KH	WP3 Lead	UBern
Andreas	Richter	AR	WP4 Lead	UBremen
Stephan	Henne	SH	WP5 Lead	EMPA
Sophie	Godin-Beekmann	SG	WP6 Lead	CNRS
Thomas	Blumenstock	TB	WP7 Lead	KIT
Sander	Niemeijer	SN	WP8 Lead	S&T
Geir	Braathen	GB	Steering Committee	WMO
Oksana	Tarasova	OT	Steering Committee	WMO/GAW
Henrik	Steen Andersen	HSA	Steering Committee	EEA
Richard	Engelen	RE	Steering Committee	ECMWF/MACC-II

Excused:

Name		Short name	Role in project	Institute
Emmanuel	Mahieu	EM	WP9 Lead	ULg
Jean-Christopher	Lambert	JCL	Steering Committee	BIRA-IASB
Thorsten	Fehr	TF	Steering Committee	ESA
Vincent-Henri	Peuch	VHP	Steering Committee	CNRS

3. Agenda

1. Status of the project and progress of work packages
2. Status of deliverables
3. Next milestone (M6)
4. Status of NORS Validation Server User Requirements and implementation of the server; interaction with MACC-II and MACC-II users
5. Interactions between NORS, MACC-II, ESA, GAW and NDACC
6. Feedback/suggestions from SC members

7. Status of action items
8. AOB

4. Minutes

MDM welcomes the participants and thanks the members of the Steering Committee for participating to the teleconference.

4.1. Progress of work packages

The WP leaders have collected the information about the tasks in their WP and represent the task leaders and WP partners at the teleconference.

4.1.1. WP1 Project coordination

All minutes of meetings can be found on the private part of the website (documents). NK will circulate the minutes of the teleconferences for correction and load the final version up on the website.

The legal department of BIRA is setting up a contract change notice to EU/REA about the replacement of D4.6 “CH4 data assessment” by D4.6 “Comparison between CO measurements from TCCON and NDACC” and an extra station in WP10 in Seoul, Korea in collaboration with IAP/UBern. This was discussed and agreed at KO meeting.

4.1.2. WP2 Project outreach

The private part of the website contains useful working documents, minutes of meetings, deliverables, etc. To access these documents, one has to create an account (at the bottom of the Login Form).

A draft version of the flyer has been circulated amongst the WP leaders. All requested modifications have been applied. A descriptive document about the NORS flyer has been submitted as a deliverable. REA will receive 100 flyers. Each of the partners will receive 50 flyers. O. Tarasova proposes to distribute the flyer at EGU General Assembly 2012 in Vienna from 22 to 27 April 2012. A pdf version can be downloaded on the NORS website.

All communications about NORS (publications, presentations, etc.) have to be sent to NK. She will submit them as deliverables and place them on the website.

MDM has attended the MACC-II Kick-Off meeting in Reading on February 29th and March 1st, where she gave a presentation about NORS.

AI-9: NK to pass on a number of flyers (about 100) to O. Tarasova for distribution at EGU.

4.1.3. WP3 Rapid data delivery at 4 NDACC stations

Report provided by KH prior to the meeting:

A. Generation of GEOMS data files

1. Installation of IDL VM (virtual machine) for *idlCR8hdf.sav* was difficult since the download at *www.exelisvis.com* did not work for me. However my colleague Simone Studer succeeded and gave me the files.

2. *Running of idlCR8hdf was fine and adjustment of the template files from Ian Boyd to the Bern GROMOS ozone microwave radiometer data was accomplished within a few days.*
3. *A few hdf-4 GEOMS files have already been generated for Bern. It seems to be no problem to generate all files for 2001 to 2011*

B. Reprocessing of GROMOS ozone profiles

1. *The time interval 2001 to 2011 was reprocessed (filter bench spectrometer). Outliers were corrected. Validation has not been done yet but the time series look reasonable (better than the old version).*
2. *Retrieval development for the data of the new FFT spectrometer (GROMOS, backend since 2010) is under way.*
3. *Filter bench spectrometer of GROMOS is out of work since November 2011. We have to work on operational retrieval of the FFTS data of GROMOS. Simone Studer may need several months until the retrieval is stable and validated.*

C. Extension of NORS by the ozone microwave radiometer at Payerne

In principle MeteoSwiss at Payerne is interested to join NORS but at the moment they have no time to generate the GEOMS files. They also work on a new retrieval for their new FFT spectrometer (backend of microwave radiometer). So it would be better to come back to this point in the end of 2012.

Summary

The most critical point is to get a robust and validated retrieval of the new FFTS data of the GROMOS microwave radiometer until summer. No problem to provide the data in GEOMS format (especially the data from 2001 to 2011 can be provided within a week in GEOMS format).

KH says that the validation of the GROMOS ozone profiles will be performed in collaboration with LATMOS.

MDM asks KH to contact the other partners of WP 3 to insure efficient collaboration.

The data delivery should start in April. SGB asks where we have to deliver the data. MDM says that she will contact Jeannette Wild about this point. It would be preferable to separate rapid data delivery (of lesser quality) and delivery of consolidated data. SGB says that the formats of the two kinds of data (HDF/AMES) should be discussed at NDACC level.

MDM says that the data formats will be coherent for the NORS stations. The format conversion should be discussed at the NDACC Steering Committee Meeting in October.

SGB mentions that Thierry Leblanc has made this conversion for LIDAR.

GB agrees that within one centre the data should have the same format. He says that AMES is easier to read than HDF.

MDM says that the visualisation software will be developed for the NORS server. GB says that the new software could be useful for implementation at the NDACC data centre. SN needs to check whether this will be possible.

MDM asks KH to ask his partners to send him the GEOMS sample files, so that we can show the EU that this milestone has been reached.

TB says that the systematic rapid delivery of data should be operational in Month 21; for now, a sample file is sufficient. MDM replies that whoever is ready to start data submission now, can do so, as soon as we have made the agreement with the NDACC database.

AI-10: GB to discuss the homogenization of formats in NDACC database at next NDACC steering committee meeting.

AI-11: KH to collect the GEOMS sample files for each NORS instrument/site.

4.1.4. WP4 Advanced characterisation of NORS data products

Report provided by EM prior to the meeting:

FTIR

- *Bavo Langerock was able to generate a hdf file for Reunion spectra (ozone retrievals). He had a few questions about some attributes (solved) but is ok with the existing template;*
- *No further specific inputs from other FTIR colleagues, except that all of them have already submitted hdf GEOMS compliant files to the NDACC data center. All groups have therefore demonstrated their ability to generate such hdf files and are ready to do so for NORS.*

UV/VIS

Andreas distributed information to the UV/VIS group. There was some questions from Monica but things appear to be fully clarified now.

Up to now, I got no definitive inputs from the MW and LIDAR representatives, although I know that Klemens has implemented the IDL-VM and started to look into the procedures.

Two questions were raised:

- *Do we stick to hdf-4 or do we allow for hdf-5? The answer here is dictated by the host of the NORS Data center, NDACC, who only accept hdf-4;*
- *Do we impose units per species/variables such as to ease --direct-- comparisons between sites/datasets? Personally, I don't think it is desirable to put even more constraints on the data submitters. Indeed, the architecture of the hdf files is particularly appropriate since the units are well documented in the VAR_UNITS and VAR_SI_CONVERSION fields. One has just to check for their values when reading the various archives and --if necessary-- apply some scaling to match the end user desired unit.*

In the meantime, a first version of the URD document has circulated. To my understanding, it did not point towards deficiencies in the actual GEOMS compliant templates (e.g. identification of missing attributes, ancillary parameters... needed for the characterization of the products, for the definition of coincidences....).

MW and LIDAR

They were able to produce hdf GEOMS compliant files and both groups are happy with the existing templates.

MDM says that all teams are happy with the formats. AR says that only the UV Vis team has not sent its agreement yet, but he will be able to check this point before the end of the month, in order to achieve the milestone.

AR asks to which WP the new NO₂ observations in Ny-Alesund belong. They belong to task 4.2.

MDM is worried about the progress of the satellite intercomparison. INTA is responsible for this task. AR says we first need the NORS data for this task. SN asks if the data formats are sufficient for them to start. AR will contact them again to check this point.

SN says the naming conversion for uncertainty variables is not well defined. OT says we should use the international terms to define uncertainty. She will send the link to the international convention. SGB mentions that this naming issue also exists for vertical resolution. She suggests a mapping to make the conversion correspond with the convention. SN suggests changing the name of the uncertainty attributes. MDM asks what everybody thinks about this. SGB says the names have been defined in the quality working group of NDACC. MDM thinks that changing names in the template would not be an issue. AR agrees, if the change is made before the end of April. KH says they have already submitted in the existing templates, so they would prefer not to change them.

SN says there are two aspects of the uncertainty issue: the type of error and the unit. SN asks if we will do error propagation. MDM says we do not have an error indication in the MACC-II data products.

SN thinks it would be preferable to apply changes now, rather than later in the project. MDM suggests having a round of vote by e-mail. SGB says we should first explain the exact problem by distributing a note to everybody. MDM asks SN to write this note. SN asks EM to send him all the templates. SN will then list the changes he thinks would be needed.

AI-12: EM to send all the templates to S&T.

AI-13: SN to send report to all on potential issues with the templates for automatic processing purposes.

Report provided by AR after the meeting:

Task 4.1 Data Formats

GEOMS templates were circulated to the different data provider groups (MW, FTIR, lidar, UV/vis) to check that the templates contain all necessary information and that all groups are able to create files conforming to the format requirements. The MW, FTIR, and lidar groups already confirmed that they are happy with the GEOMS templates and are actually using it for data delivery. Several groups from the UV/vis community also provided first sample files and the others are working on it. Some minor points of the templates are still being discussed and small issues with the conversion software are currently being solved.

No problem is foreseen for MS2 and D4.1, both due by the end of April 2012.

Task 4.2 Information Content and Harmonization of Networks / Techniques

Some work has already started on comparison of collocated NO₂ measurements from UV/vis and FTIR instruments at Jungfraujoch and Ny-Alesund.

The task on CH₄ data assessment will be replaced by a comparison of CO measurements as suggested during the kick-off meeting. Preliminary work on this has already started.

4.1.5. WP5 Integration of tropospheric products

Report provided by SH prior to the meeting:

Currently ongoing tasks: T5.1: Data Collection (M1 to M15) and T5.2: Emission sensitivities (start M7)

T5.1 Data Collection

Data and metadata recovery and collection has progressed for ground based in-situ, ground-based remote sensing and model data. The status of these data products to be used in WP5 is summarised in the table below. For the intended use of satellite data, WP5 will rely on results from WP4 and so far no efforts were undertaken to collect data or metadata.

Based on the data availability and additional scientific considerations an agreement on the final comparison sites (2 out of 3) should be reached by the end of April 2012 (milestone 5). A more detailed discussion of the available data will be send to the WP members in due time.

In brief: It was always anticipated that Jungfraujoch will be the main comparison site. This is corroborated by the current data availability. As comparison period, the years 2010 and 2011 should be selected since DOAS/MAXDOAS measurements are only available after 2010-07. For Izana similar data availability as for Jungfraujoch can be stated, while for Ny Alesund some open questions need to be answered before a decision can be made. Besides data availability, there are several arguments against the selection of Ny Alesund and in favor of Izana: 1) the observation period for DOAS and FTIR is limited to the polar summer in Ny Alesund, 2) the remote location of Ny Alesund should be accompanied by rather small horizontal concentration gradients, which may turn a detailed estimation of measurement representativeness unnecessary, 3) though also at a remote location Izana may receive considerable pollution loadings from Europe, North America and Africa.

The most important meta-data item for WP5 is the sampled (simulated in case of the model data) air mass because the backward particle dispersion simulations will start from these. For the FTIR, in-situ and model data this information is already available and will be used in Task 5.2 starting in month 7. For DOAS/MAXDOAS data further information from WP4 will be needed.

Some of the currently available model products do not cover the envisaged comparison periods. We are currently trying to extent these model products where our own simulations are concerned (FLEXPART CH₄) but will also try to obtain results for more recent years (MOZART).

T5.2 Emission sensitivities

Though this task did not officially start yet, we have progressed in setting up backward Lagrangian particle dispersion calculations to obtain emission sensitivities. We are now using a new version of the FLEXPART model which can be run in nested domains over the Alps (MeteoSwiss 2 km), Central Europe (MeteoSwiss 7 km) and globally (ECMWF 1°). Originally we had intended to solely rely on ECMWF input (0.2° and 1° resolution) for this task, but given the challenging topography around Jungfraujoch the benefits of the new FLEXPART version are apparent.

SH summarizes the report. It becomes pretty clear that Jungfraujoch and Izana will probably become the selected sites.

4.1.6. WP6 Integration of ozone products

SGB apologizes for not sending a report prior to the meeting. The work in WP6 is progressing nicely. The main objective is to integrate different ozone data sets to produce an integrated ozone product. She mentions an issue with the GROMOS data. They are now looking into the characterisation of the FTIR data for 2010, averaging kernels and methodology to compare the data.

4.1.7. WP7 Reanalysis of ground-based time series back to 2003

This WP has not started yet.

4.1.8. WP8 Web-based server for validation of GAS products using NORS data products

Report provided by SN prior to the meeting:

BIRA performed a first input round for D8.1 (URD). This provided a lot of feedback. Based on this input the document will be revised/updated and a new version is expected to be made available by the end of next week for a final review round.

In addition S&T has made contact with ECMWF and NOAA to discuss access to resp. MACC-II and NDACC data. Discussions on this are ongoing. Finally, on Tuesday April 10, S&T and BIRA had a joined pre-design meeting at BIRA to discuss possible hosting strategies and associated configuration of data streams. This resulted in a first basic approach for the validation server deployment.

SN says the operational system will be running at BIRA.

SN asks RE how to apply for access to the MARS archives. RE will ask internally how to proceed. He will contact SN and let him know.

MDM mentions an issue about the traceability of the NORS and MACC data that are used. In the NORS validation reports, it will not be easy to identify the used data with respect to the data streams that are displayed on the MACC webpages. RE says they are trying to ameliorate the website to make it more user friendly. He will keep MDM and SN informed.

MDM thanks everybody for their feedback on the URD. In the last week of April, there will be one more round of comments. MDM will send the new version to the SC and asks them for their comments.

AI-14: RE to provide access to MARS archive to S&T.

AI-15: 2nd iteration of the NORS URD, also to be sent to the SC members.

4.1.9. WP9 Validation of GAS products for O3, NO2, CO, CH4, H2CO, aerosol

This WP has not started yet.

4.1.10. WP10 Capacity building and sustainability

Nothing to report.

4.1.11. WP11 Project management

No project management issues or actions to report.

4.2. Next milestone (M6)

The first milestone will be the 30th of April 2012 (M6). We will then have to report about:

- MS2 Formats agreement
- MS3 Rapid data delivery system
- MS4 Selection of O3 data sets
- MS5 Agreement on comparison sites and periods
- MS6 Definition of validation server

All WP managers are requested to fill in the milestone report template (excel file) for their deliverables. It can be found online (<http://nors.aeronomie.be/> > Documents > Other documents > Working documents).

NK has sent an email to the WP managers with further details on milestone reporting.

AI-16: All WP managers to provide input for the milestone report. See mail from NK of 13 April for detailed instructions.

4.3. Feedback/suggestions from SC members

MDM thanks the members of the SC for their feedback and comments during this teleconference.

MDM suggest to have a teleconference with Roger Lin, Jeannette Wild and Geir Braathen in the course of next week, about the the submission of NORS data to the NDACC database.

MDM says she has received comments from Henk Eskes. The connections with MACC are running very well.

MDM asks AR if AI-1 has been closed. MDM will check with EM by e-mail.

AI-17: MDM and GB to discuss the submission of NORS data to the NDACC database with Roger Lin and Jeannette Wild.

4.4. Summary of Action Items

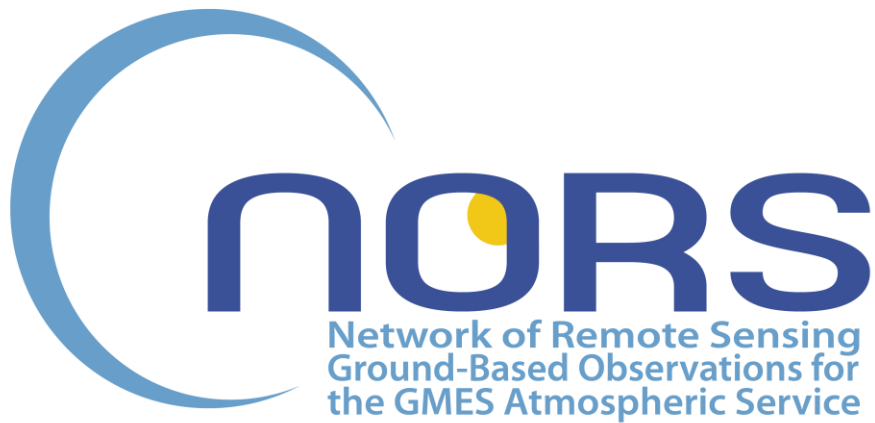
AI #	Description	Assigned to	Status
AI-1	Designate someone to lead the standardisation of the retrieval settings for NO ₂ , H ₂ CO in FTIR	Emmanuel Mahieu / Andreas Richter	Open
AI-2	Organize teleconference with FTIR people to decide to replace D4.6 "CH ₄ data assessment" by D4.6 "Comparison between CO measurements from TCCON and NDACC"	Martine De Mazière	Closed
AI-3	Identify or verify the responsibilities (task leaders/ task partners) in WP4	Andreas Richter	Closed

AI #	Description	Assigned to	Status
AI-4	Interact with Sophie Godin-Beekmann about the O3 data she needs: which data? How to deliver?	Sophie Godin-Beekmann	Closed
AI-5	Verify if there exist microwave data for O3 from Ny-Alesund and if they can be used in the NORS project	Christof Petri	Closed
AI-6	Organise a splinter meeting with S&T	Martine De Mazière	Closed
AI-7	Submit ideas for reviewers	All	Closed
AI-8	Send change contract notice to EU/REA about: - replacing D4.6 "CH4 data assessment" by D4.6 "Comparison between CO measurements from TCCON and NDACC" - extra station in WP10 in Seoul, Korea in collaboration with IAP/UBern	Nathalie Kalb	Open
AI-9	Send flyers to distribute at EGU	Nathalie Kalb	Closed
AI-10	At next NDACC steering committee meeting, discuss homogenization of formats in NDACC database	Geir Braathen	Open
AI-11	Collect GEOMS sample files for each instrument	Klemens Hocke	Open
AI-12	Send all the templates to S&T	Emmanuel Mahieu	Closed
AI-13	Send report to all on potential issues with the templates for automatic processing purposes.	Sander Niemeijer	Closed
AI-14	Provide access to MARS archive to S&T	Richard Engelen	Open
AI-15	2nd iteration of the NORS URD, also to be sent to the SC members.	Martine De Mazière	Closed
AI-16	Provide input for the milestone report. See mail from NK of 13 April for detailed instructions.	WP managers	Closed
AI-17	Discuss the submission of NORS data to NDACC database	Martine De Mazière and Geir Braathen	Closed
AI-18	Doodle to reschedule PMT Telecon 2	Nathalie Kalb	Open

4.5. AOB

Next PMT teleconference is scheduled on June 14. This is coincident with the IRWG meeting in Wengen.

AI-18: NK to set up a doodle poll to reschedule PMT Telecon 2.



NDACC Teleconference

19 April 2012

Meeting minutes

1. Introduction

A teleconference was organized on Thursday 19th of April 2012 to discuss the submission of NORS data to the NDACC database.

The teleconference started at 17h00 and ended at 17h20.

2. Participants

Name		Short name	Role in project	Institute
Martine	De Mazière	MDM	Project Coordinator	BIRA-IASB
Nathalie	Kalb	NK	Project Manager	BIRA-IASB
Geir	Braathen	GB	Steering Committee	WMO
Roger	Lin	RG	NDACC database manager	NOAA

Excused:

Name		Short name	Role in project	Institute
Jeannette	Wild	JW	NDACC database manager	NOAA

3. Minutes

NORS will submit data in GEOMS HDF format to the NDACC database within a delay of one month. This short delay of data delivery possibly implies a lesser quality of the submitted data. A consolidated version of the data may follow the rapid data delivery.

MDM thinks the rapid delivery data should be flagged by means of an attribute to inform the user about the quality. The GEOMS files contain a data quality attribute "DATA_QUALITY". She suggests using this attribute to provide information about the quality and usability of the data. MDM doubts that users will notice this attribute and suggests including a statement on the NDACC webpage to draw attention to this attribute.

RL fears that most users will not bother to read the statement, but agrees with the principle. MDM fears that we cannot do more.

MDM will write the statement for the website. JW will publish it.

MDM wonders how the attributes FILE_ACCESS and FILE_ASSOCIATION are used. RL explains that the NDACC database does not consider these attributes for the decision about access. NDACC follows the rule that data are automatically on the public part of the database as soon as they are older than 2 years. For data younger than 2 years, the data will be in the private part of the database unless the PI agrees (by Email) that access is public. Private data automatically become public after 2 years. MDM confirms that all NORS data are public. RL mentions that up to now all the HDF files in the NDACC database are public. MDM will suggest to the NORS partners that they add NORS in the entry for FILE_ASSOCIATION.

MDM asks if previous data versions are automatically deleted when data with a newer version number are submitted. RL answers that this is not the case. Older versions are only deleted when asked by the PI. MDM says that this is what is desired for NORS: in NORS we want to have traceability of all the versions.

RL asks how often he should update the database. MDM says that most NORS data will be uploaded monthly, but some daily or weekly. RL will prepare the database so that it can accept daily data.

MDM says that NORS partners would like to make a test before the end of this month. She asks if something special has to be done. RL says that people who will submit data for the first time in HDF format have to contact JW and RL before submitting.

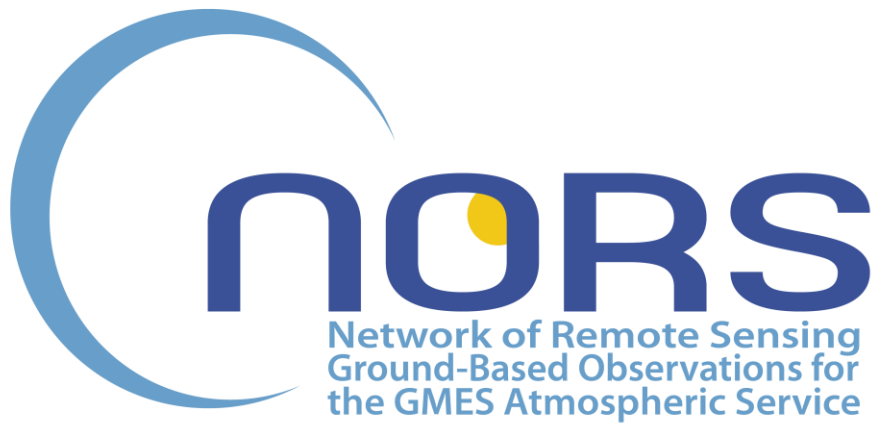
MDM says the test files should be removed after the test phase. RL asks to be informed when the test files can be deleted.

MDM informs RL that he will get e-mails before the end of this month. She will contact him at the beginning of May to check if everything went well.

The instruments used in NORS are FTIR, UV-VIS DOAS, LIDAR and Microwave Radiometer. She asks RL if the templates are implemented for all instruments. RL confirms that all templates are ready and mentions that there are no LIDAR HDF data in the NDACC database yet.

All are satisfied with the outcome of the teleconference.

After the teleconference, MDM and NK further discuss the issue of informing the users properly about the attribute to distinguish rapid delivery data and consolidated data. They suggest including a news about the data quality attribute in the NDACC newsletter or hot news section.



PMT Teleconference #2

26 June 2012

Meeting Minutes

1. Introduction

The second PMT Meeting was organized in the form of a teleconference on Tuesday 26th of June 2012.

The teleconference started at 14h00 and ended at 15h00.

2. Participants

	Name	Short name	Role in project	Institute
Martine	De Mazière	MDM	Project Coordinator	BIRA-IASB
Bavo	Langerock	BL		BIRA-IASB
Klemens	Hocke	KH	WP3 Lead	UBern
Andreas	Richter	AR	WP4 Lead	UBremen
Stephan	Henne	SH	WP5 Lead	EMPA
Thomas	Blumenstock	TB	WP7 Lead	KIT
Sander	Niemeijer	SN	WP8 Lead	S&T
Leo	Breebaart	LB		S&T
Emmanuel	Mahieu	EM	WP9 Lead	ULg

Excused:

	Name	Short name	Role in project	Institute
Nathalie	Kalb	NK	Project Manager	BIRA-IASB
Sophie	Godin-Beekmann	SG	WP6 Lead	CNRS

3. Agenda

1. Progress of work packages
2. Status of deliverables (NORS URD en Design document status)
3. Second milestone (M12)
4. NORS database (feedback of teleconference with S. Niemeijer en R. Lin)
5. CCN status
6. NORS reviewer
7. Meeting schedule
8. Summary of action items
9. AOB

4. Minutes

MDM welcomes the participants.

4.1. Progress of work packages

The WP leaders have collected the information about the tasks in their WP and represent the task leaders and WP partners at the teleconference.

4.1.1. WP1 Project coordination

All minutes of meetings can be found on the private part of the website (documents).

NK will circulate the minutes of this teleconference for correction and load the final version up on the website.

4.1.2. WP2 Project outreach

The private part of the website has been updated with publications and presentations. To access these documents, one has to create an account (at the bottom of the Login Form).

Apart from the NORS flyer, we also have a sheet in the FP7 Space brochure: Nathalie will scan it and make it available on the Web.

We also have submitted an abstract for the IGAC meeting in Beijing, China, in September; it has been accepted for a poster presentation in Session 1-Atmospheric Chemistry in the Anthropocene.

4.1.3. WP3 Rapid data delivery at 4 NDACC stations

All members have demonstrated that the rapid data delivery systems are set up by means of a sample file.

Regarding the start of data submission: several emails have been exchanged questioning the submission of NORS rapid delivery data to the usual NDACC database directories. Therefore we will have another teleconf on June 28 to discuss the location of the NORS data in the NDACC database (see Section 4.4 hereafter). Once this issue is agreed and implemented at the NACC database, NORS data submission can start.

4.1.4. WP4 Advanced characterisation of NORS data products

AR reports about the difficulties to hire a postdoc for working on the NORS project, at IUP-Bremen and at INTA.

Task 4.1 Data format definitions

It was decided that the GEOMS standard is used for NORS products. There were comments on the data format for LIDAR measurements and some remarks were formulated by S&T on the variables that describe uncertainties. The data user guide (deliverable D4.2) should be such that these remarks/comments are fully clarified (it is suggested that the definition of the airmass location should also be contained in the data user guide).

Task 4.2 Information content and harmonization of networks

Until now the research groups at BIRA, ULg and UBremen have contributed to this task with the comparisons of NO₂ (see Hendrick et al., Atmos. Chem. Phys. Discuss., 12, 12357-12389, 2012; work at University of Bremen regarding NO₂ at Ny Alesund and corresponding poster at NDACC Infrared Working Group (IRWG) meeting, June 11-13, 2012, Wengen).

EM has collected information from the NORS FTIR partners regarding the inversion of formaldehyde. Thorough harmonization will be hampered by the fact that ULg is using a very narrow optical filter to increase the S/N ratio, limiting the bandpass such that only one HCHO microwindow is encompassed, instead of e.g. 5 for Reunion Island. In parallel, preliminary comparisons between MAXDOAS and FTIR HCHO measurements have been performed by G. Pinardi (BIRA).

Task 4.3 Uncertainties

No explicit work has been done up to now. PROFFIT is capable of performing error computations. For SFIT2 routines are in development in various teams, and some work will

be done in the IRWG to implement a common tool (cf. discussion at IRWG meeting, Wengen)

Task 4.4 Comparison to satellite observations

AR reports that this task is slightly delayed due to some difficulties in hiring new staff at INTA and UBremen. The work required for this task will be initiated soon.

4.1.5. WP5 Integration of tropospheric products

SH reports that results for October measurements at Jungfrauhoch are ready. For the measurements at Izana, there are still some administrative issues. NK is preparing the appropriate paperwork to make AEMET at Izana a third-party partner in NORS (see below).

4.1.6. WP6 Integration of ozone products

Sophie Godin-Beekmann could not attend the teleconf. She has e-mailed a brief progress report for WP 6 before the meeting – which is annexed to these minutes. MDM summarizes this report.

4.1.7. WP7 Reanalysis of ground-based time series back to 2003

This WP has not started yet.

4.1.8. WP8 Web-based server for validation of GAS products using NORS data products

LB reports that next Thursday a first draft version of the validation server Design Document (DD) will be distributed among the NORS partners. To be able to process possible feedback and because there was some delay on the URD on which the design document is based, one week delay will be asked to the REA officer (S. Vermoote) for delivering this document (=D8.2).

MDM reminds the partners that the NORS URD has been delivered, but that some amendments may still occur in the course of the project, following discussions in the NDACC Working Groups. These amendments should however not affect the design of the Server. LB replies that anyway the design as explained in the DD is quite high-level.

4.1.9. WP9 Validation of GAS products for O₃, NO₂, CO, CH₄, H₂CO, aerosol

This WP has not started yet.

4.1.10. WP10 Capacity building and sustainability

The NORS project has been presented and some issues have been discussed during the NDACC IRWG during its meeting in Wengen (June 11-13),

There will also be a session dedicated to NORS during the NDACC UVVIS Working Group meeting at BIRA on July 3-4.

MDM says that it would be good to discuss NORS also during the LIDAR and Microwave Working Group meetings, if these are planned.

4.1.11. WP11 Project management

No questions about project management?

4.2. Status of deliverables

4.2.1. D4.1 Data format definitions (M6)

Submitted

4.2.2. D8.1 Validation server User Requirements Document (URD) (M6)

Submitted

4.2.3. D8.2 Validation server design document (DD) (M8)

In preparation (see above)

4.3. Second milestone (M12)

The first milestone will be the 31th of October 2012 (M12). We will then have to report about:

- MS7 Selection of statistical method for integrating O3 data products (WP6)
- MS8 Start of NDACC-TCCON Xcalibration (WP4)
- MS9 First Progress Meeting and SC meeting (WP1) > PM1 will take place in M13

All persons indicated as the responsible persons for milestones - will have to fill in the template for the milestone reports that can be found online (<http://nors.aeronomie.be/> > Documents > Other documents > Working documents).

4.4. NORS database (feedback of teleconference with S. Niemeijer en R. Lin)

The archiving of the NORS data in the NDACC database will be discussed again in a teleconference. Most partners do not like the idea that the rapid delivery data are not clearly separated from the 'consolidated' data on the NDACC database, and that one has to go inside the data to discover via the metadata which ones are rapid delivery and which ones are consolidated. At the same time, we have to account for the needs of the (automatic) validation server.

This teleconference will take place on Thursday June 28 at 4:30 PM (Brussels time, GMT+2). Feedback will be provided to the entire consortium afterwards.

Will participate:

- Martine De Mazière
- Nathalie Kalb
- Bavo Langerock
- Roger Lin
- Jeannette Wild
- Sander Niemeijer

4.5. CCN status

An amendment to the Grant Agreement is necessary for following items:

1. Replacing D4.6 "CH4 data assessment" by D4.6 "Comparison between CO measurements from TCCON and NDACC". This was discussed and agreed at KO meeting.

2. Adding an extra station in WP10 in Seoul, Korea in collaboration with IAP/UBern. This was discussed and agreed at KO meeting.
3. Including AEMET in the consortium as a third party making their resources available to a beneficiary free of charge. The reason for this is that we need some surface in-situ data from the Izana station, which is already involved in the project for remote sensing observations made at the Izana site by 2 NORS partners. The site facilities are run by the AGENCIA ESTATAL DE METEOROLOGÍA (AEMET). They are responsible for the local in-situ data. We had not included them as NORS partners because the in-situ data are publicly available. However, since we need these data at a higher sampling frequency than what is publicly available, we ask them some additional effort and cooperation. This justifies AEMET officially joining the project. The relevant sections (Work Packages and section related to Third Parties) in the DoW will be updated accordingly.

Question: Will the same problem occur for the in-situ data at Ny-Alesund that fall under the responsibility of NILU - who is not a partner in NORS at this moment?

At the moment: Ny-Alesund is not considered in the activities of WP 5.

NK will circulate the DoW for approval and keep the consortium informed about the progress of this Grant Agreement Amendment.

4.6. NORS reviewer

After the KO meeting, the members of the consortium were asked to choose a reviewer for NORS. Yves Govaerts came first in the voting poll, followed by Hennie Kelder. The outcome of the vote has been sent to the REA Officer for NORS (Stijn Vermoote), who would take the final decision. Since Yves Govaerts already acts as reviewer for the MACC project, he could not be involved in the NORS project as well. Hennie Kelder has kindly accepted to act as a reviewer for NORS.

4.7. Meeting schedule

Month	Meeting Name	Venue	Date	Time
M2	Kick Off Meeting	BIRA-IASB	Wednesday, 14 December 2011	9:30 AM
M4	PMT Teleconference 1		Thursday, 9 February 2012	10:00 AM
M6	SC Teleconference 1		Thursday, 12 April 2012	10:00 AM
M8	PMT Teleconference 2		Tuesday, 26 June 2012	2:00 PM
M10	PMT Teleconference 3		Thursday, 9 August 2012	10:00 AM
M13	First Progress Review/Meeting	BIRA-IASB	Tuesday 20 & Wednesday 21 November 2012	TDB
M14	PMT Teleconference 4		Thursday, 13 December 2012	10:00 AM
M16	PMT Teleconference 5		Thursday, 14 February 2013	10:00 AM
M18	SC Teleconference 2		Thursday, 11 April 2013	10:00 AM
M20	PMT Teleconference 6		Thursday, 13 June 2013	10:00 AM
M22	PMT Teleconference 7		Thursday, 8 August 2013	10:00 AM
M24	Second Progress Review/Meeting	BIRA-IASB	Thursday, 24 October 2013	9:30 AM
M26	PMT Teleconference 8		Thursday, 12 December 2013	10:00 AM
M28	PMT Teleconference 9		Thursday, 13 February 2014	10:00 AM
M30	SC Teleconference 3		Thursday, 10 April 2014	10:00 AM

Month	Meeting Name	Venue	Date	Time
M32	PMT Teleconference 10		Thursday, 12 June 2014	10:00 AM
M33	Final Project Review/Meeting/Workshop	BIRA-IASB	Thursday, 31 July 2014	9:30 AM

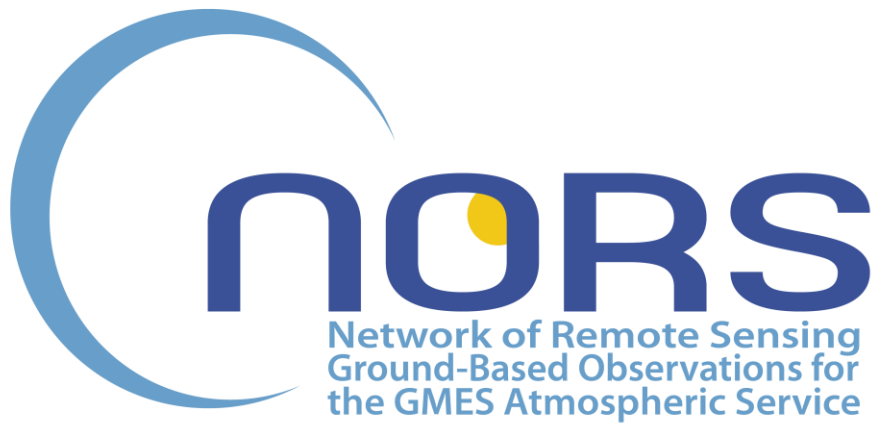
The date of PMT Teleconference 3 (August 9) was set long time ago. Because of holidays of several partners, it is delayed to September 6, at 10:00 AM. At that teleconf, the organisation of the first progress meeting (fixed on Nov. 20-21) will be discussed.

4.8. Summary of Action Items

AI #	Description	Assigned to	Status
AI-1	Designate someone to lead the standardisation of the retrieval settings for NO ₂ , H ₂ CO in FTIR	Emmanuel Mahieu / Andreas Richter	Open
AI-2	Organize teleconference with FTIR people to decide to replace D4.6 "CH ₄ data assessment" by D4.6 "Comparison between CO measurements from TCCON and NDACC"	Martine De Mazière	Closed
AI-3	Identify or verify the responsibilities (task leaders/ task partners) in WP4	Andreas Richter	Closed
AI-4	Interact with Sophie Godin-Beekmann about the O ₃ data she needs: which data? How to deliver?	Sophie Godin-Beekmann	Closed
AI-5	Verify if there exist microwave data for O ₃ from Ny-Alesund and if they can be used in the NORS project	Christof Petri	Closed
AI-6	Organise a splinter meeting with S&T	Martine De Mazière	Closed
AI-7	Submit ideas for reviewers	All	Closed
AI-8	Send change contract notice to EU/REA about: - replacing D4.6 "CH ₄ data assessment" by D4.6 "Comparison between CO measurements from TCCON and NDACC" - extra station in WP10 in Seoul, Korea in collaboration with IAP/UBern - including AEMET in the consortium as a third party making their resources available to a beneficiary free of charge	Nathalie Kalb	Open
AI-9	Send flyers to distribute at EGU	Nathalie Kalb	Closed
AI-10	At next NDACC steering committee meeting, discuss homogenization of formats in NDACC database	Geir Braathen	Open
AI-11	Collect GEOMS sample files for each instrument	Klemens Hocke	Ongoing for data from CNRS.LATMOS
AI-12	Send all the templates to S&T	Emmanuel Mahieu	Closed
AI-13	Send report to all on potential issues with the templates for automatic processing purposes.	Sander Niemeijer	Closed
AI-14	Provide access to MARS archive to S&T	Richard Engelen	Ongoing
AI-15	2nd iteration of the NORS URD, also to be sent to the SC members.	Martine De Mazière	Closed
AI-16	Provide input for the milestone report. See mail from NK of 13 April for detailed instructions.	WP managers	Closed
AI-17	Discuss the submission of NORS data to NDACC database	Martine De Mazière and Geir Braathen	Closed
AI-18	Doodle to reschedule PMT Telecon 2	Nathalie Kalb	Closed

4.9. AOB

End of teleconference.



NDACC Teleconference #2

28 June 2012

Meeting minutes

1. Introduction

A teleconference was organized on Thursday 28th of June 2012 to re-discuss the submission of NORS data to the NDACC database.

The teleconference started at 16h30 and ended at 17h30 UT+2.

2. Participants

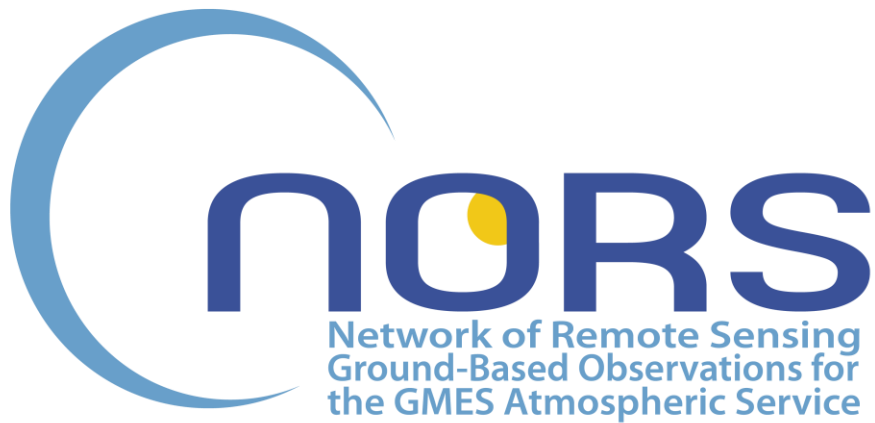
Name		Short name	Role in project	Institute
Martine	De Mazière	MDM	Project Coordinator	BIRA-IASB
Bavo	Langerock	BL	Scientist	BIRA-IASB
Roger	Lin	RG	NDACC database manager	NOAA
Jeannette	Wild	JW	NDACC database manager	NOAA
Sander	Niemeijer	SN	WP8 Lead	S&T
Leo	Breebaart	LB	WP8 collaborator	S&T

3. Minutes

- NORS data is public. NORS data will be delivered in rapid delivery mode (NRT for simplicity), and most NORS data providers prefer that the NRT data should be clearly separated from standard consolidated NDACC data. They believe that not having a clear separation on the database may be confusing for users. Therefore there will be a clear distinction between the NRT data and consolidated data on the ftp site, and the distinction will be explained to the public users of the data on the Web pages. For users going directly to the ftp site, there will be a readme file to inform them about the distinction NRT versus consolidated.
- Files submitted to the NDACC database in the framework of the NORS project are catalogued NRT if the DATA_QUALITY variable matches a substring. This substring will be major case and in the beginning of the string value of the variable DATA_QUALITY to avoid erroneous matches. The DATA_QUALITY variable is a free variable. It must be added in the GEOMS guidelines that the string "NRT" as initial substring of the entry in DATA_QUALITY is reserved for rapid delivery data.
- If submitted data is catalogued as NRT, the data submitter will receive an email from the database mentioning this fact, for his verification.
- In the case a data provider submits consolidated data (e.g. a file containing all measurements of 2011), it is the responsibility of the PI to request to the NDACC database managers to remove the NRT files covering the same measurements as the consolidated datafile. S&T would like to be notified when data is removed from the database (the NDACC catalogue does not contain this information).
- The NORS validation server will recognize when a consolidated version of NRT data is available, independent of the NDACC database. Because the filenames will likely differ (the DATA_START_DATE and DATA_STOP_DATE) for consolidated data and NRT data (submitted at least once per month), the version number is independent for consolidated data and NRT data, i.e. consolidated data is not a 'new version' of

NRT data. In order that the system recognizes the correspondence between NRT data and a datafile with consolidated data, the global attributes related to DATA_DISCIPLINE, DATA_LOCATION, DATA_SOURCE must remain identical.

- It is decided that the private NDACC site where the database can be queried, will not allow distinct queries on NRT and consolidated data.
- Roger Lin will inform the NORS project coordinator (Martine) when the necessary changes have been implemented in the NDACC database. From that time on, NORS data can be submitted to NDACC.



PMT Teleconference #3

13 September 2012

Meeting Minutes

1. Introduction

The third PMT Meeting was organized in the form of a teleconference on Thursday 13th of September 2012.

The teleconference started at 10h00 and ended at 11h00.

2. Participants

Name		Short name	Role in project	Institute
Martine	De Mazière	MDM	Project Coordinator	BIRA-IASB
Nathalie	Kalb	NK	Project Manager	BIRA-IASB
Bavo	Langerock	BL	Scientist	BIRA-IASB
Klemens	Hocke	KH	WP3 Lead	UBern
Andreas	Richter	AR	WP4 Lead	UBremen
Stephan	Henne	SH	WP5 Lead	EMPA
Maud	Pastel	MP	Represents WP6 Lead	CNRS
Leo	Breebaart	LB	Represents WP8 Lead	S&T
Emmanuel	Mahieu	EM	WP9 Lead	ULg

Excused:

Name		Short name	Role in project	Institute
Sophie	Godin-Beekmann	SG	WP6 Lead	CNRS
Thomas	Blumenstock	TB	WP7 Lead	KIT
Sander	Niemeijer	SN	WP8 Lead	S&T

3. Agenda

1. Progress of work packages
2. Status of deliverables
3. Second milestone (M12)
4. Agenda of first Progress Meeting (20&21 November 2012 - draft in annex)
5. Meeting schedule
6. Summary of action items
7. BIRA-S&T teleconference

4. Minutes

MDM welcomes the participants.

4.1. Progress of work packages

The WP leaders have collected the information about the tasks in their WP and represent the task leaders and WP partners at the teleconference.

4.1.1. WP1 Project coordination

All minutes of meetings can be found on the private part of the website (documents). NK will circulate the minutes of this teleconference for correction and load the final version up on the website.

4.1.2. WP2 Project outreach

The public part of the website contains publications and presentations. The private part of the website contains the deliverables and working documents. To access the private part of the website, one has to create an account (at the bottom of the Login Form).

MDM will present a poster about NORS at IGAC 2012 in Beijing. She will distribute a draft for comments and the final version afterwards.

MDM participated to a workshop on meta data for Air Quality and Atmospheric Composition in Dublin (Sept. 5-7, 2012). She presented the NORS GEOMS data formats; other communities presented their standards and/or needs. The harmonization of the formats among different communities was discussed. The best way to harmonize (or better 'communicate') with other communities is to produce mapping tables between each other, e.g., between NetCDF CF convention and GEOMS. GEOMS was considered not to be a standard but rather a "local" convention for a small community. We should try to make more publicity about GEOMS.

From the discussions, it was clear that GEOMS is compliant with the Inspire principles. We should check to what extent we are also compliant with the ISO guidelines. This is important to be reported in WP10. AR points out that the MACC community will be very interested in an harmonized format.

4.1.3. WP3 Rapid data delivery at 4 NDACC stations

KH says that BL has recently sent an email about the new 'NRT' directory in the NDACC database for submission of the NORS rapid delivery data files. NRT data are now clearly separated from the consolidated data in the directory. MDM suggests that all try to submit a test file to check that everything is working. She says that the NDACC website will display information about the separation and the reason for it – this is agreed with the NDACC DHF managers and currently under construction*. KH wants to know who will submit in NRT directory. MDM says that all partners should submit their data in the NRT directory, with 'NRT' in the DATA_QUALITY field, unless they are directly consolidated.

* By the time these minutes are written, this information has been published on the NDACC Webpages.

EM says that we should define the approach for consolidating the FTIR CH₄ data, because we have not yet decided between the strategies developed by R. Sussmann and the one developed by Frank Hase. MDM says it is a difficult question and suggests tackling it in a separate teleconference with the FTIR community of NORS.

AI-19: NK to schedule a teleconf with the FTIR community to define a common approach within the consortium to consolidate the CH₄ data.

MDM asks EM when the new HITRAN data would be released. He answers that it was scheduled for 2012, but will more probably be next year (release in 2013 has been confirmed recently at the joint ACE/SAGE III meeting, Oct. 15-17, Norfolk, VA, USA).

MDM asks AR if the MAXDOAS team will submit a test file. AR says he doesn't know and will investigate that. MDM insists that all should submit at least one test file.

LB says that real files instead of mock up files will be useful to show some interesting results at the first progress meeting.

MP says that the NRT data of LATMOS are ready but they first have to solve some problems with the IDL tool for producing the HDF files before submitting the data.

AI-20: All partners to submit at least one real NRT and/or consolidated datafile.

4.1.4. WP4 Advanced characterisation of NORS data products

AR is worried about the progress of this WP. IUP-Bremen has not hired a PhD student for working on the MAX-DOAS part of the NORS project yet. So there is still a problem on the DOAS side. INTA also had difficulties hiring a scientist for working on NORS, but that should be fixed now. The task leaders didn't report much, so he will insist that the task leaders provide more for the progress meeting.

MDM suggests to use the discussions and results of the UVVIS WG meeting in Brussels in July as starting point.

AI-21: MDM will check with François Hendrick about the latest version of the (MAX)DOAS template for the HDF data submission, as a consequence of the request during that UVVIS WG meeting for inserting a data quality flagging capability. She will ask him to communicate that with everybody.

4.1.5. WP5 Integration of tropospheric products

SH says this WP is progressing as expected.

4.1.6. WP6 Integration of ozone products

SGB could not attend the teleconf. She is represented by MP. They have e-mailed a brief progress report for WP6 before the meeting – which is annexed to the minutes.

MP reports that they have presented different Lidar MW and FTIR results from the Alpine station at QOS. They have received very good feedback from the symposium. They now have to understand the biases between the different data sets (Lidar, FTIR and microwave).

MDM asks MP to send the presentation to NK to include in the outreach WP.

MDM asks MP to show preliminary results at the progress meeting.

4.1.7. WP7 Reanalysis of ground-based time series back to 2003

This WP has not started yet.

4.1.8. WP8 Web-based server for validation of GAS products using NORS data products

SN could not attend the teleconf. He is represented by LB.

Since last meeting, the validation server design document has been delivered. S&T has participated to a teleconference with Roger Lin and Jeannette Wild (NDACC DHF managers) about the exchange of meta data. S&T has met difficulties to have access to the MACC-II model output files because they are a commercial company. To solve the problem, there have

been some discussions between the MACC-II consortium (via R. Engelen), BIRA and KNMI. Finally it has been agreed that KNMI will retrieve from ECMWF (MARS archive) the relevant NORS data files and forward them to S&T, so the problem is solved now.

WP 8 is progressing smoothly, despite of the problem about the access to the MARS archive. MDM asks LB to show preliminary results at the progress meeting.

MDM has sent an e-mail recently to S&T about a Web-based server for air quality data in the context of MACC-II. It looks quite similar to what we are going to do in NORS. We should discuss how these 2 servers will be presented on the MACC site.

AI-22: MDM will send the server's address to the whole community so that all can take a look.

4.1.9. WP9 Validation of GAS products for O₃, NO₂, CO, CH₄, H₂CO, aerosol

This WP has not started yet.

4.1.10. WP10 Capacity building and sustainability

MDM plans to give a presentation at the NDACC steering committee (SC) meeting about the progress in NORS. She also intends to put a discussion about the homogenization of formats in the NDACC database on the agenda of the SC meeting.

4.1.11. WP11 Project management

1. There are 2 reporting periods in the NORS project: M1 > 12 and M13 > 33. The deadline for delivering a report is 60 days after the reporting period, BUT drafts of reports must be available for reviews. The first review coincides with the first progress meeting. This means that a draft report should be provided to REA and the reviewer, Hennie Kelder, on the 7th of November 2012 and the final report should be delivered on the 21th of December 2012.

The periodic reports shall address both the technical and the financial aspects of the project. It shall consist of:

- 3.1. Publishable summary
- 3.2. Core of the report
 - 3.2.1. Project objectives for the period
 - 3.2.2. Work progress and achievements during the period
 - 3.2.3. Project Management
- 3.3. Deliverables and milestones tables
- 3.4. Explanation of the use of the resources
- 3.5. Financial statements - Forms C and Summary financial report
- 3.6. Certificates

The submission of the reports has to be done via the Participant Portal. **Signed** Forms C and certificates (if applicable) must be sent by post in parallel. A Web-based online tool for completing and submitting forms C is accessible via the Participant Portal.

AI-23: NK will send a draft report with clear indications about the information to be provided by the partners at latest on 1 October 2012. The deadline for completing and sending the requested contributions is the 24th of October 2012.

A template of a periodic report and the corresponding guidelines can be found online (<http://nors.aeronomie.be/> > Documents > Reports > Templates reports).

2. The Grant Agreement Amendment about replacing the new title of D4.6, the extra station in WP10 in Seoul and the inclusion of AEMET as a third party making their resources available to a beneficiary free of charge, has been finalized. NK has updated the DoW and uploaded it on the website.

4.2. Status of deliverables

4.2.1. D4.1 Data format definitions (M6)

Submitted.

4.2.2. D8.1 Validation server User Requirements Document (URD) (M6)

Submitted.

4.2.3. D8.2 Validation server design document (DD) (M8)

Submitted.

4.2.4. D4.2 Data user guide (M18)

The deadline is April 2013. BIRA will take actions on this.

4.2.5. D4.3 Error budgets (M18)

AI-24: AR will contact F. Hase about this deliverable.

4.2.6. D8.3 Validation server in test-phase (M18)

S&T is already working on this deliverable.

4.3. Second milestone (M12)

The second milestone will be the 31th of October 2012 (M12). We will then have to report about:

- MS7 Selection of statistical method for integrating O3 data products (WP6)
- MS8 Start of NDACC-TCCON XCalibration of CO (WP4)
- MS9 First Progress Meeting and SC meeting (WP1) > PM1 will take place in M13

All persons indicated as the responsible persons for milestones - will have to fill in the template for the milestone reports that can be found online (<http://nors.aeronomie.be/> > Documents > Other documents > Working documents).

AI-25: NK will send a separate email to the people who should provide inputs.

4.4. Agenda of first Progress Meeting

The first progress meeting of NORS is scheduled on the 20th and 21th of November 2012 at BIRA-IASB in Brussels. A draft agenda is provided in annex.

A draft of the agenda of the progress meeting has been distributed to the PMT prior to this meeting. MDM asks everybody to keep her informed about possibly changing availabilities. All agree on the agenda and duration of the presentations.

Stijn Vermoote, the REA PO, has to leave at 5PM on the first day and at noon on the second day. The timeslots after he left will be used for discussions among the consortium.

AR questions if it is really convenient for most people to start mid-morning. He thinks most people will have to stay overnight anyway and suggests to start earlier.

AI-26: NK to organise a small poll about starting PM1 early in the morning or mid-morning.

4.5. NORS meetings schedule

Month	Meeting Name	Venue	Date	Time
M2	Kick Off Meeting	BIRA-IASB	Wednesday, 14 December 2011	9:30 AM
M4	PMT Teleconference 1		Thursday, 9 February 2012	10:00 AM
M6	SC Teleconference 1		Thursday, 12 April 2012	10:00 AM
M8	PMT Teleconference 2		Tuesday, 26 June 2012	2:00 PM
M11	PMT Teleconference 3		Thursday, 13 September 2012	10:00 AM
M13	First Progress Review/Meeting	BIRA-IASB	Tuesday 20 & Wednesday 21 November 2012	TDB
M14	PMT Teleconference 4		Thursday, 13 December 2012	10:00 AM
M16	PMT Teleconference 5		Thursday, 14 February 2013	10:00 AM
M18	SC Teleconference 2		Thursday, 11 April 2013	10:00 AM
M20	PMT Teleconference 6		Thursday, 13 June 2013	10:00 AM
M22	PMT Teleconference 7		Thursday, 8 August 2013	10:00 AM
M24	Second Progress Review/Meeting	BIRA-IASB	Thursday, 24 October 2013	9:30 AM
M26	PMT Teleconference 8		Thursday, 12 December 2013	10:00 AM
M28	PMT Teleconference 9		Thursday, 13 February 2014	10:00 AM
M30	SC Teleconference 3		Thursday, 10 April 2014	10:00 AM
M32	PMT Teleconference 10		Thursday, 12 June 2014	10:00 AM
M33	Final Project Review/Meeting/Workshop	BIRA-IASB	Thursday, 31 July 2014	9:30 AM

Even though the next PMT teleconference on December 13 is scheduled shortly after PM1, it is useful to have it to discuss the progress of the first annual report. If the reviewer reports shortly after the PM, then we can have the teleconf one week earlier. The final date of the teleconf will be discussed at the PM.

4.6. Summary of open Action Items

AI #	Description	Assigned to	Status
AI-1	Designate someone to lead the standardisation of the retrieval settings for NO ₂ , H ₂ CO in FTIR	Emmanuel Mahieu / Andreas Richter	Ongoing
AI-10	At next NDACC steering committee meeting, discuss homogenization of formats in NDACC database	Geir Braathen	Ongoing
AI-14	Provide access to MARS archive to S&T	Richard Engelen	Ongoing
AI-19	Schedule a teleconf with the FTIR community to discuss the retrieval settings for the different species and define a common approach within the consortium to	Nathalie Kalb	Open

AI #	Description	Assigned to	Status
	consolidate the CH ₄ data.		
AI-20	All partners to submit at least one real NRT and/or consolidated datafile.	All	Open
AI-21	Check with François Hendrick about the latest version of the (MAX)DOAS template for the HDF data submission, as a consequence of the request during that UVVIS WG meeting for inserting a data quality flagging capability. Ask him to communicate that with everybody.	Martine De Mazière	Open
AI-22	Send the server's address to the whole community so that all can take a look.	Martine De Mazière	Open
AI-23	Send a draft report with clear indications about the information to be provided by the partners. The deadline for completing and sending the requested contributions is the 24th of October 2012.	Nathalie Kalb	Closed
AI-24	Contact F. Hase about D4.3 Error budgets (M18).	Andreas Richter	Open
AI-25	Send an email to the people who should provide inputs for the second milestone report.	Nathalie Kalb	Closed
AI-26	Organise a small poll about starting PM1 early in the morning or mid-morning.	Nathalie Kalb	Closed
AI-27	Contact KNMI about push or pull server.	Leo Breebaart	Open

AI-1: EM says they have discussed the retrieval settings for the different species with BIRA, KIT and ULg. He says that a completely homogenous approach is not necessary, particularly for H₂CO, and that the situation can be different from species to species. EM is leading this activity per default. The only partner who hasn't interacted yet on this is UBremen. He has already contacted them; AR will check with them. This topic will also be discussed during the teleconf about the CH₄ approach (see AI-19).

AI-10 and AI-14 are ongoing.

End of PMT teleconference.

4.7. BIRA-S&T teleconference

MDM, BL, NK and LB have agreed prior to the meeting to continue the teleconference after the main teleconference to discuss a specific topic.

BL has recently worked a lot with KNMI to identify the appropriate fields and parameters etc. for the MACC data. This is now nearly completed. Afterwards KNMI should have the scripts ready to compile the correct data files and forward them to S&T. LB will send an email to KNMI to ask them how they want to tackle the ftp matters: pull or push?

AI-27: LB to contact KNMI about push or pull server.

There have been some changes in the way the MACC data will be presented. We will no longer receive the analysis data every 6 hours. Once every 12 hours we will receive a file with forecast data for the coming 4 three-hours intervals.

So: t = 0, file contains data for t = 3, 6, 9, 12
t = 12, file contains data for t = 15, 18, 21, 24

This appears to be necessary because some required fields are only available in the forecast data.

Once everything is determined, BL will send an email around with the final procedure of the delivery of the MACC data.

Regarding the temporal colocation, there will be no interpolation of MACC-data under no circumstances. For instance, NORS FTIR data received at $t = 2$ will be compared to MACC at $t = 3$ (if available). If that does not work, then the NORS data will simply be discarded. In case many NORS files come in around $t = 2$, then we compare all these files with $t = 3$.

With only three hours between the MACC data, it is expected that we will much less often need to discard data than in the six hours scenario.

BL will create a table indicating for each combination (location, instrument, product type) which parameters, which particular algorithm and other decisions are needed.

We will thus have a specific inventory of the decisions which allows us to see immediately what is missing.

This table should be completed by November.

BL will investigate the requirements for the regional models (format? datastream?) and see whether they sufficiently match with the existing requirements to make it feasible to support regional models.

LB would like to spend a day at BIRA to experience the system-environment.

End of BIRA-S&T teleconference.

5. Annexes

5.1. Work package 6 progress report

Maud Pastel, Sophie Godin-Beekmann (LATMOS)

The main objective of this work package is to develop a methodology for integrating ground-based data sources to provide consistent ozone vertical distribution time series as well as tropospheric and stratospheric ozone columns at 4 NDACC stations (NyAlesund, Alpine station (OHP), Izaña, La Réunion). The delivery of our method is in November 2013.

The first step of this study was to evaluate the validity domain of ozone profile data by using error assessment and vertical resolution at the Alpine station with lidar DIAL data at OHP (44°N, 6°E), Microwave data at Bern (47°N, 7°E) and FTIR data at the Jungfrauchjoch station (47°N, 8°E). The vertical resolution of lidar measurements is altitude dependent and ranges from 0.5 km at 20 km to 2 km at 30 km and 4 km at 40 km. Their precision decreases from $\pm 2\%$ below 20 km to more than $\pm 10\%$ at 40 km and their accuracy is estimated to be on the order of $\pm 3\%$ (Godin-Beekmann et al., 2003) The

Microwave radiometer at Bern provides ozone profiles from 20 to 60 km with an altitude resolution of 10 to 15 km and a precision better than $\pm 5\%$ between 20 and 40 km (Peter and Kamper, 1995). FTIR at Jungfraujoch station provide retrieval profile with a vertical resolution varying from 7 km to 15 km and useful information up to 42 km. Precision on FTIR columns is about 4.2 % (Vigouroux et al., 2008).

A primary comparison has been done on available data (in 2009). Microwave measurements are performed mostly every day with a temporal resolution of 2 hours, FTIR perform one or two measurement par day mostly in the morning while lidar profiles are obtained only during clear sky during the night. During this period, 40 coincident profiles have been reported. Because of the higher resolution of lidar measurements, their profile resolution has been degraded for the comparison with FTIR and Microwave measurements.

Partial columns comparisons:

The time series of O₃ partial columns for the three instruments have been compared at 6 layers (16-20, 19-21, 23-27, 28-32, 33-37, 38-42 km). In the upper stratosphere ozone is in photochemical equilibrium while transport is controlling ozone below 30 km (Danielsen et al., 1985). This is consistent with our observations of the ozone vertical distribution at midlatitudes showing an ozone annual maximum occurring in summer at levels higher than 28 km and in early spring at levels below 25 km. The peak-to-peak amplitude of the ozone seasonal cycle is well captured by all measurements. The largest discrepancy between the FTIR, the Microwave and the LIDAR is observed mostly during the winter period in every layer. In fact, the biases are even more visible between the LIDAR and FTIR while Microwave measurements are closer to the latter. The maximum bias is seen mostly below 21 km where a seasonal variation of the difference is observed. Above 23 km, smaller discrepancies are observed (less than 20%) excepted during the winter period.

Monthly means profiles comparisons:

From April to May, both LIDAR and Microwave profiles from 35 to 25 km present the same variations, with a bias with FTIR less than 5%. Below 25 km a strong positive (from September to June) and negative (from August to October) bias (more than 70 %) is observed between LIDAR and FTIR profiles.

This first comparison gave a first idea of the extent of possible bias between the different types of measurements. The second step of our analysis was to understand the discrepancies observed between all measurements by using an air mass tracer in order to identify observed air masses and better understand bias in winter. Therefore, the seasonal variation of the equivalent latitude (Hauchecorne et al., 2002) at OHP and Bern have been calculated from 400K to 950K (every 25K) and compared with lidar, FTIR and Microwave partial column. Similar variations have been observed of the equivalent latitude at both stations between 18 to 24 km. Nevertheless, the seasonal variations of Microwave measurements are smaller than the others due to the lack of point below 20 km (maximum bias in winter 10 DU). From 24 to 40 km, the equivalent latitude at Bern is larger than at OHP ($>10^\circ$) but with similar variations (max in Winter and min in Summer) and partial column seasonal variation presents the same amplitude of 45 DU.

The use of the equivalent latitude did not explain the bias observed between each measurement types but it gave us a general idea of the air mass variation above the stations. The use of the monthly mean data might not be appropriate to understand the origin of the discrepancies. Therefore, we have decided to look at each coincident profile, partial columns and compare then individually with the equivalent latitude.

References

Barret, B., De Mazière, M., and Demoulin, P.: Correction to “Retrieval and characterization of ozone profiles from solar infrared spectra at the Jungfraujoch”, *J. Geophys. Res.*, 108(D12), 4372, doi:10.1029/2003JD003809, 2003.

Danielsen, E. F., Ozone transport, in *Ozone in the Free Atmosphere*, edited by R. C. Whitten and S. S. Prasad, 123–159, Van Nostrand Reinhold, New York, 1985.

Godin-Beekmann, S., Porteneuve, J. and Garnier, A. Systematic DIAL lidar monitoring of the stratospheric ozone vertical distribution at Observatoire de Haute provence (43.92°N, 5.71°E), *J. Environ. Monit.*, **5**, 57-67, 2003

Hauchecorne, A., Godin, S., Marchand, M., Hesse, B., and Souprayen, C. Quantification of the transport of chemical constituents from the polar vortex to midlatitudes in the lower stratosphere using the high-resolution advection model mimosa and effective diffusivity. *J. Geophys. Res.* 107 (2002).

Monks, P. S., A review of the observations and origins of the spring ozone maximum, *Atmos. Environ.*, 34, 3545– 3561, 2000.

Peter, R., and N. Kampfer, Short-term variations of midlatitude ozone profiles during the winter 1994–1995, in *Proceedings of the Third European Symposium on Polar Ozone Research*, Air Pollut. Res. Rep., vol. 56, edited by J. A. Pyle, N. R. P. Harris and G. T. Amanatidis, pp. 484–487, *Eur. Comm., Schliersee*, Germany, 1995.

Vigouroux, C., De Mazière, M., Demoulin, P., Servais, C., Hase, F., Blumenstock, T., Kramer, I., Schneider, M., Mellqvist, J., Strandberg, A., Velasco, V., Notholt, J., Sussmann, R., Stremme, W., Rockmann, A., Gardiner, T., Coleman, M., and Woods, P., Evaluation of tropospheric and stratospheric ozone trends over Western Europe from ground-based FTIR network observations, *Atmos. Chem. Phys.*, 8, 6865-6886, 2008

5.2. Draft agenda PM1

Tuesday 20/11/2012

10h30- 11h

Welcome with coffee / tea

11h – 11h15

Opening of the meeting

Review of the agenda

Logistics of the meeting

M. De Mazière

11h15 – 11h40

Reminder about the project objectives, structure and management for the reviewer

Webpage and Outreach

Outline of the meeting

M. De Mazière

11h40 – 12h30

Status of formatting issues

E. Mahieu

Progress in WP3: Rapid data delivery to NDACC database

K. Hocke

Interactions with MACC-II (cf. report of Workshop on metadata)

12h30-13h30

Sandwich lunch

13h30 – 14h30

Progress in WP4: Advanced characterisation of NORS data products

A. Richter et al.

14h30 – 15h

Progress in WP 5: Integration of tropospheric products

S. Henne

15h00 – 15h30

Coffee Break

15h30 – 16h00

Progress in WP6: Integration of ozone products

S. Godin-Beekmann

16h00 – 16h45

Status of WP10: Capacity building and sustainability

M. De Mazière with inputs from all

16h45 – 18h00

Reporting issues

only NORS partners

18h00

End of 1st day

19h00

Group Dinner

Wednesday 21/11/2012

9h00 – 10h15

Bavo Langerock and S. Niemeijer discuss current status of development of NORS Validation Server (WP8 & WP9: Web-based validation server for GAS):

- User Requirements
- Design
- Access to and availability of MACC-II products in MARS Archive

Bavo Langerock and S. Niemeijer

10h15 – 11h00

Discussion with Steering Committee and MACC-II team

11h00 – 11h30

Coffee Break

11h30 – 12h30

Reviewer's and EU Officer's comments

S. Vermoote & H. Kelder

12h30 – 13h30

Sandwich lunch

13h30 – 14h00

Report about the GEO-AQCP Workshop on metadata

M. De Mazière

14h00 – 16h00

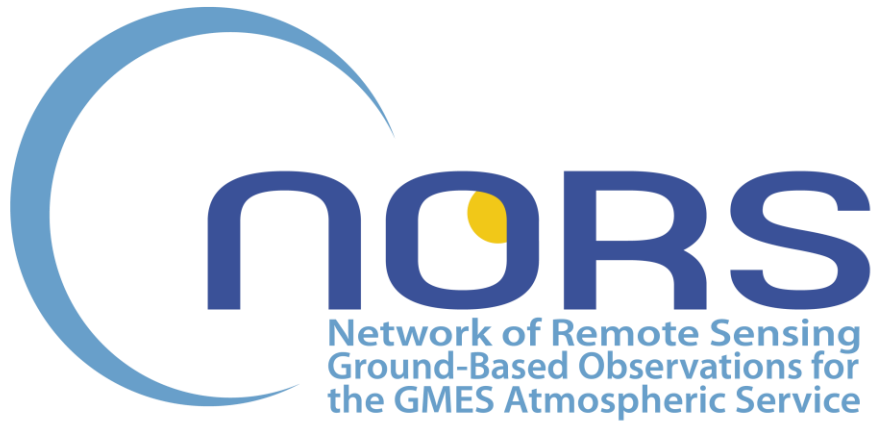
Time for addressing open questions among NORS partners and discuss tasks for next 6 months

15h00 – 15h30

Coffee Break

16h00

End of meeting



Progress Meeting 1

Meeting Minutes

Progress Meeting 1 of NORS took place on Tuesday 20th of November 2012, from 9h30 to 17h and Wednesday 21st of November 2012, from 9h till 16h in the meeting room of RMIB (Royal Meteorological Institute of Belgium), 3 avenue Circulaire, 1180 Uccle, Brussels, Belgium.

1. Participants

Participant name			Institute short name
Bavo Langerock	BL	BIRA-IASB	Scientist
Clio Gielen	CG	BIRA-IASB	Scientist
Elien Raport	ER	BIRA-IASB	Project Manager a.i.
François Hendrick	FH	BIRA-IASB	Scientist
Frederik Tack	FT	BIRA-IASB	Scientist
Jean-Christopher Lambert	FCL	BIRA-IASB	Member of Steering Committee
Karolien Lefever	KL	BIRA-IASB	Scientist
Martine De Mazière	MDM	BIRA-IASB	Project Coordinator
Michel Van Roozendael	MVR	BIRA-IASB	Scientist
Nathalie Kalb	NK	BIRA-IASB	Project Manager
Simon Chabrilat	SC	BIRA-IASB	Scientist
Stephan Henne	SH	EMPA	WP 5 Lead
Alessandro Burini	AB	ESA/ESRIN	
Stefano Cassidio	SC	ESA/ESRIN	
Klemens Hocke	KH	IAP/UBern	WP 3 Lead
Manuel Gil Ojeda	MGO	INTA	Scientist
Olga Puentedura Rodriguez	OPR	INTA	Scientist
Regina Kohlhepp	RK	KIT	Scientist
Thomas Blumenstock	TB	KIT	WP 7 Lead
Hennie Kelder	HK	KNMI	Project Reviewer
Florence Goutail	FG	LATMOS/CNRS	Scientist
Maud Pastel	MP	LATMOS/CNRS	Scientist
Sophie Godin-Beekmann	SGB	LATMOS/CNRS	WP 6 Lead
Julia Remmers	JR	MPIC	Scientist
Thomas Wagner (Wednesday)	TW	MPIC	Scientist
Stijn Vermoote	SV	REA	Project Officer
Leo Breebaart	LB	S&T	Scientist
Sander Niemeijer	SN	S&T	WP 8 Lead
Andreas Richter	AR	UBremen	WP 4 Lead

2. Agenda

Tuesday 20/11/2012

9h30 – 10h

Welcome with coffee / tea

10h – 10h15

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Review of the agenda

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M. De Mazière & Nathalie Kalb

10h15 – 10h40

Reminder about the project objectives, structure and management for the reviewer

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10h40 – 11h30

Status of formatting issues

E. Mahieu

Progress in WP3: Rapid data delivery to NDACC database

K. Hocke

11h30 – 12h30

Progress in WP4: Advanced characterisation of NORS data products

A. Richter et al.

12h30 – 13h30

Sandwich lunch

13h30 – 14h

Progress in WP 5: Integration of tropospheric products

S. Henne

14h00 – 14h30

Progress in WP6: Integration of ozone products

M. Pastel

14h30 – 15h00

Coffee Break

15h00 – 15h45

Status of WP10: Capacity building and sustainability

M. De Mazière with inputs from all

15h45 – 17h00

Reporting issues

only NORS partners

17h00

End of 1st day

19h00

Group Dinner at 't Misverstand

Wednesday 21/11/2012

9h00 – 10h15

Bavo Langerock and S. Niemeijer discuss current status of development of NORS Validation Server (WP8 & WP9: Web-based validation server for GAS):

- User Requirements
- Design
- Access to and availability of MACC-II products in MARS Archive

Bavo Langerock and S. Niemeijer

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Reviewer's and EU Officer's comments

S. Vermoote & H. Kelder

12h30 – 13h30

Sandwich lunch

13h30 – 16h00

Time for addressing open questions among NORS partners and discuss tasks for next 6 months:

- Decision about 'RD' data submission issues
- Discussion about definition and reporting of uncertainties, and compliance with "Evaluation of measurement data — Guide to the expression of uncertainty in measurement" (produced by Working Group 1 of the Joint Committee for Guides in Metrology (JCGM/WG 1)) which is adhered to by the LIDAR ISSI working group and attached herewith;
- Discussion about use and propagation of uncertainties in the NORS Validation Server;
- Short discussion about D4.2 "Error budgets" and D4.3 "Data User guide", both to be produced by month 18.

15h00 – 15h30

Coffee Break

15h30 – 16h00

Technique-specific discussions in separate groups (e.g. FTIR about work on CH₄, NO₂ and HCHO retrieval homogenisation); UV/VIS about quality flags and clouds issues; ...)

16h00

End of meeting

3. Minutes

Tuesday 20/11/2012

3.1. Introduction

See: 01_NORS_PMI_MDM

Martine De Mazière (MDM) welcomes all and introduces Hennie Kelder (Project Reviewer), Stijn Vermoote (Project Officer), Geir Braathen (MoSC and co-chairman of NDACC) and two representatives of ESA.

Subsequently, MDM gives a short introduction about the project (objectives, workpackages, consortium structure, meeting schedule, etc.), mainly to introduce the project to the reviewer and as a reminder to REA.

HK asks what the one month delay for the rapid data delivery is based on. MDM says that in the future shorter delays are foreseen. One month is our firm commitment. We want to go to 'as fast as possible'. Some are already using shorter delays.

GB suggests to advertise the webpages (more): he says that they are difficult to find via Google.

3.2. Status of formatting issues

See: 02_NORS_PMI_EM

E. Mahieu (EM) gives a talk on formatting issues. It is part of WP4. He reminds about the objectives and the context, identifies issues and proposes solutions. He also talks about the progress and achievements during the reporting period.

SN points at the distinction between NRT and consolidated data in the DATA_QUALITY attribute. We will come back to that point tomorrow. The choice must be made between the DATA_QUALITY and the DATA_CAVEATS attribute. At the moment NRT flag is in DATA_QUALITY. MDM summarizes the problem.

With regard to the name: NRT should only be used for real NRT (within 3 hours). So NDACC suggests us to use RD (rapid delivery).

GB suggests to put the flag in both. But Jeannette Wild (NDACC) prefers having just one mandatory variable.

MDM says that the templates are open to change if necessary. EM agrees, but they need to remain as fixed as possible and change is only possible with agreement of GEOMS Metadata Board.

SC asks about documentation of GEOMS conventions and says we should document better the changes we apply.

SN specifies that the convention is a NORS convention, not a GEOMS convention.

SGB asks why caveats. She thinks data quality is more appropriate. It will be further discussed tomorrow.

MDM reminds about the GEOMS Metadata Board. We are in close contact with this board.

3.3. Progress in WP3: Rapid data delivery to NDACC database

See: 03_NORS_PM1_KH

KH gives a presentation about rapid data delivery system.

HK questions how KH can explain the fine structure of ozone. KH says that it is linked to vortex overpasses over Bern. It would be good to look further into this structure.

MDM adds that all partners have been able to generate some files, some are already delivering in rapid delivery mode.

SC says that there is confusion between the ozone data delivered by MACC and the Ozone data from the meteorological service (ECMWF). In the NORS context, one should use the MACC data. The data above the stations will be available from the validation server.

SH offers to provide the data to KH.

3.4. Progress in WP4: Advanced characterisation of NORS data products

See: 04_NORS_PM1_AR

AR presents an overview of WP 4. The reports of the tasks will be presented by the task leaders.

AR presents MAXDOAS observations of NO₂ in Athens, and the dependence of the results on the viewing directions and the time. HK suggests AR to look for a local model to better understand the specificities of the measurement locations.

(Task 4.1 has already been presented by EM.)

See again: 04_NORS_PM1_AR

Udo Friess (UF) presents Task 4.2 “Information Content and Harmonization of Networks / Techniques”.

MDM notices that you cannot see the uplifted layer in the Gaussian profile retrieval. This is confirmed by UF.

MDM asks if with OEM there is enough knowledge of a priori info. UF replies that this is often not the case. It is an educated guess and should be further investigated. MDM says we are often confronted with the fact that we do not have enough a priori knowledge. So if you want to choose a method, you also have to look at the difficulty to implement it. So if the method relies strongly on a priori knowledge, it is maybe not the best method.

See: 05_NORS_PM1_FHa

Thomas Blumenstock (TB) presents Task 4.3 “Uncertainties” on behalf of Frank Hase (KIT) who could not be here.

MDM mentions that the open questions will be further discussed tomorrow.

SGB comments that it should be clearer that LIDAR is a very different technique. AR encourages SGB to emphasize this aspect in the writing of the document.

See: 06_NORS_PM1_OPR

Olga Puentedura Rodriguez (OPR) presents Task 4.4 “Comparison to Satellite Observations”.

AR lists the deliverables of WP4. He reminds all to take the appropriate actions at appropriate times.

Data user guide: BL and MDM will take the lead on this deliverable.

D4.6 the date has not changed, but has become carbon monoxide assessment instead of methane assessment (cf. amendment to grant agreement).

Lead of D4.7 should be INTA.

MDM says the challenge will be to come to a coherent entirety in this WP because there is so much different research going on.

3.5. Progress in WP 5: Integration of tropospheric products

See: 07_NORS_PM1_SH

SH presents the status of work in WP 5.

MGO presents the contributions of INTA to WP5.

HK asks how high the point is where the data are retrieved. Izana appears to be 2400m above sealevel (free troposphere).

He asks if there are models for the air circulation around the island. No, MGO explains the island situation and geography: during noon there is heating in the slopes of the mountain and there is circulation from the mixing layer.

HK shares his experience in work at Tibetan plateau. SH, HK and MGO discuss the differences between the situations.

MDM says she is confused because of the fact that he uses MACC data as background to correct the FLEXPART profile. Answer: No problem since in the end the profile is corrected with in-situ data.

MDM asks why two models: MOZART and MACC. Answer: they want to see what fits best. But it would also be possible to use any other model as input. The large-scale model is basically only used to get the relative vertical structures and not the absolute mole fractions.

3.6. Progress in WP6: Integration of ozone products

See: 08_NORS_PM1_MP

MP presents the work by LATMOS on WP6.

JCL asks about the diurnal variation of ozone. He asks if that is taken into account in their study. MP says they only use data during the day. SGB says the differences also appear in the lower layers. The variation is not that high anyway, it's not higher than the error of the

instrument. SGB thinks the lidar would be too noisy at the altitude where the diurnal variation is significant.

MDM indicates that the bias with FTIR is above 40km. This is entirely due to the a priori. That is why they should correct the method of comparison. They should correct the a priori before comparison or not include the altitudes above 40 km in the comparison.

3.7. Status of WP10: Capacity building and sustainability

See: 09_NORS_PMI_MDM

MDM shows a presentation with slides from different partners about capacity building and sustainability. She presents the different objectives, shows the different cooperations per partner and the expected long term impacts of the NORS project.

HK says the long term impacts are quite impressive and well structured but thinks it's quite optimistic for 1,5 year. He suggests to develop contacts with the ESA DRAGON project. Claus Zehner (ESA) and Ronald van der A (KNMI) are strongly involved with DRAGON.

3.8. Reporting issues

See: 10_NORS_PMI_NK

NK explains where we are in the process. She gives some financial information. E.g. she highlights that travel costs should always have indication justification per mission. Transparency is very important.

If you have bought equipment, you also have to take into account the depreciation.

The financial service at REA will compare the documents to the initial agreement, so it needs to be consistent.

MDM asks whether resources per person will be compared to the existing Table. This is a fact.

If – e.g., in WP10, you also got money from other funding sources, you must mention this and provide the amount. The Commission will check that the total funding received is not larger than the cost.

In the end, you receive what you report (taking into account the limits calculated by the commission).

Wednesday 21/11/2012

3.9. Introduction day 2

MDM welcomes everyone. There will be two extra presentations by Thomas Wagner and François Hendrick dealing with MAXDOAS cloud issues added to the agenda.

3.10. Current status of development of NORS Validation Server (WP8 & WP9: Web-based validation server for GAS).

See: 11_NORS_PMI_SN

SN presents the status of work on the validation server.

See: 12_NORS_PMI_BL

BL has been working on a document describing the algorithms. It will be distributed to the entire consortium when it will be in sufficiently good shape. We need to be careful with dry and wet air mass. SH advises us to use the water profile info (total mass) provided in the MACC data. For some molecules, like CH₄, it can be very important.

MDM mentions we do not have uncertainty info for the MACC data, so we just can take into account the uncertainty info of the NORS data.

HK asks if the addition of uncertainty information to the delivered products is foreseen in MAC. And MDM replies that it is not. It was already asked for, but it seems to be very difficult.

GB says that also in MACC, there must be some type of uncertainty. MDM says it is not provided with the data.

SV asks how we see the future: as part of the validation of GMES service or as an independent body that serves the GMES. MDM and Vincent-Henri Peuch have already touched upon that question; they will continue this discussion. Now it is a bit too early.

HK suggests to look also in the regional models.

SGB asks how we have to handle the lidar. BL will first complete the picture for the FTIR instruments, and then circulate it to get the inputs from the other instruments.

JCL says that we should not show comparisons beyond the level where there is no sensitivity; it could be confusing for the 'users'. CV confirms that in validation exercises, we are cutting off at a certain level. SN says we should be careful to compare measurements with measurements or models and not with climatologies.

KH says he is more interested in pressure levels than altitude levels. SN says this can be defined in the GECA toolset.

MVR asks if AVK can be converted as well. It is possible but then regridding is necessary and we try to avoid it.

See: 13_NORS_PL_FH

François Hendrik (FH) presents the tools for accounting for the diurnal variation in the comparisons.

AR says there is a significant diurnal variation, for example at Ny-A but not only there. This leads to a discussion about the way to deal with polar sites.

MDM summarizes that AR suggests making inputs for vortex condition and for non- vortex condition. MVR says this will imply new interdependencies.

SC says it is important to know what is done in MACC. In MACC, they also use photochemical corrections. So maybe we could use the same correction factors as them and maybe correct them. Their approach is much closer to meteorology. SC suggests to should discuss with the persons who are responsible for a similar task in MACC. SC knows who to contact about this.

See: 14_NORS_PMI_TW

Tomas Wagner (TW) gives a presentation about cloud effects on MAXDOAS inversions.

TW asks all for feedback about clouds. The discussions will take place in the afternoon for timing reasons.

See: 15_NORS_PMI_FH

FH reports about Tim Vlemmix's work on cloud filtering.

3.11. Discussion with Steering Committee and MACC-II team

MDM invites the members of the SC to share their comments and advice.

Comments from Geir Braathen

GB says he is impressed by the scientific level of this project. He says it can lead the way for many other networks and activities later on. He expects fruitful developments.

John Rimmer has charged GB to mention the new COST project EUBREWNET. This new project could be closely connected to NORS.

GB also mentions two new big initiatives at WMO level. The WIGOS (WMO Integrated Global Observing System) pilot project is some sort of continuation on NRT Delivery of ozone and aerosol data. Collaboration could be useful. WIS (WMO Information System) has developed a manual on how to submit data in NRT. It could be interesting to see how to use this in NORS.

He mentions the GAW report no. 189 that describes NRT delivery of reactive gases from GAW to MACC. It's a short report of 12 pages. According to GB, in NORS we are more advanced with regards to data formats.

MDM mentions the GEO AQCP workshop on metadata she attended in Dublin.

GB suggests to consider collaboration with WOUDC. They also accept data in NRT for production of ozone maps. It's a mix of satellite and ground-based data. The new WOUDC manager and team are very keen to serve the community. We should see if we can combine activities. MDM says that it's not really in the scope of NORS but we can contact them and see what can be combined.

Several stations in Antarctica already provide data in NRT (delay in the range from a few hours to about a week). These data could be useful for model validation. They would be easy to include in the NORS suite. Stations include Belgrano, Dôme C, Dumont d'Urville, Halley, Marambio, Neumayer, Rio Gallegos, Rothera, South Pole, Syowa, Verndadsky and Ushuaia. MDM says NORS is a demonstration project. New stations are welcome but the main requirement remains that they provide data in GEOMS HDF format.

MDM mentions that the AVDC website provides templates and recipes to create GEOMS HDF files. She says we should improve the recipes and include practical examples.

GB mentions a discussion with Thierry Leblanc about work performed in the LIDAR working group concerning reporting of uncertainties in the GEOMS data files. MDM is well aware of the issue and says that the files from Thierry Leblanc will be submitted to NDACC database very soon.

The various model output files from MACC should have the same naming conventions. It is difficult to find out more about the models. SC mentions a catalog that clarifies these things.

It would be nice to collaborate with NILU for the NRT delivery of ozonesonde data. This data is today delivered to ECMWF. It could also be delivered to NDACC DHF. Some of the participating stations are NDACC stations.

Comments from MACC

SC gives a few comments as member of MACC. The main message is that it would be a pity not to address at all the tropospheric data products of MACC.

MDM says that we must still discuss validation of MACC regional models in NORS. SN is not sure they can incorporate it in the validation server. This should be further investigated.

Comments from ESA

Stefano Cassidio says that the main message from Bojan Bojkov is that we should improve and homogenize the data sets to have the best possible data set for validation. MDM says that this is indeed our intention and that we are working on it; she is glad to hear that there is room for some support from ESA.

Comments from Jean-Christopher Lambert

JCL explains that he carries the voice of the cal-val WG of CEOS that is aiming at homogenizing and facilitating earth observation in general. It's the space arm of GEO. His main point is about the data quality/strategy issue. We should not only be GEOMS compliant but also provide evidence of compliance. NORS is also defining and establishing error budgets. MDM says that we will talk about the GUM document later this afternoon.

JCL asks if the NORS data will be provided in other formats. This would allow a broader use of the data. MDM & SN say that this will be the case indeed.

JCL highlights a concern about the transformation of NORS data. What is the traceability of errors from one transformation to another? How do the errors propagate along transformations? SN replies that this is not in the toolset at the moment. The intention is that uncertainty propagation is introduced in the GECA toolset for NORS. This requires input on how to exactly perform uncertainty propagation for all steps in the inter-comparison chain.

JCL questions the inequality between the modeling data and the merging data. A real concern is about the error bar uncertainties. At the end the output of GMES will be used for policy decisions. We are still missing very important features and atmospheric states. Uncertainty estimate documents should be created so that end users can use the data properly. MDM suggests JCL could also push this in MACC.

In NDACC at least one year is needed to cross-validate JCL asks if there are similar procedures for the rapid delivery (RD) data. Each PI should make sure to check on its own data before submitting them. There are no further quality assurance procedures nor documents for the RD data. JCL suggests to make a document as guideline for a first quality control on the data. At ULg for example there is no quality assessment for RD data. MDM thinks it is the job of the PI's.

JCL questions the sustainability of the project. What after NORS?

SV says that there is now a window of opportunities. NORS could be linked to GMES or it can be decided to stay more open to other upcoming opportunities. He recommends to use some time to network. Networking is a continuous activity. The group should open its scope. Maybe ESA or other institutions might also give options.

SN says that their approach is always to try to propose a generic solution, on which you can build later, when new opportunities arise.

JCL is convinced that the extension of activities is a good movement. In five years a geostationary satellite will start operating. Question is if there are similar initiatives on the south side of the atlantic that can be approached for cooperation. Contacts should be established.

MDM replies that some stations in the south are already contacted in the frame of NDACC/NORS.

3.12. Reviewer's and EU Officer's comments

S. Vermoote & H. Kelder

SV says the project is going very well, taking into account that the first year is only to be perceived as a kind of set-up. He likes the fact that delays are minor and do not affect the other WPs. There is a strong collaboration between the partners. Interaction with MACC is very important. This is not only important for validation, but also on other elements. NORS is

a user and a contributor of/to MACC. SV encourages the NORS team to play the MACC-user role. MACC should be challenged.

As said before, sustainability is perceived as a very important aspect.

SV congratulates NK about the project management in the very bureaucratic frame of the EU. SV says that he is always ready to answer questions.

HK says NORS is an important and challenging project. To improve the availability, rapid delivery and documentation is very relevant. NORS' objectives are well defined and realistic. The NORS team is strong and has all the expertise to make a successful project. The progress is impressive and delays are minor and minimal. Regarding visibility, the first results have been published. Long term impact is important but HK thinks NORS can not generate all the impact. He sees NORS as an important first step. The data will contribute significantly to GMES atmospheric services. It is a pity that MACC was not represented from the modeling side. NORS is using different sites that are more or less connected to universities etc. A global coverage of the sites is needed in the long term. NORS can set the base for NRT delivery. HK wishes the NORS team good luck for the future.

MDM thanks the reviewer and the REA Officer for their nice words and warnings/comments for the future. She also thanks the team members and hopes the project can continue on the same path.

3.13. Discussion with the consortium

See: 16_NORS_PMI_MDM

MDM presents the plan for the afternoon discussions.

First the name "RD" as abbreviation of Rapid Delivery is discussed.

GB explains that the GMES bureau perceives RDD as up to one month, so the NORS project complies with this standard. So RD is a good name.

Now the question is whether to put in data caveats or data quality. Following the GEOMS guidelines it should best be in data caveats. But several people think it looks more like quality. All vote, 8 participants vote in favour of quality, 2 participants vote in favor of caveats. Conclusion: We keep it in data quality but we change NRT by RD.

GEOMS: reporting of uncertainties.

Before the meeting, the GUM document was sent to everyone. The essential elements of these guidelines are presented by MDM and discussed in the meeting. Type A and B do not correspond to random and systematic. SGB says that the proposed typology (type A and B) is too vague. MVR says he has the same opinion. He adds that also in other projects this matter has been discussed. The recommendation in the cci_ozone group for example is to use the terminology uncertainties (and systematic uncertainties) rather than errors. This is also the best option in the NORS project.

AR says it is important to be clear for the user.

JCL says we should avoid naming the uncertainties if we don't know. We should report any uncertainties affecting the data, but avoid using a name if it is not known. MDM says she does not want to eliminate the concept and terminology of systematic and random errors because these concepts are widely known. This is also the opinion of F. Hase.

None of the participants are in favor of using the term type A and B. JCL and SN remind the fact that this distinction is not required.

Absolute units are preferred. If not absolute it should be specified that it is relative. For automatic handling, it is important that the names explain what is in the variable.

Based on the document, MDM gives suggestions for the GEOMS template.

Unit should be the same as for the variable itself. If not then an extension of the name is needed (should be corrected on the slide) “Random” and “systematic” will be kept. Grouping uncertainties in families is userfriendly.

SN says we should differ types clearly: systematic, random and total. It should be clear what is the total uncertainty or how to derive it, since this is the quantity that needs to be used for propagation and visualization in the NORS validation server.

MDM says: If we all stick to this kind of name, it becomes less ambiguous for the S&T colleagues. Frank Hase is in charge of the document about uncertainties. He agreed with the previous ideas (about “random” and “systematic”), for the same reasons as highlighted in the NORS-meeting.

MDM will correct the small errors in the guidelines and make them available to all. First it should of course be discussed in the different project groups.

KH fears that we might lose compatibility with NDACC. MDM reassures him that the templates will be revised and that it is the better option, certainly in a context of automatization.

EM asks how the users will handle automatization if templates change from time to time.

MDM replies that we should of course not change too often, but when the need appears clearly, we should definitely dare to take that step. (SN reminds that template identifiers contain a version number and that the template identifiers are stored as DATA_TEMPLATE attribute in the files.)

Next discussion is about aerosol and cloud quality flags for MAX-DOAS data.

See: 17_NORS_PMI_FH

The NDACC UVVIS WG came to the conclusion that there should be two quality flags. But they received major comments from S&T about the flags. The comments are:

- 1) Information in GEOMS should first appear in a quantitative way instead of a qualitative way,
- 2) What is the impact of the flag on the use of the data? (How does the user know how to deal with the data that are flagged?)
- 3) Not a good idea to combine two information elements in one flag
- 4) Why not use string entries instead of numerical entries (codes)?

MDM asks what impact the clouds have on the uncertainty. MVR asks if it makes sense at all reporting thick clouds or broken clouds. He is in favor of providing as much info as possible. The logic of having AOD in the quality flags is purely because of user friendliness. Additional info is necessary.

AR says: “poor vertical resolution should be seen in the averaging kernel” SN says that these kind of flags should lead to yes/no decision; it is unclear to him which yes/no decision this

AOD flag leads to. For clouds we don't have other ways to quantify them, so we should keep the flag.

SN would not use 9, but leave it empty for later. This allows flexibility for the future.

MDM says it should be clearly specified in the data user guide. FH will need to make a new template.

Conclusions:

- It is agreed to remove the aerosol flag and describe the quality threshold on the AOD in the Data User Guide. This approach allows the threshold to be changed afterwards without having to modify the content of the products
- include a new variable "cloud condition" (TBD further)
- and implement it as a string.

SH will discuss directly with WP 4 – task 4.4 (Olga P.) what he needs for his WP 5; so this is not discussed in the plenary meeting.

MDM is in favor of combining 2 deliverables (WP4 D4.2 and D4.3) because one can not really use the data if you don't understand the uncertainties. SN says the user is not necessarily interested in the combination of both types of information in one document. The exact content of the uncertainty document (D4.3) is TBD while a data user guide (D4.2) is a user guide.

As user SN does not see the use of having a detailed description on how uncertainties were derived in the user guide. F. Hase will explain how he gets to his uncertainties for the FTIR group. All other groups will have to report about the issue as well.

Conclusion: keep two separate deliverables D4.2 and D4.3.

After this discussion the plenary was closed.

UVVis, FTIR and Lidar+MW group had separate discussions.

3.14. UV/vis Splinter Meeting at the NORS PM1, Brussels, 21 November 2012

(Summarized by Andreas Richter, 27 November 2012)

Participants:

IASB	Michel van Roozendaal
IASB	Francois Hendrick
IASB	Clio Gielen
IASB	Frederik Tack
MPIC	Thomas Wagner
MPIC	Julia Remmers
INTA	Manuel Gil
INTA	Olga Puentedura
CNRS	Florence Goutail
Uni Bremen	Andreas Richter
Uni Heidelberg	Udo Friß
EMPA	Stephan Henne

After the general part of the meeting, a short UV/vis subgroup meeting took place covering 4 topics relevant for the next 6 months of NORS.

Clouds

Possibilities to include cloud information in the MAX-DOAS files were discussed. In the discussion, the following suggestions were made:

- Compare the results of the existing studies (BIRA, MPIC)
- Aim at something simple
- Use zenith-sky only at first to avoid problems with inhomogeneous instrument set-ups
- Do not be too restrictive as many MAX-DOAS measurements are useful even in the presence of clouds
- Use a simple zenith-sky CI as first step and later move on to more elaborate schemes
- Use ratio of CI to CI from very clear day to cancel instrumental effects

As a way forward, all groups agreed to evaluate simple CIs on zenith-sky data. As these depend on the wavelength dependency of instrument sensitivity, it was suggested to use the ratio of CIs relative to those derived from a very clear day with the same instrument. It was decided that measurements from the CINDI campaign would be a good starting point, and that each group is free in choosing all parameters (reference day, wavelength, ...) as they want. BIRA volunteered to collect the results

AI: All groups to come up with their own scheme of relative CIs (and thresholds) to characterize clouds during CINDI. Results are to be submitted to BIRA no later than 31 January 2013.

Spatial Averaging Volume

The need for proper representation of the spatial averaging volume of DOAS and MAX-DOAS measurements was discussed. In the current file format, a single point is to be given (lat, long) which will be assumed to be the position of the measurement volume.

- For zenith-sky DOAS, this was already done by Lambert et al. many years ago and displacements by a few hundred km were found in different directions depending
- For zenith-sky DOAS, simple geometry / ray tracing with single scattering approximation should be sufficient (see slides by Manuel)
- For zenith-sky observations, Janis Pukite (MPIC) has already computed 2d-AMFs (see figures sent around by Thomas)
- For MAX-DOAS, a Monte-Carlo model is needed as was already shown by Thomas at an earlier meeting
- O4 should provide useful information. In first approximation, it could be used to derive the light path (as shown by Manuel during the meeting)

It was agreed that all groups would try to look into the spatial averaging issue, with MPIC having the best tool (McArtim) for such studies. Mountain sites will provide the easiest situations and comparison between different stations should be interesting. Results from this activity will serve as input for D4.4, due in July 2013.

AI: All groups to evaluate spatial averaging volume with whatever tools are available to them. Results to be collected by MPIC until end of February 2013.

Uncertainties

The way forward with respect to uncertainties description was briefly discussed. The overall feeling was, that the current text is too general to be of use for the specialist and not enough specific to be of use to the users. In the discussion it was suggested that

- An agreement should be found about which uncertainties to report in the data files and how to compute them
- To separate between profile, column, and surface concentrations (it was not clear how this could be done in the current files)
- To make a coarse differentiation between systematic and random errors as done in the FTIR files
- To report on the uncertainties in a format including
 - Type and origin of uncertainty (“uncertainty in cross-section”)
 - An example of the effect (“change from Dehn et al. NO₂ to Merienne et al. leads to higher/lower NO₂ slant columns”)
 - Some typical numbers (“ +/- 2%”)

As definition of uncertainties is a prerequisite for data submission and this should start in April 2013, this issue has a high priority. It is also needed as input for D4.2, due in April 2013.

AI: All to provide input on their view of uncertainty description to University of Bremen until end of January 2013. This will be initiated by University of Bremen by circulating a first draft document.

Satellite data

Satellite data was discussed only very briefly. It was agreed that as a first step, information on available data sets and validation should be collected by INTA

3.15. Conclusion of the Lidar + MW group discussion

MP will pay a visit to UBern (and to ULg).

3.16. FTIR Group discussion

NO₂

It looks like one spectral microwindow is common to all groups (2914 – 2915 cm⁻¹ with small differences in the window limits). In addition to this window, several groups use a 2nd microwindow, but this 2nd window is not the same for all groups. (e.g., 2925.84-2925.95 cm⁻¹ used by KIT; 2890.78 – 2891.26 cm⁻¹ used by UBremen) .

Conclusion: ULg and BIRA will make some tests – results will be discussed with other teams in spring 2013, in a dedicated teleconference (TLC).

HCHO

The conditions for HCHO are so different from site to site + experimental configurations are very specific because of the use of special optical filters at some sites like Jungfraujoch.

Therefore, it will be almost impossible to find a common retrieval strategy

Conclusion: the groups will take no specific action.

CH4

Nobody seems to be in favour to use R.Sussmann's strategy that includes the old HITRAN2K (Atmos. Meas. Tech., 4, 1943–1964, 2011).

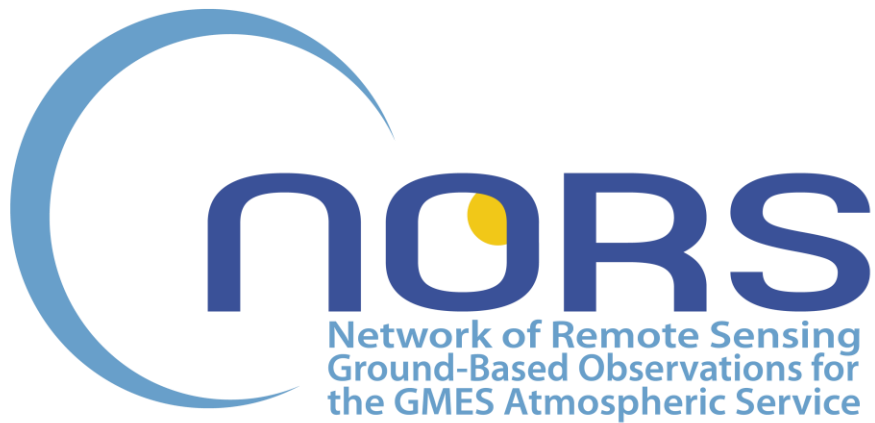
ULg is more in favour of using FH's strategy as explained in the comment to RS's paper 'Comment on "Strategy for high-accuracy-and-precision retrieval of atmospheric methane from the mid-infrared FTIR network" by R. Sussmann et al., F. Hase et al. (Hase.F_amtd-4-C1048-2011-supplement.pdf).

As for NO₂, BIRA and ULg will perform tests using Reunion and Jungfraujoch spectra, to make sure that F. Hase's strategy is applicable in these very different conditions.

Conclusion: A decision will be made as soon as the tests are finished, during a dedicated TLC.

Additional comment: fix the GEOMS FTIR templates asap.

Many thanks to all participants for the nice cooperation.



PMT Teleconference #4

13 December 2012

Meeting Minutes

1. Introduction

The fourth PMT Meeting was organized in the form of a teleconference on Thursday 13th of December 2012.

The teleconference started at 10h00 and ended at 10h40.

2. Participants

Name		Short name	Role in project	Institute
Martine	De Mazière	MDM	Project Coordinator	BIRA-IASB
Elien	Raport	ER	Project Manager a.i.	BIRA-IASB
Thomas	Blumenstock	TB	WP7 Lead	KIT
Andreas	Richter	AR	WP4 Lead	UBremen
Stephan	Henne	SH	WP5 Lead	EMPA
Sophie	Godin-Beekman	SGB	Represents WP6 Lead	CNRS
Leo	Breebaart	LB	Represents WP8 Lead	S&T
Sander	Niemeijer	SN	WP8 Lead	S&T

Excused:

Name		Short name	Role in project	Institute
Bavo	Langerock	BL	Scientist	BIRA-IASB
Klemens	Hocke	KH	WP3 Lead	UBern
Emmanuel	Mahieu	EM	WP9 Lead	ULg

3. Agenda

1. Minutes of PM1; other feedback?
2. Annual reporting: status of reporting and actions to be taken
 - Financial
 - Scientific
3. Way forward: ongoing and next actions
4. AOB

4. Minutes

MDM welcomes all participants and notices that EM could not make it.

She tells about Agatha, the little baby girl of Nathalie Kalb that was born. All partners congratulate NK.

MDM explains that this teleconference would be a rather brief meeting because we had the Progress Meeting only recently.

MDM apologizes for the delay of PM-minutes and the final draft report. She will finish both today and will also take care of the actions items succeeding from the Progress Meeting.

Among other things, she will contact the NDACC data base managers, to set the name changes concerning the rapid delivery data ('RD' identifier). MDM will also finish the updated version on reporting of uncertainties and send everything to the partners by e-mail tonight or tomorrow.

MDM thanks SN for delivering the GECA toolset. ER will place it on the NORS user website. A 'helpdesk' e-mail address will be posted; the questions will be answered by SN and co-workers.

4.1. Minutes of PM1; other feedback?

MDM looks back at the past Progress Meeting that she perceived as a good meeting. She is happy with the comments given by the steering committee and REA officers. She asks the participants about the splinter meetings held at the end of PM1.

AR has sent MDM and ER a report of a short but constructive meeting. A lot of work was agreed to be scheduled. Now, many topics need to be solved in a short time: before April. So AR and his colleagues will try to solve several of the open items mentioned in the proposal for that date.

MDM will include AR's report in the minutes of the PM1, that will be sent today.

SGB talks about the constructive meeting she had with KH. She also announces that Maud Pastel will be visiting Bern to have a discussion about the tools for integration of the microwave and lidar data. Maud would also visit ULg for discussions about the Jungfrauoch FTIR data. She concludes that good progress is made.

MDM explains that also in the FTIR splinter meeting, decisions were taken on tests to be done, future decisions to be taken, etc.

4.2. Annual reporting: status of reporting and actions to be taken

The final first periodic report should be delivered on the 21th of December 2012.

The periodic reports shall address both the technical and the financial aspects of the project. It shall consist of:

1. Publishable summary
2. Core of the report
 - 2.1. Project objectives for the period
 - 2.2. Work progress and achievements during the period
 - 2.3. Project Management
3. Deliverables and milestones tables
4. Explanation of the use of the resources
5. Financial statements - Forms C and Summary financial report
6. Certificates

FINANCIAL

ER gives an overview of the current state of the financial reporting. Almost all Forms C are submitted online. Some last details are being discussed with one partner.

Except that last partner everyone is now asked to send 2 signed copies by regular post. These must reach us before next Friday (21/12).

Meanwhile, ER will compose the summary financial report.

She asks all partners to provide the table (word document) with details on personnel spendings etc. this week.

AR says the deadline of the financial reporting was not clear. For next reporting period, the timing should be better highlighted on the webpage.

SCIENTIFIC

MDM explains that AR has sent an update for WP4, integrating some figures. The final scientific report will be sent tonight or tomorrow for final revision by the partners. MDM asks everyone to send feedback by Wednesday (19/12) at the latest. The report will be submitted to REA on the 21st of December.

4.3. Way forward: ongoing and next actions

MDM reminds all partners about the three deliverables due in month 18: April.

- S/W for Ozone data integration
- Error budget document
- Data user guide

TB asks everyone to send feedback with regard to the first error budget draft document.

AR replies that a discussion was held at the splinter meeting on the UV-VIS side. There is a feeling that the document as it is now, would not reach the right level of detail. It is perceived quite general. The main question is: what would the user like to have? Well, the user wants a simple and clear description with examples and errors.

SN remarks the possible confusion of both documents: Error budget document and Data user guide. Both documents are to be provided for a different public. The Error budget document is for those people who would like to get more details on how errors were derived etc.

GB asks whether there was a clear decision made at PM1 on the merging of both documents or not.

MDM replies that both documents should be kept as separate documents for practical reasons. Overlap must be avoided. In January, a template of the data user guide will be made and then everyone should start completing the file. KH also talked about the ISSI book on water vapour that contains some interesting material that can give us some inspiration for setting up templates for documentation about instruments, measurement, methodology etc.

MDM also explains that she recently met Tim Haigh (EEA) in charge of all the in situ data for GMES. According to him, the Commission is still not very convinced about the usefulness of the in-situ data for validation. The discussions at the Commission will be taking place in March. MDM asks SN whether we can already give presentation of what NORS will do with the in situ data by March ?

SN thinks that at that point some comparison cases can be produced and shown as an example.

MDM: The dates of that discussion at the Commission are linked to the moments when the budget issues will be discussed at the EC. The budget for GMES is also restricted, so we need to show that the in-situ data play an important role in GMES.

Sander: what exactly does the Commission question?

MDM: don't know exactly

Sander: Whole concept of quality of data is quite a whole topic so I am surprised with the remark.

MDM will try to get more information about that.

MDM informs the partners of a EC note she received yesterday. It said that GMES changed name. It is now called Copernicus. (www.copernicus.eu)

MDM will forward the e-mail.

MDM asks whether S&T's access problems are all solved now with KNMI.

LB explains that everything was already ok before PM1, but at the meeting some people raised the point that it should not have been so difficult. S&T is getting the data from KNMI and is in good contact with Bavo, who keeps them posted on the changes he's making etc.

SN explains that at the moment there is a workable solution but he wonders how it will evolve.

SN asks about the timing of discussion/communication with the MACC-group.

MDM will raise the point in the next management board teleconf of the MACC-group.

MDM explains that BL, who could not attend this meeting, made a lot of progress with the definitions of the algorithms for the validation chain. He will send out his results for FTIR, while asking the inputs from the lidar, UV-VIS and microwave groups. So, everyone can give input and the document can become complete for all the techniques.

SN points to the fact that the GECA toolset should also be adapted to the NORS algorithm. Or it should at least align.

4.3.1. Meeting schedule

Month	Meeting Name	Venue	Date	Time
M2	Kick Off Meeting	BIRA-IASB	Wednesday, 14 December 2011	9:30 AM
M4	PMT Teleconference 1		Thursday, 9 February 2012	10:00 AM
M6	SC Teleconference 1		Thursday, 12 April 2012	10:00 AM
M8	PMT Teleconference 2		Tuesday, 26 June 2012	2:00 PM
M11	PMT Teleconference 3		Thursday, 13 September 2012	10:00 AM
M13	First Progress Review/Meeting	BIRA-IASB	Tuesday 20 & Wednesday 21 November 2012	TDB
M14	PMT Teleconference 4		Thursday, 13 December 2012	10:00 AM
M16	PMT Teleconference 5		Thursday, 14 February 2013	10:00 AM
M18	SC Teleconference 2		Thursday, 11 April 2013	10:00 AM
M20	PMT Teleconference 6		Thursday, 13 June 2013	10:00 AM
M22	PMT Teleconference 7		Thursday, 8 August 2013	10:00 AM
M24	Second Progress Review/Meeting	BIRA-IASB	Thursday, 24 October 2013	9:30 AM
M26	PMT Teleconference 8		Thursday, 12 December 2013	10:00 AM
M28	PMT Teleconference 9		Thursday, 13 February 2014	10:00 AM
M30	SC Teleconference 3		Thursday, 10 April 2014	10:00 AM
M32	PMT Teleconference 10		Thursday, 12 June 2014	10:00 AM
M33	Final Project	BIRA-IASB	Thursday, 31 July 2014	9:30 AM

Month	Meeting Name	Venue	Date	Time
	Review/Meeting/Workshop			

The next PMT Teleconference is said on Thursday 14th of February. But this might change because ER would not be around that day.

We will communicate later on the date of the next meeting.

4.3.2. Summary of Action Items

AI #	Description	Assigned to	Status
AI-1	Designate someone to lead the standardisation of the retrieval settings for NO ₂ , H ₂ CO in FTIR	Emmanuel Mahieu / Andreas Richter	Closed
AI-2	Organize teleconference with FTIR people to decide to replace D4.6 "CH ₄ data assessment" by D4.6 "Comparison between CO measurements from TCCON and NDACC"	Martine De Mazière	Closed
AI-3	Identify or verify the responsibilities (task leaders/task partners) in WP4	Andreas Richter	Closed
AI-4	Interact with Sophie Godin-Beekmann about the O ₃ data she needs: which data? How to deliver?	Sophie Godin-Beekmann	Closed
AI-5	Verify if there exist microwave data for O ₃ from Ny-Alesund and if they can be used in the NORS project	Christof Petri	Closed
AI-6	Organise a splinter meeting with S&T	Martine De Mazière	Closed
AI-7	Submit ideas for reviewers	All	Closed
AI-8	Send change contract notice to EU/REA about: - replacing D4.6 "CH ₄ data assessment" by D4.6 "Comparison between CO measurements from TCCON and NDACC" - extra station in WP10 in Seoul, Korea in collaboration with IAP/UBern - including AEMET in the consortium as a third party making their resources available to a beneficiary free of charge	Nathalie Kalb	Closed
AI-9	Send flyers to distribute at EGU	Nathalie Kalb	Closed
AI-10	At next NDACC steering committee meeting, discuss homogenization of formats in NDACC database	Geir Braathen	Open
AI-11	Collect GEOMS sample files for each instrument	Klemens Hocke	Closed
AI-12	Send all the templates to S&T	Emmanuel Mahieu	Closed
AI-13	Send report to all on potential issues with the templates for automatic processing purposes.	Sander Niemeijer	Closed
AI-14	Provide access to MARS archive to S&T	Richard Engelen	Closed
AI-15	2nd iteration of the NORS URD, also to be sent to the SC members.	Martine De Mazière	Closed
AI-16	Provide input for the milestone report. See mail from NK of 13 April for detailed instructions.	WP managers	Closed
AI-17	Discuss the submission of NORS data to NDACC database	Martine De Mazière and Geir Braathen	Closed

AI #	Description	Assigned to	Status
AI-18	Doodle to reschedule PMT Telecon 2	Nathalie Kalb	Closed
AI-19	Schedule a teleconf with the FTIR community to discuss the retrieval settings for the different species and define a common approach within the consortium to consolidate the CH ₄ data.	Nathalie Kalb	Closed
AI-20	All partners to submit at least one real NRT and/or consolidated datafile.	All	Closed
AI-21	Check with François Hendrick about the latest version of the (MAX)DOAS template for the HDF data submission, as a consequence of the request during that UVVIS WG meeting for inserting a data quality flagging capability. Ask him to communicate that with everybody.	Martine De Mazière	Ongoing
AI-22	Send the Julich server's address to the whole community so that all can take a look.	Martine De Mazière	Open
AI-23	Send a draft report with clear indications about the information to be provided by the partners. The deadline for completing and sending the requested contributions is the 24th of October 2012.	Nathalie Kalb	Closed
AI-24	Contact F. Hase about D4.3 Error budgets (M18).	Andreas Richter	Closed
AI-25	Send an email to the people who should provide inputs for the second milestone report.	Nathalie Kalb	Closed
AI-26	Organise a small poll about starting PM1 early in the morning or mid-morning.	Nathalie Kalb	Closed
AI-27	Contact KNMI about push or pull server	Leo Breebaart	closed

4.4. AOB

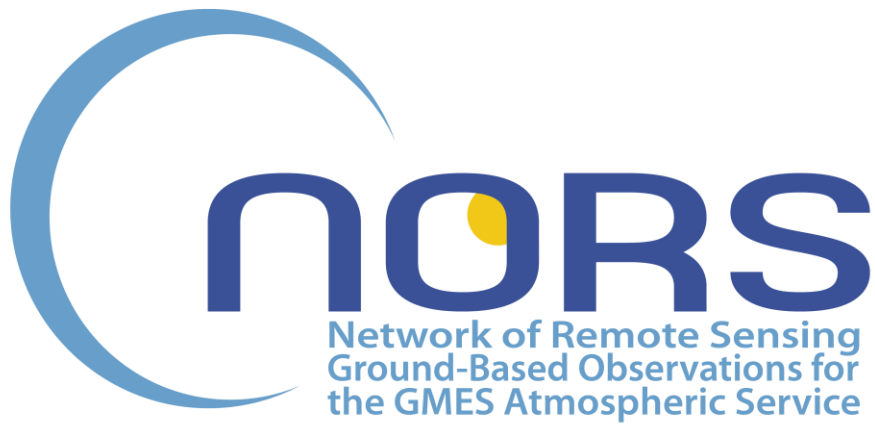
AR asks about the rules of travelling to conferences etc. under NORS budget. When should permission be asked in case more than 1 person is travelling? He remembers the rules explained in the beginning were quite restrictive.

MDM recalls that normally, if someone is asked to give presentation or make a poster etc., the European Commission accepts that travel expenses of one person are booked in the NORS budget. But when more people want to attend the same conference, it needs to be justified.

Still, doubts rise on whether we should take into account the number of participants per partner or the number for the whole consortium etc.

ER will check it again and send the information by e-mail.

The meeting was closed by MDM, wishing everyone a nice Christmas and New year.



PMT Teleconference #5

26 February 2013

Meeting Minutes

1. Introduction

The fifth PMT Meeting was organized in the form of a teleconference on Tuesday 26th of February 2013.

The teleconference started at 10h00 and ended at 11h10.

2. Participants

Name		Short name	Role in project	Institute
Martine	De Mazière	MDM	Project Coordinator	BIRA-IASB
Elien	Raport	ER	Project Manager a.i.	BIRA-IASB
Thomas	Blumenstock	TB	WP7 Lead	KIT
Andreas	Richter	AR	WP4 Lead	UBremen
Stephan	Henne	SH	WP5 Lead	EMPA
Maud	Pastel	MP	Represents WP6 Lead	CNRS
Leo	Breebaart	LB	Collaborator in WP8	S&T
Sander	Niemeijer	SN	WP8 Lead	S&T
Emmanuel	Mahieu	EM	WP9 Lead	ULg
Klemens	Hocke	KH	WP3 Lead	UBern
Bavo	Langerock	BL	Scientist	BIRA-IASB

Excused:

Name		Short name	Role in project	Institute
Sophie	Godin-Beekman	SGB	WP6 Lead	CNRS

3. Agenda

1. Status of financial reporting; status of Copernicus funding
2. Project progress (reports by WP leaders)
3. Status of Deliverables:
 - Document about data uncertainties (D4.3)
 - Data User guide (D4.2)
 - Validation server in test phase (D8.3)
4. Varia
 - Report about GEOMS teleconference (by M. De Mazière)
 - GISC meeting April 10-11 at EEA
 - AOB

4. Minutes

MDM welcomes the participants.

4.1. Status of financial reporting; status of Copernicus funding

Status of financial reporting:

After a first revision by the EC financial officer, now the adapted forms C were all submitted online. Three forms C (MPIC, UBremen and INTA) are to be sent on paper to BIRA and EC (directly) before the payment process will be initiated.

ER is asked to provide feedback about the status of reporting more regularly in the future.

Status of Copernicus funding:

The budget for EU Copernicus funding for the next 6 years (2014-2020) has been discussed. Instead of the 5.8 billion EUR asked for, a budget of 3.7 billion EUR will be foreseen. The priority is on services. We have to wait and see which impact this has on the continuation of MACC-II and possibly on the NORS project. MDM will follow up.

4.2. Project progress (reports by WPLEaders)

- WP3:
 - Maud Pastel visited Uni Bern and cooperated with Simone Studer in cross-validation of MW and LIDAR
 - GEOMS HDF ozone data of Bern microwave radiometer have been reprocessed and are in the RD directory. The series covers November 1994 to October 2010 and belongs to the filter bench spectrometer
 - Automatic generation of HDF GEOMS files is now possible with idlcr8hdf.pro in the IDL Demo mode which requires no license. Thanks to Ian and Mathias Palm, A short guide is available by Klemens.
 - ULg has pursued regular archiving of RD data for CO and O₃. CH₄ was added more recently, following a demand of Bavo. The archiving rate is of about twice a month.
 - The data submission to RDDS is not performed yet by all partners but on the other hand the GEOMS templates will be changed soon. After this change, all partners will submit their data to RDDS.
 - The new GEOMS UV-VIS template including the CLOUD.CONDITIONS variable has been implemented in our code generating the HDF files. It should be noted that fill-in values are currently used for this variable but C. Gielen has developed a cloud flagging routine for MAX-DOAS data and an intercomparison exercise of cloud flagging methods is under progress within the NORS UV-VIS WG.
 - Principally RDDS works without a serious problem. Some web browsers such as Safari fail to show the content of the RDDS directories.

- WP4:

- Task 4.1

- **CNRS**

- A new retrieval program of V2 RT data for SAOZ-CNRS/NDACC stations (OHP and La Reunion) is mostly finished (Ozone AK need to be added) .
 - Absorption cross-sections of V2 version is installed at OHP and will be soon at La Reunion. Final tests are on-going.
 - NO2 climatological AMF will be added to RT retrieval program (V3 version) in the near future.
 - SAOZ-CNRS will submit RT HDF GEOMS files in version V2 according to the new DOAS template in March-April 2013
 - LIDAR teams are waiting for the new template of the RT HDF GEOMS files.

- **IASB**

- Implementation of the new variable CLOUD.CONDITIONS in the GEOMS UV-VIS template in collaboration with Ian Boyd from the GEOMS Working Group. This variable has been implemented as a string and can have the following values: clear-sky; thin clouds; thick clouds; broken clouds; [empty]. [empty] means that the cloud retrieval is not successful; not possible or missing. Updated template description and example files can be found on the AVDC website at <http://avdc.gsfc.nasa.gov/index.php?site=1876901039>.
 - BIRA has successfully submitted example files compliant with the new GEOMS template to the NORS/NADCC database.

- **U Bern**

- RDDS is ready to get your HDF GEOMS files (now with DATA_QUALITY=RD)
 - Ian Boyd and Mathias Palm found a solution for automatic generation (batch) of HDF GEOMS files by means of IDL DEMO and idlcr8hdf.pro. This means: an IDL license is not necessary! We provide in the next week a short guideline how it can be done.
 - Safari web browser has some problems to show the latest content of RD directory at NDACC. Firefox seems to be better.

- **UBremen**

- Work on automating the FTIR retrievals. Unfortunately the retrieval software itself is "work in progress" and so the automation software has to be adapted again shortly.
 - Implementation of GEOMS files for automatic MAX-DOAS retrievals on-going

- Task 4.2: Information content and Harmonization of Networks/Techniques

- **INTA**

- An algorithm was created that permits to assign the existence of clouds, clear day or presence of dust aerosols using data from MAX-DOAS at Izaña station since 2010. At this stage only zenith-sky data have been taken into account, and the algorithm works properly at Izaña. It has been successfully applied to CINDI data to discriminate clear days, days with broken clouds and full cloud coverage.
 - The sensitivity of the instrument to altitude and distance was calculated, for zenith measurements, in a similar way as what BIRA and MPIC did (a presentation with some images was provided).

IASB

- Continuation of the work on the development of an empirical cloud filtering method for MAX-DOAS observations based on the colour index (CI): a new pilot study focusing on the 2010-2011 MAX-DOAS data set at Xianghe (Beijing area) is currently under progress. Threshold values for 30° and 90° elevation CI have been derived in order to assign sky conditions. A broken cloud flag based on the modelling of the measured CI data with a double sine function has been also developed. This cloud screening method has been applied to the CINDI campaign data and results are currently being compared to those obtained by other groups (MPIC, INTA, Uni Bremen, Uni Heidelberg, CNRS).
- Development of a method for the retrieval of tropospheric NO₂ columns from daytime zenith-sky scattered sunlight observations. It is based on the removal of the stratospheric content from each measurement using stratospheric NO₂ columns retrieved at sunrise and sunset and modelled stratospheric NO₂ diurnal variation. This method is currently being applied to measurements made at polluted sites (CINDI campaign, Xianghe station), then it will be applied to the NORS station of Jungfraujoch, which is a more challenging task given the fact that this station is most of the time located in the free troposphere.
- Continuation of the comparison between OEM- and parameterization-based approaches for the retrieval of aerosols and trace gases profiles and columns from MAX-DOAS measurements. A paper on this study is in preparation.

UBremen

- A study was made on one year of MAX-DOAS observations in Bremen computing the Colour Index and comparing it to SCIATRAN radiative transfer calculations for different scenarios. Good agreement was found in measured and modelled CI as a function of SZA, LOS and cloud conditions. It was noted that in the Bremen data set, only 3 out of more than 300 days of measurements could be classified as cloudless. The study will be extended to measurements from Cabauw for intercomparison with other groups.
- Based on earlier work, the use of the temperature dependence of the NO₂ absorption for the retrieval of tropospheric NO₂ columns from zenith-sky observations was investigated on measurements from Cabauw. This study is currently being prepared for publication
- Measurements from the MAX-DOAS instrument in Athens are being analysed for spatial gradients and ways to characterize these with simple numbers
- A comparison of NDACC and TCCON retrieval strategies for CO was made. It is still under investigation but first results are being presented at the DPG conference in Jena

ULg

- An updated strategy proposed by Frank Hase to retrieve CH₄ using Hitran08 line parameters has been evaluated, using Jungfraujoch spectra. Although some tests are still ongoing, we can already indicate that we are very pleased with the results.
- As to the harmonization of the retrieval strategy for NO₂, we have performed a first selection of approaches to be tested and compared. The actual comparisons will happen sometimes in March.

MPI

- Retrieval of the CI from Cabauw zenith observations, selection of a clear sky reference (half) day and CI normalisation, development of a simple cloud classification scheme based on normalised CI.

- Detailed investigation of the effects of clouds on MAX-DOAS observations of O4, Ring effect, radiance and CI based on measurements and RTM. Development of a sophisticated cloud classification scheme for individual MAX-DOAS elevation sequences. This study will be presented at EGU in Vienna.
- Investigation of the horizontal sensitivity range of MAX-DOAS observations. Based on RTM the horizontal distance, for which MAX-DOAS observations are sensitive for, can be determined from the O4 absorption at low elevation angles. Simple parameterisations are determined for different wavelengths, SZA, rel. azimuth angles and elevation angles.

Remarks/questions:

- MDM asks for more information about the CO comparisons between NDACC and TCCON: at present, the work includes only the UBremen data; extension to data from other stations will follow. MDM asks AR to make Christof Petri send the results to the FTIR group. **AI**

▪ Task 4.3 Uncertainties

Approaches to unify error assessment in FTIR observations were discussed at the IRWG/NORS Workshop on uncertainties in Boulder end of January. The idea is to create common software based on sfit4 that will enable the whole data processing, from the measurements up to the HDF file.

▪ Task 4.4: Comparison to satellite observations

CNRS

- SAOZ consolidated V2 ozone data of 2012 were compared with different satellites: OMI-DOAS, OMI-TOMS and SCIAMACHY. Comparison results present similar seasonal variations on the difference as preceding years.
- LIDAR O3 new consolidated profiles from 1985 to 2012 have been compared with SBUV, SAGE II, HALOE, UARS MLS, AURA MLS, GOMOS, ODIN, MIPAS data.

INTA

- A first approach was made to task 4.4 by collecting information about the satellite data used by MACC II. A bibliography search was made for publications concerning comparisons between NORS-type products and satellite data used by MACC II. The results of this search have been distributed to all partners in order to add other studies not included in the document. **AI**
- The next step is the identification of the parameters that have been taken into account in the collected publications and the identification of which additional parameters have to be taken into account for future validations. Once this will be done, we need support by the rest of the partners in order to fix the validation parameters for each technique involved in NORS

IASB

- Continuation of the comparison exercise between satellite nadir and ground-based UV-vis stratospheric NO₂ column data sets at different NDACC stations.

• WP 5

- Little to report. Work is going on for presentation at EGU.

- WP6 (Maud Pastel, Sophie Godin-Beekmann – LATMOS)

The main objective of this work package is to develop a methodology for integrating ground-based data sources to provide consistent ozone vertical distribution time series as well as tropospheric and stratospheric ozone columns at 4 NDACC stations (NyAlesund, Alpine station (OHP), Izaña, La Réunion). The delivery of our method is in November 2013.

The first step of this study was to evaluate the validity domain of ozone profile data by using error assessment and vertical resolution at the Alpine station with lidar DIAL data at OHP (44°N, 6°E), Microwave data at Bern (47°N, 7°E) and FTIR data at the Jungfrauchjoch station (47°N, 8°E). A comparison between the instruments has been studied and all bias between measurements were identified. Corrections related to each instruments have now been thoroughly made and we assume that only the origin of air masses can induce the remained biases. Our method of integration profiles will therefore be based on the variations of this parameter from 2003 to 2011. This method is based on three parts: The identification, the classification and the attribution.

The identification part:

We have shown in our previous study that the latitude equivalent varied according to the latitudes and longitudes and also with altitudes (cf figure 1 for the day 25/02/2009). For our study, it is impossible to work on all altitudes levels (very long process). So the first step is to target altitudes where a bias of 10 ° is observed between the 3 stations.

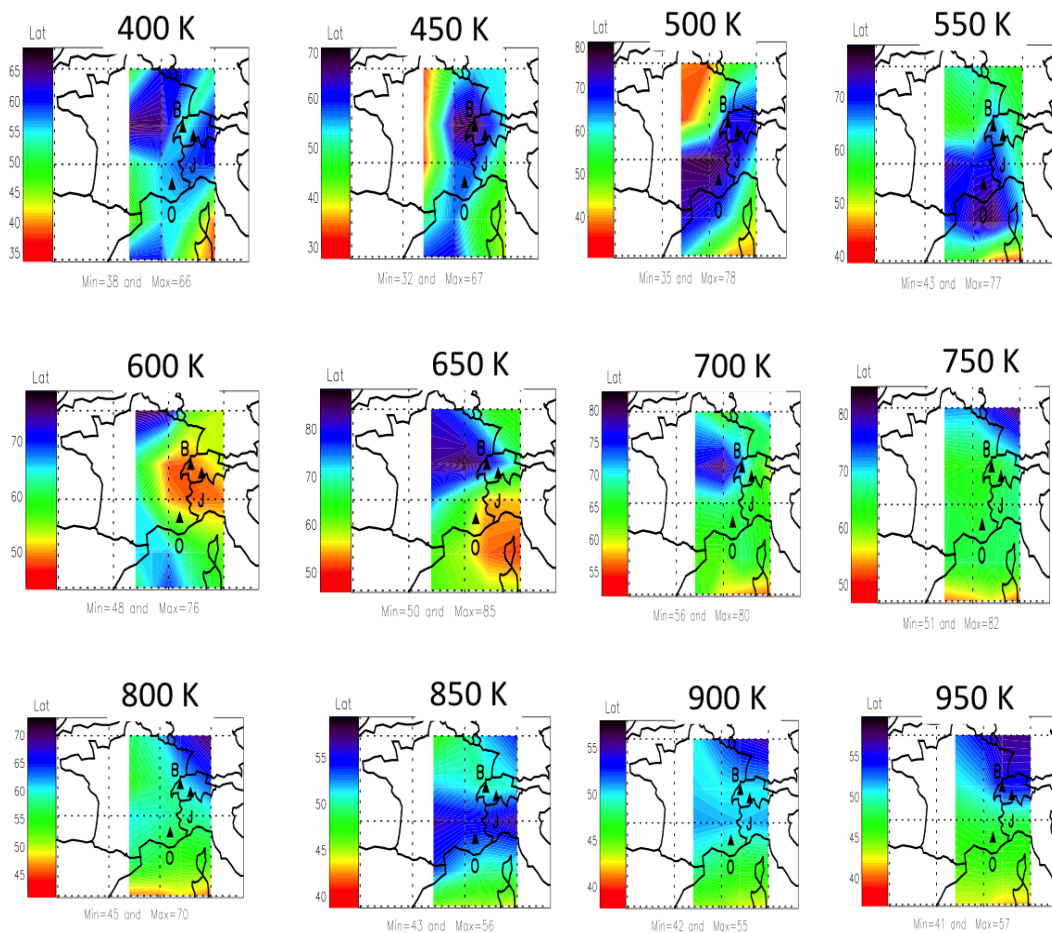


Figure 1: Equivalent latitude above OHP, BERN and Jungfraujoch on 12 altitudes levels for the day 25/02/2009. Figure incompréhensible

For example, if the study was only on the day 25/02/2009, altitudes 500K,600K,750K,800K, 850K, 900K, will not be considered. In order to look at all levels for the period 2003 to 2011, principal component analysis is used on the equivalent latitude at the 3 stations at each levels. A principal component analysis (PCA) is a mathematical procedure that uses an [orthogonal transformation](#) to convert a set of observations of possibly correlated variables into a set of values of [linearly uncorrelated](#) variables called principal components. The number of principal components is less than or equal to the number of original variables. In this case, our variables are the altitude of each profiles. This transformation is defined in such a way that the first principal component has the largest possible [variance](#). The results of our PCA will allow to define the altitudes where there is a large variance among the three equivalent latitude stations.

The classification part:

The goal of this part is to identify each scenario where the variance is larger. From that matter, a grid of equivalent latitude has been chosen (50°N, 0°: top left; 50°N, 10°E: top right , 40°N, 10°E: bottom right, 40°N, 0°: bottom left) (Figure 1). For this day, 4 scenarios (different equivalent latitude above the stations) are seen: at 550K, 600K, 650K, 900K levels. Our purpose is to classify by weight each scenario by using a self-organizing map (SOM). Self-organizing map (SOM) is a type of artificial neural network (ANN) that is trained using unsupervised learning to produce a low-dimensional (typically two-dimensional), discretized representation of the input space of the training samples, called a map. Self-organizing maps are different to other artificial neural networks in the sense that they use a neighborhood function to preserve the topological properties of the input space.

The properties of the unsupervised learning method is that follow:

- it is a method for vector quantization
- it gathers information on classes while respecting the topology of the space observations
- it has an 'a priori' definition of a notion of proximity between classes
- The observations are ranking by their similarity in the data space

In overall, the method compress multidimensional data by classes while preserving their characteristic. For each altitude level that has been chosen, the corresponding grid will be used as the input in the SOM. The output will be a weighted map according to the grid.

The attribution part:

From the output map of the SOM, weights will be defined at each altitude of each equivalent latitude profile above the three stations for each day since 2003 to 2011. Based on the assumption that the O3 bias between the 3 stations is mostly due to the variation of the equivalent latitude, weights profiles above the three stations will be attributed to their O3 profiles and will be used in a weighted average in order to build a daily alpine O3 profile.

Our methodology for integration O3 profile is based on only one parameter: the equivalent latitude and the assumption that only this parameter induced O3 bias between the three stations.

Noticed that this methodology cannot be done without a primary work on the comparison between all profiles.

- WP7 (Thomas Blumenstock) – not started yet
- WP8 (Sander Niemeijer, Leo Breebaart - S&T)
 - S&T is facing HR challenges.
 - Few changes with regard to MACC-II data: they now come via BIRA instead of KNMI. Format and structure changed a bit.
 - NORS algorithm document is in good shape with regard to the basic algorithms. But with regard to all the steps to be undertaken it is currently not yet up to date for all.

- End of April: deliverable is due. We should try to have something by then (even if it is only FTIR).
- BL explains that the goal of this document is to have a complete list of all algorithms, needed for validation of all NORS data against MACC-II data. The best way to proceed is by implementing test cases for the different measurement techniques. BL will send these out to everyone by the end of March (AI), so all partners can agree or disagree with the test cases and the algorithm part can be finalized. (No input necessary from microwave and lidar at this stage.)
- WP10: capacity building and activities in stations abroad.
 - BIRA:
 - Our rapid data delivery system for stratospheric NO₂ and total O₃ columns at Jungfraujoch is close to operational. Our system is designed in such a way that at the beginning of each month, the data corresponding to the month before will be automatically delivered to the NORS/NDACC database. Caroline is still doing some tests but the automatic delivery of these data will start probably next week with February 2013 data.
 - The retrieval of tropospheric NO₂ profiles and columns as well as aerosol extinction profiles from MAX-DOAS observations is very challenging at Jungfraujoch. The reason is that the station is most of the time located in the free troposphere and therefore the aerosols and tropospheric NO₂ contents are quite low, so we are close to the detection limit. Since further investigations are needed for an operational MAX-DOAS retrieval at this station (F. Tack is working on that issue), we decided to postpone the rapid delivery of the corresponding data. What we are currently doing now is to set up an automatic rapid delivery system for MAX-DOAS data at Xianghe (WP10) which is expected to be operational by mid of April.
 - UniBern:
 - Dr. Maud Pastel (CNRS) visited the Institute of Applied Physics at Bern. A knowledge exchange for the joint use of lidar and microwave radiometry took place.
 - Prof. Jung Jin Oh and Dr. Soohyun Ka (Sookmyung Women's University, Seoul) visited the Institute of Applied Physics (Bern) in January 2013. Prof. Oh would be glad to contribute to the NORS network as an active member.
 - Prof. Niklaus Kämpfer and Dr. Axel Murk will visit Prof. J. J. Oh at Seoul in May 2013. The purpose of the visit: technical improvements of the microwave radiometer at Seoul.
 - Uni Heidelberg
 - The long-term MAX-DOAS measurements at Paramaribo, Suriname, operated by partner UH in collaboration with the Meteorological Service of Suriname, have been continued as planned. The development of new retrieval algorithms for the analysis of the data from Paramaribo according to the current NDACC recommendations is in progress.
 - INTA
 - Work related to non-European stations: BrO, OCIO and NO₂ MAXDOAS measurements have been performing at Belgrano station (77°52'S, 34°37'W) since January 2011. Application for joining this station to NDACC is foreseen along 2013.

In early January 2011, the MAXDOAS spectrometer to measure in visible range could finally be repaired. Tests are being performed whether it is working properly.

- Uni Bremen
 - In permanent contact to the Yekaterinburg group. Another visit might be organized in the future.
 - Furthermore, Uni Bremen is working on the Suriname Project.
 - Nothing particular remarkable here since November.
- CNRS
 - A scientist from Argentina has been trained to work on the data retrieval for the SAOZ and the LIDAR at Rio Gallegos NDACC station. They have now the new version of the LIDAR Near Real Time retrieval programme and an update of the SAOZ procedure level 1 (slant column version 2). Recommendations and advices on the use of the new LIDAR NRT retrieval were made during the visit of S. Godin-Beekmann in Argentina in February 25-28.
- MPIC
 - We had an intensive exchange on MAX-DOAS profile inversions with our colleague Jin Junli from the Chinese Academy of Science, Beijing. The work focussed on the inversion of aerosol profiles and the effects of clouds on the retrieval.
 - In January 2013 a joint publication on satellite validation using the Beijing MAX-DOAS data was published in ACP:
Ma, J. Z., Beirle, S., Jin, J. L., Shaiganfar, R., Yan, P., and Wagner, T.:
Tropospheric NO₂ vertical column densities over Beijing: results of the first three years of ground-based MAX-DOAS measurements (2008–2011) and satellite validation, *Atmos. Chem. Phys.*, 13, 1547-1567, doi:10.5194/acp-13-1547-2013, 2013. (Reference to the NORS project was forgotten. MPIC promises not to make that mistake again.) in the acknowledgements in that paper; I try to make it better next time)

4.3. Status of Deliverables (due in April 2013)

4.3.1. Document about data uncertainties (D4.3)

It is still unclear for some what should be in this document and what makes it different from the data user guide. There is some overlap, but D4.3 is about what you put into your data uncertainties; how you calculate them, etc. The document is rather technical. D4.2 is supposed to be much more general. The document must show where data come from, what they represent and how they should be used.

AI MDM to send TB and AR a small document created during the Boulder workshop (on temperature) as an example.

AR suggests that the document needs more quantitative discussion of the uncertainties and examples for the reader to understand what it is about.

MDM is also in favor of this approach.

AI MDM and TB to discuss this over the phone: Friday morning (29/02)

4.3.2. Data User guide (D4.2)

MDM has sent around a document about the Data User guide. She consulted the book made by the water vapour community in the context of their ISSI work. This book can be used as some kind of reference.

She suggests all partners to complete the template for their technique (including characteristics of different types of instruments, different modes of operation and principles of data analysis). Much reference can be made to literature. Not everything is to be repeated, but main principles are to be highlighted.

MDM proposes to start completing the template for FTIR at BIRA as a first example. Then all partners can comment whether the approach is appropriate and then complete the document for their own instruments.

Who will be the authors?

- AR to look in DOAS community
- KH: microwave
- MP: lidar
- FTIR: EM and TB are ready to help.

Timing:

AI All partners should start in parallel and by the end of March all the documents are to be sent to MDM, for integration. Then the complete document will again be circulated to all partners for verification and final touch-up.

The final document is due by the end of April.

EM asks where to include the description of the HDF format. MDM suggests to add it in part 3 (L2 data).

SN reminds partners that file formats can also be included as an annex. He also highlights that, while drafting this document, partners should use a backward reasoning from the point of view of the data user (but “forward” description).

4.3.3. Validation server in test phase (D8.3)

On the 10th and 11th of April the GISC meeting will take place at EEA. This is a meeting with the Commission in Copenhagen that will discuss in-situ component of Copernicus. EC has several questions on sustainability and access to in-situ data. They would like us to explain what the data flow in NORS would look like.

MDM asks SN if he can make a demonstration at this meeting.

AI Mid-March MDM and SN will get back to each other to see what are the possibilities (Plan A: to make a new demonstration, or Plan B: to use BL’s examples).

4.4. Varia

4.4.1. Report about GEOMS teleconference (by MDM)

The issue of uncertainty reporting was at the core of the discussion. Main changes for all of us would be the change in the naming (it will not change in the content). Soon (before M21), we

will have to adapt the template to the new names and implement it. The faster this can be done, the better.

AJ MDM will send an e-mail to the working group partners to inform them and to motivate this change.

4.2.1. GISC meeting April 10-11 at EEA

See 4.3.3. Validation server in test phase (D8.3)

4.4.2. AOB

AR repeats his question about the rules of travelling to conferences etc. under NORS budget. How many people can be supported under NORS-budget? (One per partner? One per consortium?)

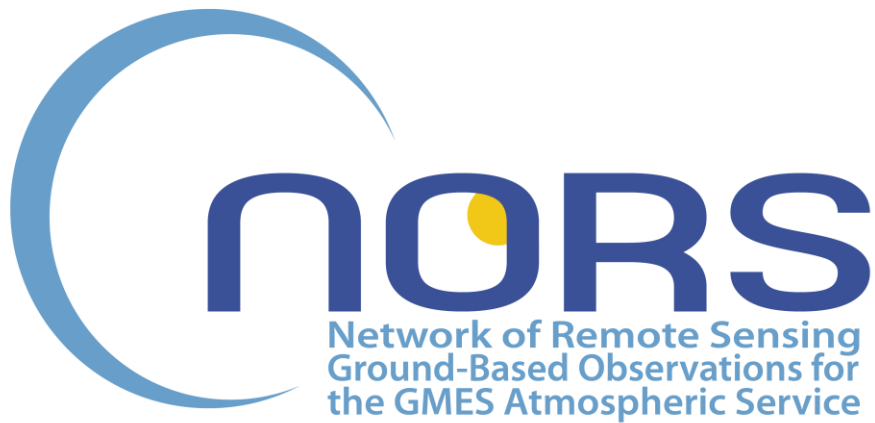
AJ ER will check this and send the information by e-mail.

AJ ER to set up a Doodle for next SC teleconference (week of 15/04 or week of 22/04).

End of teleconference.

5. Annexes

None



SC Teleconference #2

18 April 2013

Meeting minutes

1. Introduction

The second PMT Meeting with Steering Committee was organized in the form of a teleconference on Thursday 18th of April 2013.

The teleconference started at 10h00 and ended at 11h30.

2. Participants

Name		Short name	Role in project	Institute
Martine	De Mazière	MDM	Project Coordinator	BIRA-IASB
Elien	Raport	ER	Project Manager	BIRA-IASB
Klemens	Hocke	KH	WP3 Lead	UBern
Andreas	Richter	AR	WP4 Lead	UBremen
Stephan	Henne	SH	WP5 Lead	EMPA
Maud	Pastel	MP	Representing Sophie Godin-Beekmann (WP6 Lead)	CNRS
Thomas	Blumenstock	TB	WP7 Lead	KIT
Sander	Niemeijer	SN	WP8 Lead	S&T
Leo	Breebaert	LB	Scientist	S&T
Geir	Braathen	GB	Steering Committee	WMO
Oksana	Tarasova	OT	Steering Committee	WMO/GAW
Richard	Engelen	RE	Steering Committee	ECMWF/MACC-II
Stefano	Casadio	SC	Representing Bojan Bojkov (Steering Committee)	ESA

Excused:

Name		Short name	Role in project	Institute
Jean-Christopher	Lambert	JCL	Steering Committee	BIRA-IASB
Emmanuel	Mahieu	EM	WP9 Lead	ULg
Bojan	Bojkov	BB	Steering Committee	ESA
Sophie	Godin-Beekmann	SG	WP6 Lead	CNRS
Mette*	Müller	MM	Steering Committee	EEA

* Our apologies to Mette Muller. We forgot to invite her to the teleconference. We wrongly invited her predecessor Mr Henrik Steen Andersen.

3. Agenda

1. Status of the project per work package
2. Perspectives for the demonstration/test phase of the NORS Validation Server
3. Comments about the (expected) interactions with MACC and NDACC
4. Deliverables and milestones
 - Overview Ds and MSs
 - Request for advice on D 4.2 and 4.3 by SC members?
5. Short report about the GISC Workshop in Copenhagen
6. Ideas for preparing the future of NORS?
7. AOB

4. Minutes

MDM welcomes the participants and thanks the members of the Steering Committee for participating to the teleconference.

The agenda will be a little bit extended. Recent and future deliverables and Milestones will be discussed and there will be some room for “any other business”.

4.1. Status of the project per work package

A summary of each work package (WP) is given by the WP-leaders.

WP1: Project coordination

ER explains that the first financial reporting period is not closed yet. Three partners still received some additional questions from the EC-officers. We hope to finalize the reporting period soon now so that payment can be initialized.

BIRA and all partners involved have learned a lot from this reporting period and understood how severe the EC controls the visibility of the project (use of logo's etc.), the rules of travelling to conferences, etc.

We hope to proceed much faster next time.

WP2: Project Outreach

See AI-1 and point 4.5.

WP3: Rapid data delivery at 4NDACC stations

KH talks about the progress in WP 3.

Operational submission of new GROMOS files was done. In Bern RD directory now: data from 1994 to 2013.

MDM: Why submitted to RD directory in NDACC database, and to station directory for consolidated data ? KH: Old data were not fully consolidated because spectrometer was not so good. The next step, including some cross-validation with other data sets, was already initiated. Later we might have to think about correcting the old data.
So in summary, these data are not considered as completely consolidated data.

WP4: Advanced characterization of NORS data products

AR explains the progress in WP4 task by task.

Task 1: Data Formats

All different techniques have an agreed GEOMS template
And contributed to the Data User Guide (D4.2 DUG)

Task 2: Information Content and harmonization of networks/techniques.

- On MAXDOAS side, much work is done with regard to flagging, etc.

Much work was done on the handling of clouds: first aim is to better understand the impact on clouds and the second aim is to have a robust scheme of indicating impact of clouds in the GEOMS data files. This is not finished yet, but was about the main activity in the last months.

- Characterization of horizontal sensitivity.
- Different retrieval approaches of profiles.

Some work was done on the first comparison of different approaches to CO retrieval (incl. NDACC versus TCCON. This will be extended to more stations than only Bremen.

Some progress was made on methane retrieval using HITRAN8 data base and progress was made in homogenizing the approach on NO₂ retrieval.

Task 3: Uncertainties

Linked to cloud-work and horizontal sensitivity

Task 4: Comparison to satellite observations

Work done in the context of providing support to the MACC-II project. Different work on direct comparisons between in situ and satellite data products.

INTA distributed the initial onset of D4.7 reporting the comparisons between NORS-type data and satellites, up to now focusing on past published work.

MDM asks to include the results from the current and ongoing comparisons in this document, at least via reference to a publication. As such, D4.7 becomes an overview document that is useful for MACC-II and other satellite data users.

MDM comes back to Task 1:

Many discussions have still been continued among the members of the GEOMS Metadataboard regarding the reporting and naming of uncertainties in the GEOMS HDF files. Decisions are to be taken soon. A next GEOMS teleconference is planned on May 2.

MDM will send the preliminary conclusions from the Email discussions out to the NORS consortium and to the NDACC WG representatives to get their opinion. Hopefully we will be able to come to a final decision at the May 2 teleconference, because we need to be ready well in time before the operational rapid data delivery starts (month 21 = July 2013).

WP5: Validation and integration of tropospheric composition measurements (in-situ and remote-sensing measurements)

SH talks about the progress in WP 5. He explains that they are in a feedback loop with FTR people about the current results. They have only used MACC-II reanalysis data at the moment where model data were needed, but SH thinks this is not sufficient.

The next step is to tackle the MAXDOAS data.

AI-1: MDM asks SH to send his presentation he gave at EGU to ER so it can be included in WP2, outreach. She asks everybody who had a presentation at EGU related to NORS to do the same.

WP6: Integration of ozone products

MP explains that since the last teleconference the consortium has chosen for a neural network method. Since this choice was made, tests are running, but there is still work to integrate ozone products. They don't have a profile yet.

The Milestone related to the definition of the method is due in November 2013 and will be reached.

MP also makes a comment regarding the operational delivery. She explains that from the La Reunion station for lidar, they have so far no data yet. (The Lidar is working but the retrieval program is not working yet.) She will be going to La Reunion in June to implement the data retrieval programme. So data will be there not earlier than June.

WP7: Reanalysis of ground-based time series back to 2003

TB announces that WP7 will start next month. He will send an e-mail to everyone involved.

The Milestone related to this Work Package (MS12: Guidelines for re-analysis of timeseries) is normally due in April. Probably we should delay this till May because the results from WP4 are not fully consolidated yet.

AI-2: TB is asked to send an e-mail to all the people involved to see what is possible before the end of May and TB meanwhile starts to collect the input.

AI-3: ER & MDM: justify delay to EU Officer

WP8: Web-based server for validation of GAS products using NORS data products.

SN explains that the S&T challenges with regard to staffing are being solved. A new colleague has joined the team since the beginning of April and MS has now more time to spend on the NORS project. Still, the Milestones that are now set are no longer perceived as realistic. There cannot be a first version at the end of this month. Multiple factors contribute(d) to the delay.

SN would like to get 4 months extra time.

MDM argues that 4 months is too long. She would prefer a 3 months delay since the operational delivery of the data will start in 3 months.

The server should in any case become operational in summer time.

AI-4: ER to check how to delay deliverables/milestones formally

AI-5: SN to write a few lines to justify the delay of D8.3 'Validation server in test phase'. To be sent to ER.

WP10: Capacity building and sustainability

Work at new stations is going on normally (people visiting and implementing), and has been presented during the GISC workshop in poster format. We will talk about the sustainability of NORS in point 5 of this teleconference.

4.2. Perspectives for the demonstration/test phase of the NORS Validation Server

MDM explains that Bavo Langerock (BIRA) made example plots of all the types of plots that are planned to be generated in the automatic mode on the NORS Validation Server. She asks RE to take a look at them and see whether it is useful/suitable or not. **AI-6**

RE suggests to keep Henk Eskes also involved.

SN says "Some of the plots are only applicable to one to one comparison, so you have to check with Bavo which ones are useful"

4.3. Comments about the (expected) interactions with MACC and NORS

There are no real comments at this moment.

SN talks about the MACC / PURE workshop that he would like to attend under the NORS project, mostly to discuss the MACC-II data access and data discovery issues.

RE and SN discuss the usefulness of SN's attendance.

AI-7: RE and SN are asked to look at what were real issues so far in the NORS project and how general they are for other users as well.

SN keeps ER informed whether he (and or others) will attend or not attend the workshop.

4.4. Deliverables and milestones

Deliverables

Two documents, D4.2 and D4.3, were circulated on Tuesday. Both are in draft status and in mean time, AR has sent a more elaborate version for the chapter on DOAS in D4.2 to MDM.

During the teleconference we discuss whether those documents are useful? Should be adapted/changed?

GB explains there was not much time to review the documents. His first impression is very positive. These are useful documents, especially the User Guide (with pictures and graphics). He advises to continue.

RE has the same impression. He adds a few comments/questions:

- With regard to D4.2: DUG

It would be useful to have a general quality flag, a single quality flag that indicates whether the data is good or not good to use; the reason is that it is very difficult for a data user to combine information from different types of quality flags. SN agrees that this would be useful. AR is worried to make it this simple. He is rather against a “conservative 1-0 flag” and would prefer a flag with some kind of percentage. That would also be ok for RE.

AI-8: ideally, this discussion should be held within each NDACC WG.

In general: If we use quality flags they should be well documented in DUG

- With regard to D4.3: Uncertainty Budgets: the discussion throughout the document about systematic and random errors, is some arbitrary distinction.

MDM: every technique tries to handle that to the best possible. But it is still useful to have this categorization because it gives you an idea of what would be the outcome after averaging.

RE requests to indicate a time scale of systematic error (e.g., does the systematic error depend on season?).

In the document ER would like to see the main contributor to the uncertainty budget, because MACC-II can use this sort of info when using the data. MDM: “I am afraid that it is difficult to make a generic statement about that. We would have to go quite in details per species and maybe station”

Thomas will discuss this with Frank.

AI-9: everyone who still wants to comment on both documents (D4.2 and D4.3) can send his/her comments to ER until next Wednesday 24/04.

Milestones

Milestones (M18)

- MS 12 “Guidelines for re-analysis of timeseries”
see above: probably delayed for one month (starting point of the WP may be delayed also by one month, not the delivery date).
- MS 11 “Start verification of consistency of NORS data products”
is up and running.

AI-10: AR will deliver the milestone report; it will be no problem to deliver in due time.

Upcoming milestones (M21)

- MS13 “Multi-D characterization of NORS data products”
- MS14 “Operational data delivery”
- MS15 “NORS validation server operational”

Upcoming deliverables (M20 and M21)

- D9.1 “Feedback report regarding validation server” (M20): delayed
- D3.1 “operational data delivery” (M21)

- D4.4 “Data representativeness” (M21): work has been done => probably on time
- D8.4 “ready-to-use validation server” : delayed corresponding to delay of D8.3

4.5. Short report about the GISC Workshop in Copenhagen

GB, BB, Vincent-Henry Peuch and MDM attended the GISC workshop in Copenhagen. MDM was a bit disappointed about the reaction of the EC on sustainability of the in situ component.

GB suggested that it would be useful to have a more focused meeting on the atmosphere in a later stage.

He agrees that “in situ needs support”. This should be made clear in recommendations.

GB and MDM have sent their material presented at the Workshop to be made available on the EEA website. They will check that the recommendations from the workshop concerning in-situ sustainability will be correctly reported.

AI-11: ER to make these also available on the NORS website.

RE adds that the in situ data issue has two sides and the commission is still focused mostly on only one of them, namely air quality. Member states want to keep the aspect of “air quality” in their own hands. But there is also the other side, namely all other ground-based data, which the EC is not really busy with.

Important person to keep in touch with: Mette Müller (replaced Hendrik Steen Andersen at EEA).

The consortium agrees to make sure to draw attention to this issue. RE mentions that they (MACC-II / ECMWF) have an appointment with EEA (M. Muller) soon from now: he invites the NORS partners to send input for this discussion.

AI-12: MDM and GB will coordinate this input.

4.6. Ideas for preparing the future of NORS?

MDM talked to Agnes Robin (from the EU, present at the GISC WS), asking her about her thoughts. The only realistic vision according to her is to be attached to an ESFRI.

MDM thinks about ACTRIS (proposed for a future ESFRI) as an option to relate the NORS project to. She will discuss with the ACTRIS coordinators in June. She asks all partners to push their national ESFRI delegates for supporting the in situ component and commission funding.

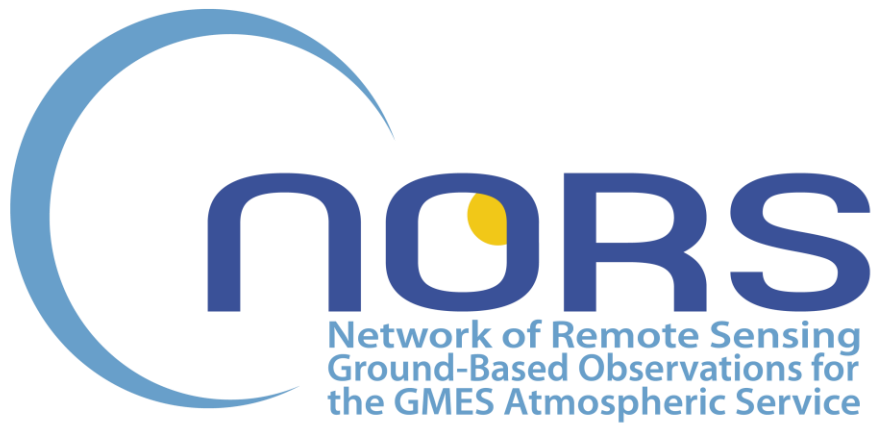
4.7. AOB

- The next progress meeting of NORS will be in October or November. ER will send out a doodle this week to find a date. The meeting will take place in Brussels and will last 2 days.

AI-13: ER to set up a doodle to find a date for the next Progress meeting.

LIST of ACTION ITEMS

AI#	Description	Assigned to	Status
AI-01	To send presentations given at EGU to ER. ER to include it in WP2, outreach.	All (everyone who gave a presentation at EGU) & Elien Raport	Open
AI-02	To send an e-mail to all the people involved in MS12 to see what is possible before the end of May and meanwhile start to collect input.	Thomas Blumenstock	Open
AI-03	To justify MS12 delay to EU Officer	Martine De Mazière & Elien Raport	Open
AI-04	To check how to delay deliverables/milestones formally	Elien Raport	Open
AI-05	To write a few lines to justify the delay of D8.3 'Validation server in test phase' and send it to ER.	Sander Niemeijer	Closed
AI-06	Take a look at example plots of all the types of plots that are planned to be generated in the automatic mode on the NORS Validation Server and see whether it is useful/suitable or not.	Richard Engelen	open
AI-07	(About expected interaction between MACC and NORS) take a look at what were real issues so far in the NORS project and how general they are for other users as well.	Richard Engelen & Sander Niemeijer	open
AI-08	Discussion about general quality flag to be held within each NDACC WG.	All	open
AI-09	Comments on documents D4.2 and D4.3 can be sent to ER until Wednesday 24/04.	All	open
AI-10	Deliver report of MS11	Andreas Richter	open
AI-11	NORS material presented at GISC-workshop to be made available on NORS website	Elien Raport	open
AI-12	Discussion on future in-situ data with EEA (M. Muller) in near future. Input of NORS partners to be coordinated.	Martine De Mazière & Geir Braathen.	open
AI-13	Set up doodle to find date for Progress Meeting 2	Elien Raport	closed



PMT Teleconference #6

20 June 2013

Meeting Minutes

1. Introduction

The sixth PMT Meeting was organized in the form of a teleconference on Thursday the 20th of June 2013.

The teleconference started at 14h00 and ended at 15h15.

2. Participants

Name		Short name	Role in project	Institute
Martine	De Mazière	MDM	Project Coordinator	BIRA-IASB
Nathalie	Kalb	NK	Project Manager	BIRA-IASB
Bavo	Langerock	BL	Scientist	BIRA-IASB
Thomas	Blumenstock	TB	WP7 Lead	KIT
Frank	Hase	FH	Collaborator in WP7	KIT
Andreas	Richter	AR	WP4 Lead	UBremen
Klemens	Hocke	KH	WP3 Lead	UBern
Sander	Niemeijer	SN	WP8 Lead	S&T
Leo	Breebaart	LB	Collaborator in WP8	S&T

Excused:

Name		Short name	Role in project	Institute
Emmanuel	Mahieu	EM	WP9 Lead	ULg
Stephan	Henne	SH	WP5 Lead	EMPA
Sophie	Godin-Beekman	SGB	WP6 Lead	CNRS
Maud	Pastel	MP	Collaborator in WP6	CNRS

3. Agenda

1. Status of the project and progress of work packages
2. Status of deliverables
3. Approval of GEOMS variable name changes.
4. Status of previous milestone (month 18 - April) and the next one (month 21 - July)
5. Status of financial reporting of the first year & payments
6. Status of action items
7. NORS meetings schedule
8. AOB

4. Minutes

MDM welcomes the participants.

4.1. Status of the project and progress of work packages

4.1.1. WP1 Project coordination

All minutes of meetings can be found on the private part of the website (documents). NK will circulate the minutes of this teleconference for correction and load the final version up on the website.

4.1.2. WP2 Project outreach

The public part of the website contains publications and presentations. The private part of the website contains the deliverables and working documents. To access the private part of the website, one has to create an account (at the bottom of the Login Form).

NK reminds all to send her the presentations given at EGU. So far, she has received just one, from SH.

MDM gave a presentation about the status of NORS at the NDACC IRWG last week in Japan. It was essentially about the algorithms and reporting templates that have been prepared for the validation server issued by S&T. It will be posted on the website.

AI-PMT6-54: NK to post the presentation of MDM at the NDACC IRWG on the website.

4.1.3. WP3 Rapid data delivery at 4 NDACC stations

KH reports that they are working on the merging of the old and new datasets (from the old and new spectrometer at Bern). A COST validation paper was submitted to ACPD.

MDM reminds everybody that they should be able to submit data to the rapid delivery server on NDACC on a monthly basis by the end of July. MDM asks KH to check this during the month of August. KH says it is then important to decide on the new formats today. MDM agrees.

EM who couldn't attend the teleconference has sent a short report prior to the meeting:

- The regular upload of Jungfrauoch FTIR RD data (CO, CH₄, O₃) to the dedicated NDACC database has been nominally pursued since the last teleconference, at a frequency of 2 to 4 submissions per month.
- The earlier RD data for CO and CH₄ have been removed since consolidated HDF archives have been submitted since then.

4.1.4. WP4 Advanced characterisation of NORS data products

AR reports on the different inputs received from the partners in WP4 prior to the meeting.

Task 4.1 Data Formats

IASB

- Since April 2013, daily delivery to the NORS/NADCC database of stratospheric NO₂ and total ozone column HDF/GEOMS data files from the Jungfraujoch station.
- A similar automated data delivery process is currently under development for the MAX-DOAS tropospheric products at Xianghe (China), which is one of the NORS Capacity Building stations.

UB

- MW data are being delivered in GEOMS format,
- Implementation for MAX-DOAS observations is close to being finalised

INTA

- INTA has successfully implemented the GEOMS format and will start to send data in the defined HDF format to NDACC database as soon as it is requested. At the moment INTA keeps NASA-AMES format

Task 4.2 Information Content and Harmonization of Networks / Techniques

INTA

Vertical sensitivity and harmonization of network/techniques.

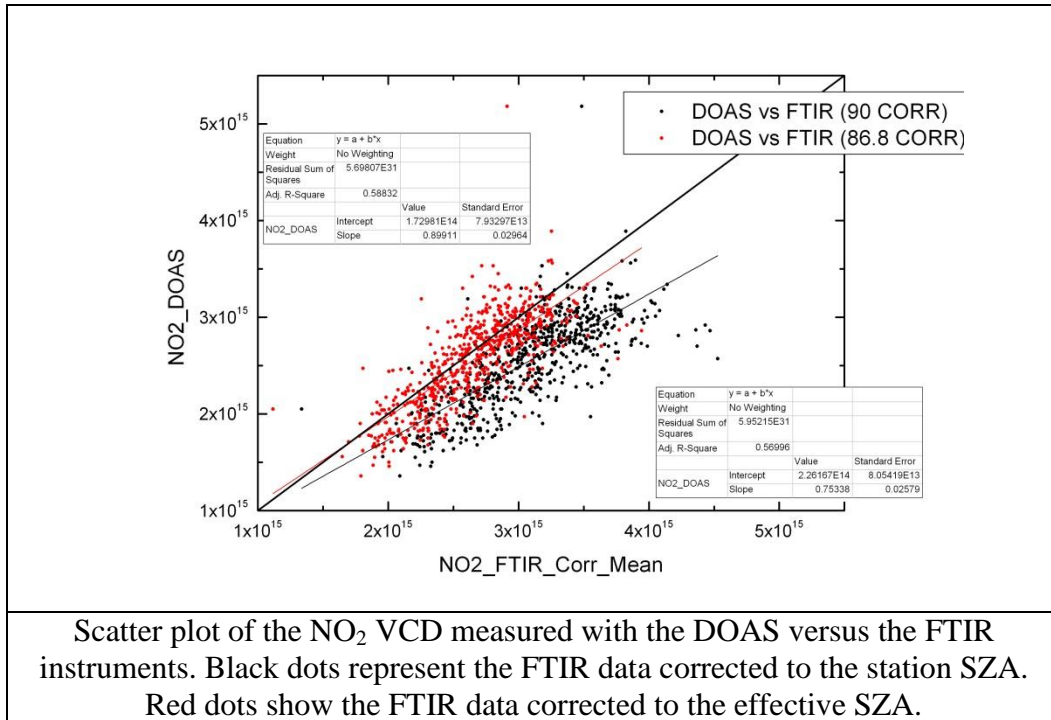
- Vertical sensitivity of MAXDOAS instrumentation at Izaña has been characterised in order to obtain vertical profiles of NO₂ and O₃.
- OEM codes to retrieve vertical profiles of trace gases have been implemented. These codes have been tested using the CINDI NO₂ data. Codes lead to results similar to those from other groups.
- After code validation, Izaña O₃ profile retrieval has started, and work is on-going. Comparisons with ozone sondes show a good agreement until up to an altitude of about 6 Km (Izaña altitude is around 2.37 Km), where the sensitivity of the method decreases.
- NO₂ profile retrievals at Izaña are more challenging since concentrations are extremely low (around 20 ppt). The work is centred at the moment on the vertical sensitivity of MAXDOAS characterization in order to obtain the NO₂ profiles, tests are in progress but we do not expect good results.

⇒ In summary, we have worked on the profile inversion since March 2011, and the vertical profile inversion of both, O₃ and NO₂, and the corresponding analysis is in progress.

Horizontal averaging and displacement of measurement volume and systematic comparison of periods of parallel measurements

- The comparison between FTIR and MAXDOAS NO₂ total column at Izaña station referred to SZA=90°, is ongoing at an advanced stage.
- FTIR data are converted to twilight taking into account the effective SZA of the sampled air mass. Since sampled air mass is located some 360 km toward the direction of the Sun, the effective SZA used for the photochemical correction is found to be 2.2° lower than over the vertical.

- The results of the comparison improve when this correction is taken into consideration as can be seen in the figure:



IASB

- **Continuation of the work on the development of an empirical cloud filtering method for MAX-DOAS observations based on the colour index (CI):** A cloud screening method has been developed at BIRA and successfully applied to our MAX-DOAS measurements at Xianghe. Within NORS, BIRA has taken the lead of a study on the development of harmonized criteria for sky characterization. First suggestions have been sent to the NORS UV-vis WG members and will be discussed at the NDACC/NORS UV-vis WG meeting to be held at MPIC-Mainz on July 1-2, 2013.
- **Development of a method for the retrieval of tropospheric NO₂ columns from daytime zenith-sky scattered sunlight observations.** It is based on the removal of the stratospheric content from each measurement using stratospheric NO₂ columns retrieved at sunrise and sunset and modelled stratospheric NO₂ diurnal variation. This method has been applied to measurements made during the CINDI campaign. A reasonably good agreement is obtained with data derived by LATMOS using a similar approach and with MAX-DOAS observations. Contacts have been taken between BIRA and LATMOS to discuss possible improvements. Results will be presented at the NDACC/NORS UV-vis WG meeting in Mainz.
- **Comparison between OEM- and parameterization-based approaches for the retrieval of aerosols and trace gases profiles and columns from MAX-DOAS measurements:** A paper on this study is in preparation.
- **In relation with WP7, BIRA and the NORS UV-vis WG have made recommendations for the re-analysis of (MAX-)DOAS measurements time-series.** The recommended settings are based on the harmonization effort done within the NDACC UV-vis WG, the NORS WP4, and the CINDI campaign.

- **The stratospheric NO₂ photochemical correction tool developed at BIRA is currently being tested by LATMOS at different SAOZ stations.**

UB

- **FTS Data comparison:** The CO comparison between NDACC and TCCON will be extended by a comparison to aircraft in-situ measurements from the IMECC campaign.
- **Cloud filtering of MAX-DOAS** data using intensities and Colour Index have been developed and will be presented at the NORS meeting in Mainz on July 1st and 2nd

MDM asks if CP is still working only on the CO data from Bremen? AR answers positively. CP has circulated his results in form of a poster, but MDM says it was only about the Bremen data. MDM says we should extend to the other FTIR data in the NORS project: Izana, La Reunion and maybe Ny-Alesund. AR will pass this message on to CP.

MPIC

- development of a technique to characterise the horizontal sensitivity of MAX-DOAS measurements using measured O₄ DSCDs ⇒ planning and set up of a MAX-DOAS comparison (MADCAT) campaign in Mainz
- The first results of the MADCAT campaign will be presented at the DOAS-WS in August:
 - o Julia Remmers et al., MADCAT campaign 2013 in Mainz, Germany – First results and comparisons.
 - o Thomas Wagner, Julia Remmers, Steffen Beirle, Steffen Dörner, Reza Shaiganfar, Marc Ziegler, Characterisation of cloud properties from MAX-DOAS observations.
 - o Thomas Wagner, Julia Remmers, Steffen Beirle, Reza Shaiganfar, A new method for the absolute radiance calibration of MAX-DOAS observations.

ULG

- **NO₂:** We have evaluated different approaches for retrieving NO₂ from Jungfraujoch FTIR solar spectra, based on various combinations of microwindows used in Lindenmaier et al. (2011) (doi:10.1029/2011JD016207) and Hendrick et al. (2012) (doi:10.5194/acp-12-8851-2012). The results have been summarized in a brief report sent recently to the NORS FTIR group. This report concludes by showing that the use of the 2914, 2915, 2918 and 2919 cm⁻¹ bandpasses represents an improvement in terms of the second leading eigenvalues without significant negative impact on the number of unphysical retrieved profiles. We are currently waiting for feedbacks on this approach (for example, results of NO₂ retrievals carried out with the same strategies and with measurements from other stations).
- **H₂CO:** We are currently investigating the use of a priori forward models coming from either WACCM v.6 simulations or from ACE-FTS satellite data for the H₂CO retrieval in the 2833 cm⁻¹ microwindow (sole window available from our specific narrow optical filter). We are also comparing products derived using either a Tikhonov regularization L1 matrix or climatological constraints (climatological forward model based on ACE-FTS data).

- **CH4:** The most recent retrieval settings (including updated line parameters) for CH4 as proposed by the KIT FTIR group have been evaluated using SFIT-2 and Jungfraujoch spectra, including CH4-HF correlations or comparison with in situ surface measurements. A complete time series spanning the 1997-2012 period has been produced and made available for comparison.

Task 4.3 Uncertainties

UB

- **FTS:** There are activities to evaluate the measurement uncertainties within the SFIT programming group, this will be integrated in the upcoming version of SFIT 4.
- A RTM study of the **accuracy of the geometric approximation for MAX-DOAS observations** has been performed showing largely varying uncertainties. Results will be presented at the NORS meeting in Mainz
- A study has been performed on the **impact of water leaving radiances on MAX-DOAS observations** over large water bodies with implications for satellite observations

Task 4.4 Comparison to Satellite Observations

CNRS

- In 2011, Nair et al., assessed the validity of a combined satellites (SBUV(/2), SAGE II, HALOE, UARS MLS, Aura MLS) time series at Haute-Provence Observatory (northern mid-latitudes) by studying average bias and relative drift of different long and short-term data from 1985 to 2010. Since then, new version of those satellite data sets have been released. Based on these aspects, and following Nair's study, long-term evolution of stratospheric ozone at Haute-Provence Observatory (northern mid-latitudes) is now re-investigated from 1985 to 2012. The analysis is performed by comparing the collocated profiles of ozone lidar, with ozonesondes and space-borne sensors (SBUV(/2), SAGE II, HALOE, UARS MLS, Aura MLS, GOMOS, ODIN, MIPAS), extracted around the stations. The focus is on the ozone lidars, which have more than 10 years of continuous observations. The average bias and relative drift of different long and short-term data sets are analysed with respect to the ozone lidar measurements in order to evaluate their consistency and stability.

Publications:

Pastel, M., Pommereau, J.-P., Goutail, F., Richter, A., Pazmiño, A., and Ionov, D.: Comparison of long term series of total ozone and NO₂ column measurements in the southern tropics by SAOZ/NDACC UV-Vis spectrometers and satellites, Atmos. Meas. Tech. Discuss., 6, 4851-4893, 2013, doi:10.5194/amtd-6-4851-2013

INTA

- Bibliographic revision both by searching in the web and by asking the NORS colleagues to send us their contributions have been done.
- NO₂ papers have been read, classified and relevant information have been extracted and included in a data-base.

- Results, conclusions and possible improvement suggestions will be included in the report, currently in preparation.

IASB

- Continuation of the comparison exercise between satellite nadir and ground-based UV-vis stratospheric NO₂ column data sets at the Jungfraujoch station.

AR reports about a personnel problem at Bremen. The phd student who recently started to work on NORS has decided to leave UBremen in a few weeks. The progress is not as far as expected and they will not be able to hire someone else for such a short duration. They will have to redistribute the work and the budget on existing people. They will have difficulties to meet the deadlines. AR suggests to continue this discussion by telephone.

MDM thanks AR for his report. She asks if he is already able to report about the uncertainties in the files. She has the impression that a lot of research still needs to be done about the subject in the MAXDOAS community. AR agrees. He says the approach that will be taken is to use the formal errors coming out of the retrievals, which do not include all the systematic uncertainties. MDM asks if this is already included in the document about the uncertainty budget. AR thinks it is, but should check to be sure.

AI-PMT6-55: AR to check the reporting about the uncertainties in the files.

Report of the phone-call between AR and MDM on June 23 about the personnel issue at UBremen:

- AR plans to hire Enno Peters, who just submitted his PhD thesis on MAXDOAS observations for SHIVA, as a PostDoc in NORS. He has agreed to stay at least until the end of this year. AR hopes that he will agree to continue until the end of project if he is asked. Enno is very knowledgeable with respect to MAXDOAS, but he is not so experienced yet with respect to questions of information content in the retrievals.

4.1.5. WP5 Integration of tropospheric products

SH could not attend the teleconf. He has e-mailed a brief progress report for WP5 before the meeting.

“Work focused on method development and FTIR comparison.

- Evaluation of MACC re-analysis products (MACC evaluation reports) to answer the question how much these influence our constructed “in-situ” profiles. In this context I also attended the MACC-II/GMES-PURE Atmosphere Services User Workshop, 11 and 12 June, Harwell, UK.
- Discussion with WP members on differences in FTIR tropospheric CO profile shapes as compared to “in-situ” profile shapes.
- Set-up of our own global scale CH₄ and CO simulations for the comparison period 2009-2011. These will be used as an alternative to the currently used MACC re-analysis.”

4.1.6. WP6 Integration of ozone products

SGB could not attend the teleconference. She was supposed to be represented by MP. But MP was unable to connect to the teleconference because she is currently staying at La Réunion.

AI-PMT6-56: NK to find out how to connect to teleconferences from Ile de la Réunion.

MP has emailed a brief progress report after the meeting:

The main objective of this work package is to develop a methodology for integrating ground-based data sources to provide consistent ozone vertical distribution time series as well as tropospheric and stratospheric ozone columns at 4 NDACC stations (NyAlesund, Alpine station (OHP), Izaña, La Réunion). The delivery of our method is in November 2013.

Following the methodology described in the latest WP6 progress report, a principal component analysis (PCA) has been used in the alpine station data in order to define the altitudes where there is a large variance among the three equivalent latitude stations (Bern, OHP, Jungfrauch). The goal now is to identify each scenario where the variance is larger. From that matter, a grid of equivalent latitude has been chosen (50°N, 0°; 50°N, 10°E, 40°N, 10°E, 40°N, 0). Our purpose is to classify by weight each scenario by using a self-organizing map (SOM). We are running some test on the training phase of this neural network approach.

4.1.7. WP7 Reanalysis of ground-based time series back to 2003

TB reports that this WP started 1 ½ months ago. They have to report about the re-analysis by the end of this month (milestone 12). The deadline for this milestone had been extended previously by two months.

MDM asks AR if the DOAS and MAXDOAS communities have agreed on the analysis procedure for the re-analysis. AR answers that they have agreed on the spectral analysis procedures and he expects very little discussion on this point at the NORS meeting on July 1st and 2nd. This is not true for the profile inversion part which is much more open. The different approaches are difficult to reconcile. AR will make sure this will be discussed at the NORS meeting. The part on the profile inversion in the document about milestone 12 will thus require a later update.

TB summarizes that, except for the MAXDOAS part, they have agreed on the harmonized re-analysis procedures for all the techniques. The deadline of June 30th will be met.

4.1.8. WP8 Web-based server for validation of GAS products using NORS data products

SN reports about the ongoing work at S&T. The individual components get completed. They have implemented the one degree of freedom extension. The GECA toolset is growing, as well as the website content.

BL has processed all measurement techniques, but he still has to process the aerosol profiles. He will contact FH next week to see how to process the aerosol data. To SN comparison of aerosols is also a tricky matter. He is interested to know how BL will deal with that.

Unfortunately no one has experience with that. MDM advises BL to limit to optical thickness, which is a good product, for the moment.

MDM asks all to send their comments about the document that BL sent out, before S&T implements that in the server.

MDM reminds SN about the importance of being able to demonstrate that we are useful to MACC if we aim for continuation and asks him to be vigilant with regards to deadlines.

SN mentions that he has attended the MACC GMES pure workshop. He didn't give a presentation or presented a poster, but was able to provide feedback on our end. It seems that it is not very common to provide uncertainties with the data in the model community. But this will come more and more on the agenda.

On the dissemination approach, they have defined three different types of user groups in function of access to and use of the data: the moderate scientific user who deals with web-content and needs interactive access to the data, a more general user who wants access to the data itself to download it and a more advanced user, who has more tailored requests. For our purposes, we fall into the general user-group. On one hand we are a user of MACC, but on the other hand we are also co-service provider in the sense that our validation results are useful for the end-users.

The MACC-II project is an FP7 project at the moment and it will end in July 2014, around the same time as the end of NORS. The follow-up of MACC-II should be through Copernicus, but there are no details at all about the set-up yet. This means they don't know yet what the user requirements should focus on. They don't know what will be used in operational phase and what should change. The time frame of one year left until the end of MACC-II is also a limiting factor.

With regards to the validation, they want to introduce a more score-based system in the course of next year. This is something we should keep an eye on to see if we can align with that.

They also want to introduce a system to make users report each year about what they did with the data. There is some concern about whether people would be willing to do that and how open that would be, knowing the data policy is supposed to be open. This is not entirely clear.

4.1.9. WP9 Validation of GAS products for O3, NO2, CO, CH4, H2CO, aerosol

WP9 has not started yet.

4.1.10. WP10 Capacity building and sustainability

MDM reports about the MACC review meeting that took place in Brussels on June 6th and 7th. There have been discussions about the future of MACC-II and NORS after July 2014. She confirms that it is not clear how the operational phase and the follow-up of MACC-II will be implemented. . There will probably be a call in September but the constraints are not defined yet. The MACC-II people would like to continue with the same partners but they are open to integrate the validation activities (operational part) of NORS into the validation part of

MACC-II for the operational phase. This was just a verbal statement but it gives us some perspective for continuation of our work. We will closely follow the call and negotiation between MACC and the EU.

MDM has invited Leonor Tarrason to our progress meeting in October. She is responsible in MACC-II for everything linked to observations. We should align with the way MACC is dealing the observations.

MDM has sent around the report about the outcome of the EEA workshop in April. NK will post it on the website.

AI-PMT6-57: NK to post the report about the outcome of the EEA workshop in April on the NORS website.

4.1.11. WP11 Project management

NK reports that the financial reporting has been finalized. BIRA will be paid by the EU and redistribute the money to the partners in the following weeks.

4.2. Status of deliverables

4.2.1. D4.2 Data user guide (M18)

Submitted.

4.2.2. D4.3 Error budgets (M18)

Submitted.

4.2.3. D8.3 Validation server in test-phase (M18 > M21)

The deadline has been extended to the end of July. SN hopes that he will receive all the algorithms by then.

4.2.4. D3.1 Operational data delivery (M21)

The deadline will be met.

4.2.5. D4.4 Data representativeness (M21)

AR asks for an extension for this delivery because there hasn't been as much progress as he hoped and not much inputs were received. AR will ask his colleagues to commit to contributions and deadlines and get back to NK and MDM with regards to requesting a new delivery date. A two months delay is a minimum, but to play it safe, knowing a lot of people will be on holiday in between, we should probably ask for 3 months (end of October).

AI-PMT6-58: NK to request a 3 month extension of the deadline for D4.4 Data representativeness (M21) and MS13 Multi-D characterisation of NORS data products (WP4), when confirmed by AR.

4.3. Approval of GEOMS variable name changes.

MDM has sent around a document with the proposed changes and the justification for it. For the FTIR working group, it was discussed at their meeting last week in Japan. Although they

are not particularly pleased with it, because it's yet another change, they are accepting it. EM has written that he accepts it as well. Since the change has been initiated mostly in the Lidar team, she assumes they agree as well. KH reports that the Microwave people agree.

MDM says that before the end of July we have to implement the changes to start the rapid delivery with the new templates. MDM will interact with AVDC to publish the new templates on the AVDC webpage (where the GEOMS guidelines are).

MDM suspects that the Microwave data from the University of Bern on the rapid delivery server are not compatible with the templates on the GEOMS pages on the AVCD website with regards to the reporting of the uncertainties. KH should check that.

AI-PMT6-59: KH to check the compatibility of the Microwave data from the University of Bern on the rapid delivery server with the templates on the GEOMS pages on the AVCD website as to the reporting of the uncertainties (unit).

MDM will ask EM to update the data format document with the new proposed names.

AI-PMT6-60: EM to update the data format document with the new proposed names and templates.

4.4. Status of previous milestone (month 18 - April) and the next one (month 21 - July)

At last milestone (M18= April 2013), we had to report about:

- MS 10 Uncertainties in NORS data products (WP4) -> reported
- MS 11 Start verification of consistency of NORS data products (WP4) -> reported
- MS 12 Guidelines for re-analysis of timeseries (WP7) -> 2 months delay (reported during the writing of these minutes)

At the next milestone (M21= July 2013), we will have to report about:

- MS13 Multi-D characterisation of NORS data products (WP4) -> a three months delay should be requested due to the change of personnel at UBremen
- MS14 Operational data delivery (WP3)
- MS15 NORS validation server operational (WP8)

and deliver:

- D8.3 Validation server in test-phase (M18 > M21)
- D3.1 Operational data delivery (M21)
- D4.4 Data representativeness (M21) -> three months delay (see MS 13)

Upcoming deliveries:

- D3.2 Preliminary documentation of data delivery system (M22) -> KH in charge. MDM suggests KH to start collecting the inputs for this deliverable and milestone. This document should describe the systems that have been implemented to reach the rapid data delivery.
- D9.1 Feedback report regarding validation server (M23) -> EM in charge

4.5. Status of action items

AI #	Description	Assigned to	Status
AI-SC1-10	At next NDACC steering committee meeting, discuss homogenization of formats in NDACC database (first week of October)	Geir Braathen	Open
AI-PM1-28	All groups to come up with their own scheme of relative CIs (and thresholds) to characterize clouds during CINDI. Results are to be submitted to BIRA no later than 31 January 2013.	All	ongoing / coordinated by BIRA
AI-PM1-29	All groups to evaluate spatial averaging volume with whatever tools are available to them. Results to be collected by MPIC until end of February 2013.	All	ongoing / coordinated by MPIC
AI-PMT5-31	MDM asks for more information about the CO comparisons between NDACC and TCCON: at present, the work includes only the UBremen data; extension to data from other stations will follow. MDM asks AR to make Christof Petri send the results to the FTIR group.	Andreas Richter	Open
AI-PMT5-32	A bibliography search was made for publications concerning comparisons between NORS-type products and satellite data used by MACC II. The results of this search have been distributed to all partners in order to add other studies not included in the document.	All	Ongoing
AI-SC2-48	Discussion about general quality flag to be held within each NDACC WG.	All	Open
AI-SC2-52	Discussion on future in-situ data with EEA (M. Muller) in near future. Input of NORS partners to be coordinated.	Martine De Mazière & Geir Braathen.	Ongoing
AI-PMT6-54	NK to post the presentation of MDM at the NDACC IRWG on the website.	Nathalie Kalb	Open
AI-PMT6-55	AR to check the reporting about the uncertainties in the files.	Andreas Richter	Open
AI-PMT6-56	NK to find out how to connect to teleconferences from Ile de la Réunion.	Nathalie Kalb	Open
AI-PMT6-57	NK to post the report about the outcome of the EEA workshop in April on the NORS website.	Nathalie Kalb	Open
AI-PMT6-58	NK to request a 3 month extension of the deadline for D4.4 Data representativeness (M21) and MS13 Multi-D characterisation of NORS data products (WP4), when confirmed by AR.	Nathalie Kalb & Andreas Richter	Open
AI-PMT6-59	KH to check the compatibility of the Microwave data from the University of Bern on the rapid delivery server with the templates on the GEOMS pages on the AVCD website as to the reporting of the uncertainties (unit).	Klemens Hocke	Open

AI #	Description	Assigned to	Status
AI-PMT6-60	EM to update the data format document with the new proposed names and templates.	Emmanuel Mahieu	Open
AI-PMT6-61	NK to inform all about the rescheduling of PMT Teleconference 7.	Nathalie Kalb	Open

MDM discusses AI-48. At last SC teleconference, Richard Engelen made a comment about the need of a quality flag. This issue had also been raised at the last progress meeting. And should be further discussed, perhaps in the individual instruments groups. The MAXDOAS group has implemented such quality flag in their HDF templates. The Lidar, FTIR and Microwave groups have not. MDM doesn't feel the need for it in the FTIR community. SN thinks we should provide such flag as much as possible in terms of physical quantities instead of a yes/no use flag. In the FTIR community the filtering is done before submission. SN says that this strongly depends on the users. Open for discussion.

MDM will interact with GB about AI-52.

4.6. NORS meetings schedule

Month	Meeting Name	Venue	Date	Time
M2	Kick Off Meeting	BIRA-IASB	Wednesday, 14 December 2011	9:30 AM
M4	PMT Teleconference 1		Thursday, 9 February 2012	10:00 AM
M6	SC Teleconference 1		Thursday, 12 April 2012	10:00 AM
M8	PMT Teleconference 2		Tuesday, 26 June 2012	2:00 PM
M11	PMT Teleconference 3		Thursday, 13 September 2012	10:00 AM
M13	First Progress Review/Meeting	BIRA-IASB	Tuesday 20 & Wednesday 21 November 2012	
M14	PMT Teleconference 4		Thursday, 13 December 2012	10:00 AM
M16	PMT Teleconference 5		Thursday, 26 February 2013	10:00 AM
M18	SC Teleconference 2		Thursday, 18 April 2013	10:00 AM
M20	PMT Teleconference 6		Thursday, 20 June 2013	2:00 PM
M22	PMT Teleconference 7		Thursday, 8 ->20 August 2013	10:00 AM
M24	Second Progress Review/Meeting	BIRA-IASB	Thursday 17 & Friday 18 October 2013	9:00 AM
M26	PMT Teleconference 8		Thursday, 12 December 2013	10:00 AM
M28	PMT Teleconference 9		Thursday, 13 February 2014	10:00 AM
M30	SC Teleconference 3		Thursday, 10 April 2014	10:00 AM
M32	PMT Teleconference 10		Thursday, 12 June 2014	10:00 AM
M33	Final Project Review/Meeting/Workshop	BIRA-IASB	Thursday, 31 July 2014	9:30 AM

PMT Teleconference 7 will be rescheduled to August 20th.

AI-PMT6-61: NK to inform all about the rescheduling of PMT Teleconference 7.

At PMT Teleconference 7 we will discuss the structure and content of the next progress meeting in October.

MDM thanks the participants and wishes all nice summer-holidays.

Summary of the NORS / NDACC meeting in Mainz, 1 – 2 July 2013

Andreas Richter (IUP-Bremen) and F. Hendrick (BIRA-IASB)

NORS WP4. Cloud screening for MAX-DOAS

Cloud screening options using colour index, intensity and O₄ absorptions and their variability were presented by different groups with different levels of complexity. Overall the approaches are similar but depending on station and research focus, the impact of station altitude, aerosols and broken clouds are of varying importance. It was agreed that for inclusion in the NORS data products, a simple, standardized and transparent solution is to be preferred, even if it does not contain all information on clouds that can be extracted from the measurements. The retained cloud screening approach will differentiate between clear-sky, cloudy, and broken clouds conditions. There is no need to modify the current GEOMS UVVIS data format.

AI: Clio Gielen to organise a practical solution for cloud screening using the CI for all groups based on the work performed already at BIRA.

NORS WP4: Satellite validation

Results from satellite data validation were presented for stratospheric NO₂ at Jungfraujoch and stratospheric NO₂ at several SAOZ stations. The results from Jungfraujoch confirmed a high bias in the current OMI stratospheric products, in line with other studies. Validation in the tropics showed a more complex pattern with differences between stations and instruments (GOME, SCIAMACHY, GOME-2, OMI), highlighting the difficulties in NO₂ retrievals from satellite.

AI: F. Hendrick, F. Goutail, and J.-P. Pommereau to continue their investigation on the validation of satellite nadir stratospheric NO₂ products using ground-based DOAS observations, with focus on the photochemical matching between satellite and ground-based data.

NORS WP4. Horizontal representativeness

Several studies investigating horizontal representativeness of DOAS observations (MAX-DOAS and zenith) were presented indicating that relatively simple geometric approximations can provide the bulk of the information needed. In the case of MAX-DOAS, O₄ columns retrieved from the observations can be used to estimate the horizontal sensitivity using a simple parameterisation.

AI: Andreas Richter to circulate a template for a document discussing the horizontal and vertical representativeness of observations from all NORS techniques. The deliverable is due end of July but a request was made to extend the deadline by 3 months.

AI: All groups to provide input for their respective techniques by September.

NORS WP 4&7: Retrieval harmonisation + capacity building

The current state of retrieval harmonisation for stratospheric and tropospheric products was presented and considered to be overall in very good shape. Only for the profiling step of the retrievals, different approaches (parameterised and optimal estimation method) cannot easily be harmonised. It was decided that for now, this inconsistency will have to be accepted.

The two stations Belgrano (77.9°S, 34.6°W) and Xianghe (39.7°N, 117.0°E) operated by INTA and BIRA, respectively, were identified as good candidates for the extension of the NORS network with the ability to provide data in NRT. Paramaribo is also an option but no decision was taken there yet.

NORS WP4: MAX-DOAS error budget

The MAX-DOAS error budget was briefly discussed, summarising what has already been documented in the project and which aspects need further clarification. It was decided that error sources and their quantification as well as recipes for calculation the uncertainties to be saved in the NORS files will be summarised in a NORS document.

AI: Andreas Richter to create a skeleton document on MAX-DOAS uncertainties and to distribute. A first draft of this document should be available by end of August.

NORS WP4 Open Session

Several new developments were presented in the open session:

- A systematic retrieval of tropospheric NO₂ from zenith-sky observations showing excellent correlation with MAX-DOAS observations during CINDI but an offset of yet unknown origin (F. Tack)
- A new method for radiometric calibration of MAX-DOAS instruments was presented using scattered light measurements on a clear day and radiative transfer calculations for different aerosol scenarios (T. Wagner)
- The NORS tool for photochemical correction of NO₂ was applied for tropospheric NO₂ retrieval and good performance during twilight was found but some unexpected biases at high sun in the tropics, including an unexplained difference in diurnal variation (F. Goutail)
- The accuracy of the geometric approximation was evaluated in details and a strong and aerosol dependent azimuthal bias was highlighted which depends strongly on altitude (A. Richter)
- A new approach to the retrieval of optically dense and spectrally structured gases (such as O₂ and H₂O) was presented using similar approaches as applied in the NIR for satellite observations (U. Friess)

NORS WP3: Data format / Rapid Delivery

The current status of data format and rapid data delivery was reported. The minor changes in the HDF/GEOMS data format recently proposed by the GEOMS Metadata Board are presented and adopted. Each group also presented the current status of their rapid data delivery system: BIRA is delivering daily and monthly data files corresponding to the Jungfrauoch (stratospheric products) and Xianghe (MAX-DOAS tropospheric products) stations. At this stage of the project, the other groups have chosen to deliver monthly files only. The problems in reporting results from parameterised retrievals were discussed and it was suggested that parameterized box profiles should be recalculated on a discrete altitude grid in order to be included in the data files. In the future, it is planned to modify the GEOMS UVVIS format to allow the reporting of retrieved parameters (e.g. height and shape of well mixed layers starting at the surface). However, as none of the NRT data are from parameterized retrievals, there is no need for urgent action.

Options for MACC-II validation using MAX-DOAS instruments were discussed and it was decided to start with a small number of stations in polluted regions.

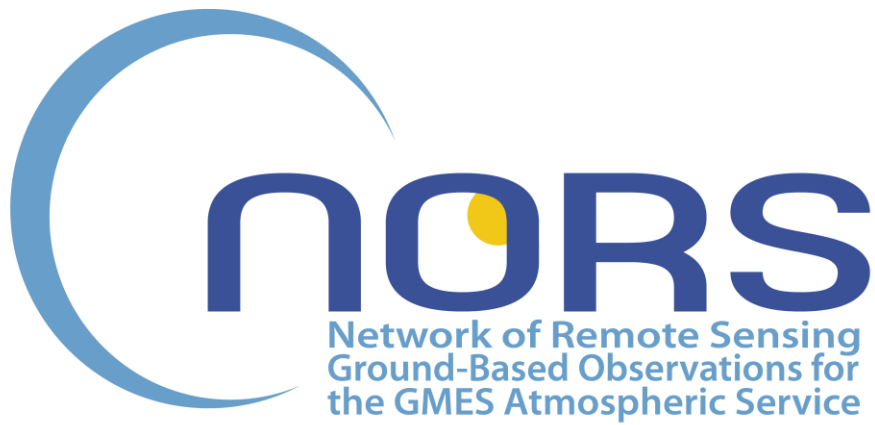
AI: Andreas Richter to collect a list of stations and times with data that could be used for MACC-II validation and communication to Henk Eskes

Mad-Cat campaign

The Mad-Cat campaign taking place in Mainz in June 2013 has briefly been presented and first results have been shown. The campaign aims at intercomparing a number of MAX-DOAS instruments in an informal way and has a focus on the horizontal variability of NO₂ and how it can be studied using MAX-DOAS instruments. Extensive car-DOAS measurements provide detailed information on the variability of NO₂ in time and space. The campaign is neither an official NDACC campaign nor meant as a replacement of the CINDI-2 campaign.

CINDI-2 campaign

Options for the CINDI-2 campaign were presented which could possibly take place in late summer 2015 in Bucharest, Romania. Some support from ESA will be available for both capacity building in Bucharest, support of the validation activities and also an airborne component. While overall NO₂ levels in Bucharest are smaller than in pollution hotspots such as the Po valley, significant pollution can be expected from both point sources and the city.



PMT Teleconference #7

20 August 2013

Meeting Minutes

1. Introduction

The seventh PMT Meeting was organized in the form of a teleconference on Tuesday the 20th of August 2013.

The teleconference started at 15h00 and ended at 16h15.

2. Participants

Name		Short name	Role in project	Institute
Martine	De Mazière	MDM	Project Coordinator	BIRA-IASB
Nathalie	Kalb	NK	Project Manager	BIRA-IASB
Bavo	Langerock	BL	Scientist	BIRA-IASB
Andreas	Richter	AR	WP4 Lead	UBremen
Stephan	Henne	SH	WP5 Lead	EMPA
Thomas	Blumenstock	TB	WP7 Lead	KIT
Sander	Niemeijer	SN	WP8 Lead	S&T
Leo	Breebaart	LB	Collaborator in WP8	S&T
Emmanuel	Mahieu	EM	WP9 Lead	ULg

Excused:

Name		Short name	Role in project	Institute
Klemens	Hocke	KH	WP3 Lead	UBern
Sophie	Godin-Beekman	SGB	WP6 Lead	CNRS
Maud	Pastel	MP	Collaborator in WP6	CNRS

3. Agenda

1. Status of the project and progress of work packages
2. Status of payment phase 1 & timing/amount payment phase 2
3. Status of deliverables
4. Status of milestones & deliveries
5. NORS meetings schedule: Progress Meeting 2
6. Status of action items
7. AOB

4. Minutes

MDM welcomes the participants.

4.1. Status of the project and progress of work packages

4.1.1. WP1 Project coordination

All minutes of meetings can be found on the private part of the website (documents). NK will circulate the minutes of this teleconference for correction and load the final version up on the website.

4.1.2. WP2 Project outreach

The public part of the website contains publications and presentations. The private part of the website contains the deliverables and working documents. To access the private part of the website, one has to create an account (at the bottom of the Login Form).

NK reminds all to send her all their presentations.

4.1.3. WP3 Rapid data delivery at 4 NDACC stations

KH could not attend the teleconf. He has e-mailed a brief progress report for WP3 before the meeting.

The milestone for the operational rapid data delivery to RDDS at the end of July 2013 is not fully reached. The directories of the pilot stations Bern, Izana, Jungfraujoch, NyAlesund, OHP, La Reunion and Xianghe contain data files but some changes to the new GEOMS data format of the station data - as communicated in end of July - are necessary for the most stations. The final GEOMS format of each measurement technique is described at Aura Data Validation Center (Tools/Quality_Assurance):

<http://avdc.gsfc.nasa.gov/index.php?site=1178067684>

Please check if the variable names and units in the templates are really in the finalized format which we are going for. (see section deliverables)

Action item AI-PMT6-59: We checked the compatibility of the Microwave data from the University of Bern and submitted new files. The microwave radiometer community (Ian, Gerald, Nik, Mathias, Simone, Klemens) agreed to the new format.

The changes to the new format are easy. As told by Ian Boyd, the version number of the station data file should be changed from "i" to "i+1".

For end of August 2013, a deliverable about RDDS (WP3) is in work. We already have about 20 pages with contributions from FTIR, Lidar, UV/Vis, and MW. After some fine tuning, the report on RDDS data processing and delivery will be finished. Thank you for your contributions! (see section deliverables)

Finally I like to repeat that each station should begin with delivery of the data files with the new format. Please feel free to contact me for support.

EM remarks that a change of template during the holidays is quite unfortunate. In future this will have to be borne in mind.

EM asks about the status of the RDD. MDM answers that we have data for all the stations, but not necessarily in the latest template. She is not worried about this point. This should get fixed when everybody returns from holiday.

LB asks for an overview of the delivered data so that they can perform cross-checks. MDM suggests the other way around. SN says there is a section in the validation server where people can check themselves which files are in the archives.

SN asks if the a priori information of the UV/vis climatologies data sets could be included in the data format themselves. MDM and FH will discuss this internally with the group. AR agrees that it should be stored in the files, but stresses that this is not a consensus opinion.

AI-PM7-62: MDM, FH and AR to discuss the inclusion of a priori information in the UV/vis data sets. (During the writing of these minutes, this action item has been closed. "This will be solved by including the required a priori profiles in the HDF files, rather than in separate Look-Up-Tables".)

LB asks if he should include the stations that were not mentioned in the original user requirements document, for example the Chinese station. MDM says that these stations are part of WP10 Capacity building. Including these additional stations would be nice for demonstration purpose. LB agrees. He asks if the system should be open for other stations in future? MDM answers that the system should be open for at least all the stations that are mentioned in the NORS project, but we should communicate about any new addition. In principle all NDACC stations can be included. All agree.

AI-PM7-63: MDM to generate a list of all NDACC stations to communicate to S&T. (During the writing of these minutes, this action item has been closed. MDM has sent an Email to all after the meeting (August 25) clarifying this point:

"Dear Leo and Sander

Dear all,

I remind you of Leo's question about the 'acceptance' of data in the NORS Validation Server (NVS): after some better thinking, I believe that I have not given a completely correct answer. I believe that the correct answer is as follows:

We should distinguish between the default, automatic operation of the NVS and the user-driven operation.

In the default, automatic operation, the NVS will search the NDACC database (Rapid Data Delivery and Consolidated data), and will select the latest version of data for each datapoint in time. It is preferable that all station data that are compliant with the GEOMS HDF format, and not only those from the 4 NORS pilot stations, are included in the NVS.

So it is not necessary then to generate a list of NDACC stations, because we know that non-NDACC data are not included in the NDACC database.

In the VIP mode, a user could possibly submit data in the GEOMS HDF format that are NOT NDACC affiliated: the NVS will deliver a report to that user, but it will not appear on the NVS in the same way as the other default reports, because the origin, affiliation and quality of those data is not known, and we should avoid any confusion with NDACC certified or RD data, in order not to harm the NDACC quality label.”)

4.1.4. WP4 Advanced characterisation of NORS data products

AR reports the status of work in the different groups contributing to WP4. Considering the vacation time, there has been quite a lot activity in this WP.

At UBremen, the MW and FTIR data are being delivered. For the FTIR data, there is on-going verification of the HDF file format and a new retrieval code which is ready and implemented and will be operational by the end of the month.

Concerning the Lidar data at CNRS, the comparison of long-term changes of stratospheric ozone as observed by various instruments at OHP was continued. Here, the Lidar data serve as standard as they are very stable and can be used to align data from satellite instruments and ozone sondes.

At the University of Liège, they have been working on retrieval strategies for formaldehyde and did some work on intercomparing different CO retrieval settings. Also, work on the Data format definitions (D4.1) is on-going (check that there is no need to update it following the change in the various hdf templates).

As for the UV/vis group (BIRA), the MAXDOAS NO₂ data from the Chinese station are being delivered. The GEOMS data format has been implemented and there has been some work on cloud filtering. There has been work on the retrieval of tropospheric NO₂ which is very important, as it would add many more stations to the record. Testing on the stratospheric NO₂ chemistry tool is also on-going. This is needed for the tropospheric NO₂ retrieval.

Mainz, Heidelberg and Bremen have been working on cloud filtering.

A NORS NDACC UV/vis meeting was held in Mainz on July 1st and 2nd. AR lists the topics that were discussed during this workshop. The report of this workshop has been circulated by FH shortly after the meeting and is also available in the meetins section of the NORS website.

The early results of the 4 weeks MADCAT campaign in Mainz (June-July) that included a large number of MAXDOAS instrumentation were reported at the DOAS WS in Boulder mid-August. Key MAX-DOAS issues of NORS WP4 (cloud impact, horizontal variability, measurement accuracy and precision) were addressed during this campaign.

MDM asks if AR has information on the satellite validation document for which INTA is responsible. AR says that this document has been discussed at the NORS meeting. But due to vacation, he has no further update. AR will remind the concerned people about this document.

About AI-PMT5-31: AR has not contacted CP yet (about results of the CO comparisons between NDACC and TCCON), but will do asap. (During the writing of these minutes, AR has contacted CP, who will contact all FTIR groups for a joint comparison.)

EM mentions the on-going work about CO comparisons in several micro-windows. It's interesting to know that even when using very different lines the shape and slope of the profiles remain quite the same.

About the columns, they are also doing comparisons. He mentions that at some point comparison for the lowermost troposphere above the JFJ could be interesting. This work should be put in parallel with CP's work regarding the Ny-Alesund observations.

EM adds that they also did formaldehyde retrievals. He is in contact with FH and MVR to initiate some comparisons of formaldehyde for the JFJ station.

He asks if the data format definition document should be updated since the templates have changed. MDM says that we have linked to the ACVD website in this document. It is thus sufficient for EM to check if the link is still valid.

AI-PM7-64: EM to check if the link to the ACVD website in the data format definition document is still valid.

4.1.5. WP5 Integration of tropospheric products

SH reports that most work in WP5 has been done on the FTIR data. FTIR is basically done for 2009-2010. He thinks he will be able to extend to 2011 as well, even though we only promised to do 2 years.

SH says he encountered the same issue as the one EM described earlier for methane: the profiles shape at Izana and JFJ look quite different and compare differently to their in situ product. The MACC reanalysis product as background for model simulations for methane is not as good as it is for CO. So he had to come up with an alternative.

The tropospheric means are fine for the FTIR, but the shapes of the profiles are misleading. EM says it is somewhat irrelevant to consider the shape of the profiles in the troposphere because of the relatively low information content and the large associated uncertainties.

SH will provide the in situ model profiles in the frame of NORS. So comparisons can be done quickly when performing adjustments to the retrieval strategy.

Work on the MAXDOAS data has not yet started. The data should be received in September. They will be able to present results from the data extrapolation of the in situ data at the second progress meeting.

MDM asks if the MACC-II people are aware of the issue with the methane vertical profiles. SH answers positively.

4.1.6. WP6 Integration of ozone products

SGB could not attend the teleconference. MP has e-mailed a brief progress report for WP 6 before the meeting. MDM reads the report.

The main objective of this work package is to develop a methodology for integrating ground-based data sources to provide consistent ozone vertical distribution time series as well as tropospheric and stratospheric ozone columns at 4 NDACC stations (NyAlesund, Alpine station (OHP), Izaña, La Réunion). The delivery of our method is in November 2013.

A principal component analysis (PCA) have been used in the alpine station data in order to define the altitudes where there is a large variance among the three equivalent latitude stations (Bern, OHP, Jungfrauch). The goal now is to identify each scenario where the variance is larger. From that matter, a grid of equivalent latitude has been chosen (50°N, 0°; 50°N, 10°E, 40°N, 10°E, 40°N, 0). Our purpose is to classify by weight each scenario by using a self-organizing map (SOM). We are still running some tests on the training phase of this neural network approach.

We hope to have some consistent results for the alpine station by the end of September.

MDM thinks we will see interesting results at the progress meeting.

4.1.7. WP7 Reanalysis of ground-based time series back to 2003

TB reports that at end of June the guidelines for the re-analysis of timeseries (MS12) have been submitted. To his knowledge some groups have already started reprocessing, which is due in January 2014 (M27). We will see in October if the reprocessing is going well and eventually send reminders.

4.1.8. WP8 Web-based server for validation of GAS products using NORS data products

SN reports that the validation server is running, even though some adjustments are still needed. It is ready to be tested.

LB details the status of the validation server. It is already running various reports. He suggests that everybody should send an email to LB to request an account to the server (VIP access). As VIP, one gets access to the metadata catalog. He also suggests to create a “read only” guest account. They are aware that there are some missing functionalities. They are still working on fixing the results in the reports and on the infrastructure in the web server itself. For example creating custom data streams is not possible yet. Not all plots from the requirements document are available yet. LB asks all to test the server and share their comments.

AI-PM7-65: NK and LB to distribute the guest-user account for the validation server for testing purposes, as well as a short list of the known deficiencies to avoid unnecessary comments. (During the writing of these minutes, this action item has been closed.)

MDM asks SN and LB to make a demonstration at the PM. They agree.

4.1.9. WP9 Validation of GAS products for O3, NO2, CO, CH4, H2CO, aerosol

This WP is depending on the validation server. EM is eager to start testing it.

4.1.10. WP10 Capacity building and sustainability

MDM summarizes the reports received from the different partners.

Report from Christof Petri (CP, UBremen):

Within WP10 the University of Bremen is exporting the NORS expertise to two solar absorption FTIR-observatories outside of Western-Europe; the first one is located at Paramaribo (Suriname) and the second one at Kourovka (Russia). Below the main activities are summarised in bullet points for the two sites.

A) Paramaribo (Suriname, 6°N, 55°W)

- We run two measurement campaigns in autumn 2012 and in spring 2013 (both partly paid out of NORS). Our efforts are guided by the aim to establish this site as a NDACC FTIR-station with regular campaigns and delivery of data.
- During the last campaign we installed an upgraded 125M spectrometer with respect to a better quality of the retrieved data.
- We plan side by side measurements of the new and the old instrument within the next measurement campaign planned in autumn this year; after that, the old instrument will be removed.

B) Kourovka (Russia, 57°N, 59°O)

- During our first visit in Yekaterinburg we run cell measurements with the brand new FTIR-instrument as aligned during delivery. These showed a not sufficient alignment for atmospheric trace gas measurements. We aligned the instrument as it is common within the NDACC and TCCON measurement networks. Several electrical modifications were made on the instrument as common in the measurement Networks.
- We discussed the retrieval strategies within NDACC and TCCON and tested the related retrieval software SFIT and GFIT.
- The second visit to Yekaterinburg is planned for 23.08.-05.09.2013. We found a possible problem of the solar tracker alignment and want to solve it. The Instrument has to be aligned again and we want to observe the stability of the alignment. Furthermore a new version of the SFIT retrieval-software will be installed and tested.

Report from Maud Pastel (CNRS):

The CNRS has imported the new automated lidar data retrieval at Rio Gallegos. We are now working with them to get the real time data.

Report from Nik Kämpfer (UBern):

We expanded our capacity in microwave radiometry of water vapor and ozone in three ways:

In the frame of our collaboration with the Sookmyung women university in Seoul, South Korea, we helped upgrading the existing radiometer for ozone monitoring. The microwave radiometer called SORAS is capable to retrieve stratospheric and mesospheric ozone profiles on a regular basis. The aim is to operate the system in the frame of NDACC in the near future.

Further we started operation of a new ozone radiometer for campaigns in Bern. The instrument is called GROMOS-C in contrast to the NDACC instrument that is used in NORS and that is called GROMOS- The C stand for campaigns. The instrument should be finalized in the fall.

By the end of August we start operation of two microwave radiometers on La Réunion island at the Maïdo observatory. One instrument is for strato-mesospheric water vapor, the other one for the determination of the horizontal wind profiles in the stratosphere and mesosphere.

I could imagine that this is of interest in the frame of NORS.

Report from Thomas Blumenstock (KIT):

The FTIR site in Mexico - Altzomoni - made a site presentation at the IRWG meeting in June this year. Therein, they asked for NDACC affiliation. NDACC certification process will start soon. After that, at the latest next year, they will start submitting data to NDACC.

The Addis site is also operational. Dr. Gizaw Mengistu, PI of FTIR Addis site has got a Georg-Forster stipendium from Humboldt foundation and will visit IMK for 1 year, starting September 1, 2013. They have not applied yet to obtain the NDACC affiliation yet.

Report from Martine De Mazière (BIRA):

The Xianghe site in China is operated in collaboration with BIRA. It is already operational and submitting data to the rapid delivery data server for the UV/vis MAXDOAS measurements.

4.1.11. WP11 Project management

On 30 July BIRA-IASB has received a payment of 573.849,11€ from the EU. This will be redistributed amongst the partners according to the requested amounts, providing that the total received money (advance + progress payment) does not exceed 90% of the total budget, according to Article II.6 of ECGA. Instructions to invoice will be sent by email by NK.

4.2. Status of deliverables

4.2.1. D8.3 Validation server in test-phase (M18 > M21)

LB will provide a short release note, which NK will submit to the EC. (During the writing of these minutes, this deliverable has been submitted.)

4.2.2. D3.1 Operational data delivery (M21)

MDM will ask KH to write a short note at the end of August to demonstrate that rapid data delivery has started, even if not at all the sites. (During the writing of these minutes, this deliverable has been submitted.)

4.2.3. D3.2 Preliminary documentation of data delivery system (M22)

KH has reported that this deadline will be met. (During the writing of these minutes, this deliverable has been submitted.)

4.2.4. D9.1 Feedback report regarding validation server (M20 > M23 > M24)

EM is responsible for this report. Due to the delay of the validation server entering into test-phase, we will ask for a month of delay. This brings us to the end of October and will allow us to include some more feedback that we will receive at the next progress meeting (17-18 October) in the report.

4.2.5. D4.4 Data representativeness (M21 > M24)

A three months extension of the deadline has been requested and accepted. The deadline is now the end of October.

AR has sent out a request for comments and received some. This document has also been discussed at the NORS meeting in Mainz. He is confident that this deadline will be met. AR is concerned about an eventual overlap of this document and the description of the different methods we have done before. In the previous documents there have also been sections on data representativeness in the horizontal and vertical.

MDM comments that this document should be more explicit on data representativeness, but agrees that it largely depends on the inputs that will be collected.

4.2.6. D8.4 Ready-to-use Validation Server (M21 > M24 > M25)

MDM suggests to request a delay of one month for this delivery as well in order to be able to take into account the outcome of "D9.1 Feedback report regarding validation server". This brings us to the end of November. SN comments that there will be continued development anyway.

SN mentions that there are some open issues that will need to be solved before he can finalize the validation server. There is the issue of the intercomparison for the aerosol products. BL is aware of this issue and will tackle it. Then there is also the discussion on the UVVis a priori tables. MDM, FH and AR will handle this.

AI-PM7-66: NK to request a delay of one month to REA for D9.1, D8.4 and MS15. (During the writing of these minutes, this action item has been closed)

4.2.7. D4.5 NORS data consistency (M24)

AR has not started to work on this deliverable yet. MDM asks AR to send an email to all groups to remind them that inputs will be requested in time. This document concerns NO₂, formaldehyde and O₃.

4.2.8. D4.6 Carbon monoxide mid- and near infra-red data assessment (M24)

CP is responsible for this document. He should also issue a request for contributions.

4.2.9. D5.1 Description of methodology for data integration (M24)

SH is ready to start writing. He is confident that this deadline will be met.

4.2.10. D5.2 Derived tropospheric column data (M24)

SH says he is confident about the FTIR data. For the UVVis, a partial update of the deliverable at a later stage might be necessary.

4.2.11. D6.1 S/W for Ozone data integration (M24)

SGB and MP are not attending. NK will check by email if this deliverable is going well.

AI-PM7-67: NK to enquire by email about the status of “D6.1 S/W for Ozone data integration” (During the writing of these minutes, this action item has been closed. MP is confident that this deadline will be met.)

4.3. Status of milestones

At last milestone (M21= July 2013), we have failed to report about MS14 Operational data delivery (WP3). This is linked to D3.1 and will be done soon.

At the next milestone (M24= October 2013), we should report about:

- MS13 Multi-D characterisation of NORS data products (WP4) (linked to D4.4)
- MS16 Source sensitivities (WP5)
- MS17 Second progress meeting and SC meeting (WP1)

At the milestone following the above ones (M25= November 2013), providing that the one month delay is accepted by the EC, we should report about:

- MS15 NORS validation server operational (WP8)

4.4. NORS meetings schedule

Month	Meeting Name	Venue	Date	Time
M2	Kick Off Meeting	BIRA-IASB	Wednesday, 14 December 2011	9:30 AM
M4	PMT Teleconference 1		Thursday, 9 February 2012	10:00 AM
M6	SC Teleconference 1		Thursday, 12 April 2012	10:00 AM
M8	PMT Teleconference 2		Tuesday, 26 June 2012	2:00 PM
M11	PMT Teleconference 3		Thursday, 13 September 2012	10:00 AM
M13	First Progress Review/Meeting	BIRA-IASB	Tuesday 20 & Wednesday 21 November 2012	
M14	PMT Teleconference 4		Thursday, 13 December 2012	10:00 AM
M16	PMT Teleconference 5		Thursday, 26 February 2013	10:00 AM
M18	SC Teleconference 2		Thursday, 18 April 2013	10:00 AM
M20	PMT Teleconference 6		Thursday, 20 June 2013	2:00 PM
M22	PMT Teleconference 7		20 August 2013	3:00 PM
M24	Second Progress Review/Meeting	BIRA-IASB	Thursday 17 & Friday 18 October 2013	9:00 AM
M26	PMT Teleconference 8		Thursday, 12 December 2013 (TBC)	10:00 AM
M28	PMT Teleconference 9		Thursday, 13 February 2014 (TBC)	10:00 AM
M30	SC Teleconference 3		Thursday, 10 April 2014 (TBC)	10:00 AM
M32	PMT Teleconference 10		Thursday, 12 June 2014 (TBC)	10:00 AM
M33	Final Project Review/Meeting/Workshop	BIRA-IASB	July 2014 (TBD)	9:00 AM

MDM has issued a draft agenda for the second progress meeting (17 & 18 October) prior to the meeting. Her idea was to structure the meeting according to science, rather than by WPs, to make it more attractive.

AI-PM7-68: EM and AR to assign speakers and fill in the blanks in the “Ongoing Research & Developments” section of the draft agenda of PM2. (During the writing of these minutes, this action item has been closed.)

The final meeting will be organized in the form of an international workshop. One suggestion is to organize it with MACC II to broaden the public. This should be discussed at the progress meeting in the presence of the MACC people and representatives of the EEA and ESA.

MDM reminds all that the progress meeting will also be a review meeting, thus in the presence of Hennie Kelder, the reviewer. The demonstration of the validation server is very important to prepare our integration in the pre-operational Copernicus Atmospheric Service for the future call. At this meeting, we should demonstrate the necessity of NORS to continue to live through the follow-up of the MACC project.

This is the status of the agenda after inclusion of the comments from the PMT:

Thursday 17/10/2013

9:00-9:10 Welcome, Logistics and Introduction
Martine De Mazière and Nathalie Kalb, BIRA

9:10-9:20 Focus in year 2
Martine De Mazière, BIRA

NORS (NDACC) getting operational

9:20-10:00 Rapid delivery status
Klemens Hocke, UBern, and Emmanuel Mahieu, ULg
- Including format improvements
- Including uncertainties and data user guidelines
- Quality flags

10:00-11:00 Validation server
Sander Niemeijer, S&T, and Bavo Langerock, BIRA

11:00-11:30: **Coffee/Tea**

Ongoing Research & Developments

Tropospheric products

11:30-11:50 Cloud filtering and flagging
Clio Gelien, BIRA

11:50-12:10 HCHO
Emmanuel Mahieu, ULg

12:10-12:30 CO
Christof Petri, UBremen

12:30-13:00 NO₂
Francois Hendrik, BIRA (or Andreas Richter, UBremen)

13:00-14:00: **Lunch**

14:00-14:20 Spatial representativeness
Andreas Richter, UBremen

14:20-14:50 Progress in WP5
Stephan Henne, EMPA

Stratospheric and total atmosphere products

14:50-15:10 NO₂
Jean-Pierre Pommereau or Florence Goutail, LATMOS (or Francois Hendrick BIRA)

15:10-15:40 Ozone
Sophie Godin-Beekmann, LATMOS

15:40-16:10 **Coffee/Tea**

16:10 – 16:40 Comparison with satellite products
Olga Puentedura Rodriguez or Manuel Gil Ojeda , INTA

16:40-16:50 Project management
Nathalie Kalb, BIRA

16:50-17:45 Discussion
All

17:45 End of Day 1

19:00 **Group Dinner** (restaurant TBD)

Friday 18/10/2013

NORS future

9:00-9:20 Capacity building
Martine De Mazière, BIRA

9:20-10:00 Integration in Copernicus Pre-operational Atmospheric Server
Richard Engelen with contributions from Leonor Tarrason

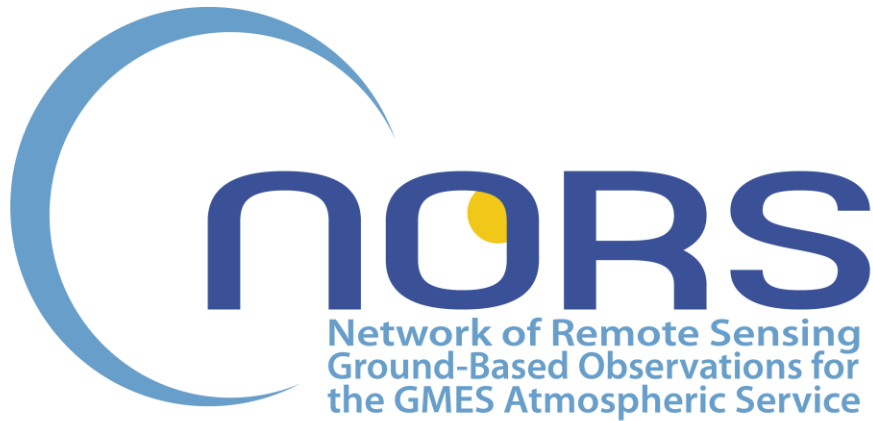
10:00-10:20 Future role of EEA cf. Follow-up of GISC Workshop
Mette Müller (TBC)

10:20-10:50 **Coffee/Tea**

- 10:50-11:10 Role of NORS in WMO and NDACC
Geir Braathen (attendance TBC) or Oksana Tarasova (TBC)
- 11:10-11:30 ESA's atmospheric Cal/Val activities
Bojan Bojkov, ESA
- 11:30-11:50 CEOS Cal/Val and NORS
Jean-Christopher Lambert, BIRA
- 11:50-12:45 Feedback by *Hennie Kelder* and *Stijn Vermoote*
- 12:45-13:45 **Lunch**
- 13:45-14:30 Organization and content of the final workshop at the occasion of the final NORS meeting (July 2014)
Martine De Mazière, BIRA
- 14:30-15:00 AOB
- 15:00 End of meeting

4.5. Open action items

AI #	Description	Assigned to	Status
AI-SC1-10	At next NDACC steering committee meeting, discuss homogenization of formats in NDACC database	Geir Braathen	Open
AI-PMT5-32	A bibliography search was made for publications concerning comparisons between NORS-type products and satellite data used by MACC II. The results of this search have been distributed to all partners in order to add other studies not included in the document.	All	Ongoing
AI-SC2-52	Discussion on future in-situ data with EEA (M. Muller) in near future. Input of NORS partners to be coordinated.	Martine De Mazière & Geir Braathen.	Ongoing
AI-PMT6-55	AR to check the reporting about the uncertainties in the files.	Andreas Richter	Ongoing
AI-PMT7-64	EM to check if the link to the ACVD website in the data format definition document is still valid.	EM	Open



Progress Meeting 2

Meeting Minutes

The second Progress Meeting of NORS took place on Thursday the 17th of October 2013, from 9h to 17h30 and Friday the 18th of October 2013, from 9h to 15h in the meeting room of RMIB (Royal Meteorological Institute of Belgium), 3 avenue Circulaire, 1180 Uccle, Brussels, Belgium.

1. Participants

Participant name	Participant short name	Institute short name	Role in project
Martine De Mazière	MDM	BIRA-IASB	Project Coordinator
Nathalie Kalb	NK	BIRA-IASB	Project Manager
Michel Van Roozendael	MVR	BIRA-IASB	Scientist
Bavo Langerock	BL	BIRA-IASB	Scientist
François Hendrick	FH	BIRA-IASB	Scientist
Clio Gielen	CG	BIRA-IASB	Scientist
Gaia Pinardi	GP	BIRA-IASB	Scientist
Frederik Tack	FT	BIRA-IASB	Scientist
Anne De Rudder	ADR	BIRA-IASB	Scientist
Karolien Lefever	KL	BIRA-IASB	Scientist
Tijl Verhoelst	TV	BIRA-IASB	Scientist
Simon Chabrilat	SC	BIRA-IASB	Scientist
Corinne Vigouroux	CV	BIRA-IASB	Scientist
Stephan Henne	SH	EMPA	WP 5 Lead
Brigitte Buchmann (Thursday)	BB	EMPA	Scientist
Klemens Hocke	KH	IAP/UBern	WP 3 Lead
Olga Puentedura Rodriguez	OP	INTA	Scientist
Cristina Robles	CR	INTA	Scientist
Laura Gomez	LG	INTA	Scientist
Thomas Blumenstock	TB	KIT	WP 7 Lead
Matthaeus Kiel	MK	KIT	Scientist
Sophie Godin-Beekmann	SGB	LATMOS/CNRS	WP 6 Lead
Florence Goutail	FG	LATMOS/CNRS	Scientist
Maud Pastel	MP	LATMOS/CNRS	Scientist
Jean-Pierre Pommereau	JPP	LATMOS/CNRS	Scientist
Julia Remmers (Thursday)	JR	MPIC	Scientist
Thomas Wagner (Friday)	TW	MPIC	Scientist
Stijn Vermoote	SV	REA	Project Officer
Leo Breebaart	LB	S&T	Scientist
Sander Niemeijer	SN	S&T	WP 8 Lead
Andreas Richter	AR	UBremen	WP 4 Lead
Christof Petri	CP	UBremen	Scientist
Udo Friß	UF	UHeidelberg	Scientist
Emmanuel Mahieu	EM	ULg	WP 9 Lead
Bruno Franco	BF	ULg	Scientist
Richard Engelen	RE	ECMWF/MACC-II	Member of Steering Committee
Bojan Bojkov	BB	ESA/ESRIN	Member of Steering Committee
Hennie Kelder	HK	KNMI	Project Reviewer
Vincent Huijnen	VH	KNMI	MACC-VAL representative

2. Agenda

Thursday 17/10/2013

9:00-9:10 Welcome, Logistics and Introduction
Martine De Mazière and Nathalie Kalb, BIRA-IASB

9:10-9:20 Focus in year 2
Martine De Mazière, BIRA-IASB

NORS (NDACC) getting operational

9:20-10:00 Rapid delivery status
Klemens Hocke, UBern, and Emmanuel Mahieu, ULg

- Including format improvements
- Including uncertainties and data user guidelines
- Quality flags

10:00-11:00 Validation server
Sander Niemeijer, S&T, and Bavo Langerock, BIRA-IASB

11:00-11:30: **Coffee/Tea**

Ongoing Research & Developments

Tropospheric products

11:30-11:50 HCHO
Bruno Franco, ULg

11:50-12:10 CO
Christof Petri, UBremen

12:10-12:30 Overview of the MADCAT campaign and its benefit for the NORS project
Julia Remmers, MPIC

12:30-12:45 Tropospheric NO₂
Francois Hendrick, BIRA-IASB

12:45-13:00 MAX-DOAS NO₂ and aerosols intercomparisons during CINDI: benefits for NORS
Udo Frieß, UH

13:00-14:00: **Lunch**

14:00-14:40 Spatial representativeness
Andreas Richter, UBremen, Bavo Langerock, BIRA-IASB, Sophie Godin-Beekmann, LATMOS and Klemens Hocke, UBern

14:40-15:10 Progress in WP5
Stephan Henne, EMPA

Stratospheric and total atmosphere products

15:10-15:30 Stratospheric NO₂
Florence Goutail, LATMOS

15:30-16:00 **Coffee/Tea**

16:00-16:30 Integrated Ozone product
Maud Pastel, LATMOS

16:30-17:00 Comparison with satellite products
Cristina Robles, INTA

17:00-17:30 Discussion
All

17:30 **End of Day 1**

19:00 **Group Dinner at Pasta Commedia**

Friday 18/10/2013

9:00-9:20 Project management
Nathalie Kalb, BIRA-IASB

NORS future

9:20-9:40 Capacity building
Martine De Mazière, BIRA-IASB

9:40-10:20 Integration in Copernicus Pre-operational Atmospheric Server
Richard Engelen with contributions from Leonor Tarrason

10:20-10:40 Role of NORS in WMO and NDACC
Martine De Mazière, BIRA-IASB, on behalf of Geir Braathen

- 10:40-11:10 **Coffee/Tea**
- 11:10-11:30 ESA's atmospheric Cal/Val activities
Bojan Bojkov, ESA
- 11:30-11:50 Insights into INSPIRE
Anne De Rudder, BIRA-IASB
- 11:50-12:30 Feedback by *Hennie Kelder* and *Stijn Vermoote*
- 12:30-13:00 Discussion about possible extension of NORS
Stijn Vermoote
- 13:00-14:00 **Lunch**
- 14:00-14:45 Organization and content of the final workshop at the occasion of the final
NORS meeting (July 2014)
Martine De Mazière, BIRA-IASB
- 14:45-15:00 AOB
- 15:00 **End of meeting**

3. Minutes

Thursday 17/10/2013

3.1. Introduction

3.1.1. Welcome, Logistics and Introduction, Martine De Mazière and Nathalie Kalb, BIRA-IASB

See: 01_NORS_PM2_NK

MDM welcomes the participants of the second progress meeting of NORS. She introduces and welcomes the members of the Steering Committee and the project reviewer.

NK says a few words about the logistics of the meeting.

3.1.2. Focus in year 2, Martine De Mazière, BIRA-IASB

See: 02_NORS_PM2_MDM

MDM gives a brief overview of the project, its achievements during the first two years and the plans for the third year.

3.2. NORS (NDACC) getting operational

3.2.1. Rapid delivery status, Klemens Hocke, UBern, and Emmanuel Mahieu, ULg

See: 03_NORS_PM2_KH

KH presents the work performed over the last year in the frame of WP3.

HK asks if “rapid” means “one month”. KH confirms and adds that some stations deliver their data quicker than one month.

HK asks when all of the stations will achieve rapid delivery since KH stated in his presentation that rapid data delivery is fulfilled at about 80% of the NORS stations. KH answers that it will be very soon, there are just a few minor issues to solve.

BB asks why he doesn't provide uncertainty bars in the comparisons of profiles. KH answers that there are too many profiles to be able to provide error bars in the plots, but he acknowledges that it would be necessary and will consider it in the next version of the manuscript about RDDs.

See: 04_NORS_PM2_EM

EM presents the work performed on the format improvements during the second project year and the content of the Uncertainty Budget Document.

3.2.2. Validation server, Sander Niemeijer, S&T, and Bavo Langerock, BIRA-IASB

See: 05_NORS_PM2_SN

SN presents the work performed on the Validation Server and its actual status.

See: 06_NORS_PM2_BL

BL presents the work performed on the algorithms and the algorithm document during the past year.

See: 05_NORS_PM2_SN

SN continues his presentation on the status of the validation server.

He shows the topics that could possibly be descoped because S&T is running out of budget. He also shows the topics that need to be discussed, if not during this meeting, soon in the future.

LB presents a live demonstration of the validation server.

KH asks for more information about the MACC model types because he finds it difficult to select particular model types. LB says there is room in the interface for help pages, tips, etc., but he does not know much about the models themselves. The names of the models could be made more explicit.

For RE, the main question is: who will be the users of this validation server? In case of internal use, more flexibility is allowed with regards to the products that are shared. But for external users, we should probably be more restrictive. MDM agrees that results for an internal test model should not be public to all users. SN and LB comment that the possibility to differentiate types of users already exists (VIP user & regular user). LB shows the possibilities as VIP user.

RE asks if when creating a custom report, we can see in advance if there are data available. LB answers positively.

LB concludes and encourages all to provide feedback.

VH asks if it's possible to create multiple model comparisons. LB answers that this is not possible yet because the reports are intercomparison based (one model type - one instrument type). But he says it would be nice to work on in the future. There are a lot of aspects involved and this is not straightforward.

SN takes back the word and lists all the topics that need to be discussed. MDM comments that these open questions can be discussed during the discussion session at the end of the day.

MDM says there are a lot of open questions and we will not solve them all today. But she would like to discuss at least what could be descoped and eventually left for a follow-up of the project. She says we should definitely work on uncertainty propagation. SN agrees. This

will not be descoped. MDM suggests having a separate meeting or teleconference to discuss the unsolved technical issues.

3.3. Ongoing Research & Developments

3.3.1. Tropospheric products

3.3.1.1. HCHO, Bruno Franco, ULg

See: 07_NORS_PM2_BF

BF presents the work performed during the second project year on formaldehyde at the Jungfraujoch station, preliminary FTIR results and first comparison with MAXDOAS data and the future plans.

HK asks where the differences between the IMAGES model and GEOS CHEM simulations come from. BF says it could partly be due to different spatial resolutions from the different models. They plan to do simulations with a finer spatial resolution.

RE asks to what extent the orography model plays a role in the comparisons. BF says this is a question for the people running the model. He doesn't know.

JFM answers that in IMAGES the spatial resolution is such that e.g., the impact of the Po Valley will be present at the Jungfraujoch. He therefore expects the model values to be higher than the observations.

SH comments that one cannot conclude from the comparison with the model that there is a problem with the retrieval. There are much larger uncertainties in the model. MDM asks if they have in situ data for HCHO at Jungfraujoch. SH says they do, but not continuous. That would be nice to look into.

3.3.1.2. CO, Christof Petri, UBremen

See: 08_NORS_PM2_CP

CP presents the work performed during the second year on CO and the future plans.

MDM comments that these are interesting results for the TROPOMI people, who are very much interested in seeing how the NDACC and TCCON networks compare to each other as to validation of TROPOMI CO.

It looks like profile retrievals are beneficial in case of large CO pollution events.

3.3.1.3. Overview of the MADCAT campaign and its benefit for the NORS project, Julia Remmers, MPIC

See: 09_NORS_PM2_JR

JR presents the first results of the MAD-CAT campaign that was held in June-July 2013 at Mainz focusing among others on the representativeness issue for NO₂ from the DOAS instruments.

HK asks if they have done regional modelling of air quality. JR says that they have not, but will ask her colleagues at her institute if they have. MDM comments that MACC can provide regional models for this purpose. Due to the special geographical situation, JR is not sure if even a small scale model (~3km resolution) can give meaningful results in this case. RE says that MACC regional models may capture large plumes, but capture essentially the background.

AR comments that the beauty of this campaign is that the two different data sets show something different. The instrument on the roof of the building has a strong averaging system and sees the plumes coming over, whereas the car-measurements show more small-scale variability, which will not be captured by the model (would require street-scale models).

HK asks whether the observed NO₂ values have been compared to AQ regulations ? The answer is no.

3.3.1.4. Tropospheric NO₂, Francois Hendrick, BIRA-IASB

See: 10_NORS_PM2_FH

FH presents the work performed on tropospheric NO₂ during the second project year and the future plans.

MDM asks what the height of the tropospheric NO₂ columns is. FH answers that he showed the partial columns between 0 and 4 km. He comments that this altitude range is a good approximation of tropospheric NO₂. The AVK are not sensitive above 5km, the concentrations are too low.

FH comments that the MACC profiles have been smoothed by the MAXDOAS averaging kernels.

RE is surprised that the comparison of tropospheric NO₂ columns at Xianghe is so good. The model used (fsd7) is a model without data assimilation: it is C-IFS with MACCity emissions.

3.3.1.5. MAX-DOAS NO₂ and aerosols intercomparisons during CINDI: benefits for NORS, Udo Frieß, UH

See: 11_NORS_PM2_UF

UF presents the results of the CINDI campaign and its benefits for NORS.

About the question “What can we learn for NORS?” AR remarks how sensitive the results were to the selection of data points. He says that in the BIRA retrieval the rejection of bad points is done well. The Bremen retrieval does not reject bad points well. He says we need to improve the rejection of bad values in NORS, but also be careful not to reject too much.

MDM asks if this matter has something to do with the cloud information flag. AR answers positively. He adds that in many cases even if the surface retrieval is not good, the column will still be correct. This is the reason why we should not reject values too quickly.

SH comments that instead of rejecting, we should rather assign uncertainties. In this way, the comparison shouldn't change when rejecting values. AR answers that uncertainties are difficult to evaluate.

3.3.1.6. Spatial representativeness, Andreas Richter, UBremen, Bavo Langerock, BIRA-IASB, Sophie Godin-Beekmann, LATMOS and Klemens Hocke, UBern

See: 12_NORS_PM2_AR

AR presents the work performed on spatial representativeness during the second project year. He will talk mainly about MAXDOAS. Other speakers will give presentations about the other instrument techniques.

KH explains why the MW radiometer range from 14° to 40° has been chosen.

MDM asks if the third approach (see point 3, slide 14) would be implemented in the data system. She thinks that in this case other parameters would be needed in the data files. AR thinks that LUTs could be provided externally to the data files; they depend only on geometry. He doesn't think there should be any additions to the data files themselves. MVR comments that the SZA are provided in the data files.

See: 13_NORS_PM2_BL

BL gives more precisions as to the FTIR technique.

SGB speaks about the LIDAR technique. She says we have to take into account that we are averaging the measurements over 4 hours and the lidar volume is influenced by the windfields in the stratosphere. This is not mentioned in the files. She suggests we should provide more precisions on the actual airmasses that have been sampled. AR asks if the time period is provided. SGB answers positively. Should this be accounted for in the comparisons ?

MDM asks AR if she understood correctly that for the zenith-sky stratospheric observations we can quite easily implement something in the validation server as to spatial representativeness and that all the necessary data are provided in the files. AR confirms, but tempers the word "easily". He doesn't know how to write the code right now. For MAXDOAS, we need pointing and O4 information.

MDM suggests having a small technical working group to discuss offline the issues raised during this meeting and the GEOMS implementations (see section 3.3.3).

BB says that this work on spatial representativeness is excellent; much progress has been made. He thinks we should come to a community agreed way for comparing to model or satellite data and document it in a rigorous manner. This is really important for the future. MDM says we will not solve everything in this project, but we are working towards it.

3.3.1.7. Progress in WP5, Stephan Henne, EMPA

See: 14_NORS_PM2_SH

SH presents the work performed in the frame of WP5 during the second project year and the future plans.

MDM asks how SH sees the use of the HDF files of the in situ profiles. SH says these profiles could be used as a priori, but they are more intended as 'true profiles' for the FTIR community to verify profile retrievals.

MDM asks if the technique SH described could also be applied to create in situ profiles for sites with in situ data only and no remote sensing like FTIR. SH answers that the volume sampling is crucial, but it's possible. MDM says it could be a way to link the surface data to satellite data – the latter then determine the sampling volume - and to have better comparison than comparing the in-situ directly to satellite. SH says it merits reflection. The use may be different at low- and high-altitude stations cf. impact of boundary layer.

3.3.2. Stratospheric and total atmosphere products

3.3.2.1. Stratospheric NO₂, Florence Goutail, LATMOS

See: 15_NORS_PM2_FG

FG presents the work performed on stratospheric NO₂ during the second project year and the future plans.

3.3.2.2. Integrated Ozone product, Maud Pastel, LATMOS

See: 16_NORS_PM2_MP

MP presents the work performed on the integrated ozone product at the alpine station during the second project year and the future plans.

SC says it looks like the presented neural network approach is trying to make two different stations look like one. MP denies this and says she considers them as separate. She doesn't want to correct the air masses, but wants to provide them with a weighing factor with regards to their contributions to the target station. MDM comments that the target station is one station. The neural network analysis is done for each altitude where the airmass is different.

SGB further comments the method.

MVR asks of what airmass the output of the target merged profiles will be representative. MP answers that for each altitude, the contributions from the sites can be different. The resulting integrated profile at the target station is representative of the ensemble of the three stations (OHP, Bern and JFJ).

MDM says it could be useful to compare such measurements to satellite measurements with a large footprint. MP comments that this is indeed their intention.

MDM asks how the differences between the airmass location differences. MP answers that this is part of the work on the correction of biases.

AR is surprised to see the large biases between the techniques. In her presentation MP suggested that it's a matter of the a priori used in the retrieval. The bias between LIDAR and

MW is quite large. MP agrees, but comments that above 45 km it's the climatology of SAGE and not the LIDAR measurements. MDM suggests extending the LIDAR profile with MW a priori instead of SAGE to get rid of the bias after smoothing. SGB says there is a bias between MW a priori and the SAGE climatology. This bias is not a problem since we will not go above 40km.

3.3.2.3. Comparison with satellite products, Cristina Robles, INTA

See: 17_NORS_PM2_CR

CR presents the work performed during the second project year on the comparison with satellite products and the future plans.

AR thinks that the source of the problem with the OMI data is in the KNMI fit. He has encountered the same offset in his work.

AR is confused about the representation of the solar zenith angles in the figure of the diurnal validation of NO₂. CR explains the logic behind this figure. AR understands, but says this figure is misleading. He adds that it's just a matter of presentation and that it could be discussed further offline.

MDM comments that the issues raised in this presentation point very well to the usefulness of what we're doing in NORS for MACC in developing intercomparisons which are the same for all the instruments. It could be taken up again in the GECA frame to apply the same consistent approach for satellite validation.

JPP mentions that the problem is that we have very little information on the NO₂ profiles in the troposphere. This is a big issue in the tropics where tropospheric NO₂ is very high due to the pollution.

3.3.3. Discussion, All

See: 18_NORS_PM2_OP

OP shows the inputs she needs from the partners to continue her work on task 4.4 (see also AI-PMT5-32). She asks the partners to provide inputs about studies (papers) on the comparison of NORS products with satellite products. OP will send out this table to a set of contact persons and ask for their contributions. The contact persons are: Lidar: SGB and MP, MW: KH, FTIR at JFJ: EM and BF, FTIR at La Reunion: CV and BL, FTIR at Ny-Alesund: CP, MAXDOAS at BIRA: FH and MVR, MAXDOAS at Bremen and Ny-Alesund: AR.

MDM suggests to have a small technical working group to discuss the issues raised today by S&T with SN, LB, BL, SH, EM, FH, MP, KH and AR (to a limited extent). For the MACC team, RE and Henk Eskes will address the technical questions when needed. The idea is to organise a teleconf in a few weeks and if needed a live meeting afterwards. MDM asks all that we already start thinking about which subjects could be descoped.

AI-PM2-69: NK to organise a technical working group to discuss the issues raised during the second progress meeting including the GEOMS implementation.

Given the issues we encounter with regards to tropospheric NO₂, SGB suggests adding ancillary measurements at some stations (ceilometer, NO₂ sondes, etc.) and report about this in the final deliverable about the NORS status and capacities at the end of the project. We should think about this question and come up with suggestions for improving some NDACC stations with additional ancillary measurements from standard instruments.

MDM says we will also need to have a discussion with the GEOMS data board. We will have another update of the GEOMS template at the end of the project.

MDM thanks all the participants for this fruitful first day of meeting and the speakers for their nice presentations and good timing.

Friday 18/10/2013

3.4. Project management, Nathalie Kalb, BIRA-IASB

See: 19_NORS_PM2_NK

NK presents the project management and coordination activities during the second project year.

MDM mentions that all the minutes of the PMT (project management team) teleconferences are available on the website.

MDM asks SV if there will be a follow-up of the non-contractual progress report requested by him before the progress meeting. SV says this report will be used for the review and feedback will be given in the review report.

HK comments that he found this intermediate report very useful.

3.5. NORS future

3.5.1. Capacity building, Martine De Mazière, BIRA-IASB

See: 20_NORS_PM2_MDM

MDM presents the results of the capacity building efforts in the NORS project during the second project year.

CP comments that the problem of liquid nitrogen availability needs to be solved before the Yekaterinburg station can apply for NDACC affiliation.

HK asks if the University of Paramaribo (Unviversity Antom de Kom) is involved. UF answers negatively. CP says there was a plan that Unviversity Antom de Kom collaborates with UBremen, but he doesn't know the details.

MDM adds that JCL communicates with CEOS about NORS and that BB is Chair of the CEOS Atmospheric Composition subgroup of the Working Group on Calibration/Validation.

MDM asks what the future role of EEA in Copernicus is. SV answers that GISC as such has ended end of October 2013. There is no continuation foreseen for the project itself, but there might be plans for some sort of continuation.

RE comments that they have the same problem. EEA is still taking responsibility with regards to the in situ air quality data. That data stream still works fine, but all the research behind it will be missing when EEA will no longer coordinate.

SGB mentions that they promote NORS in the NDACC LIDAR working group.

3.5.2. Integration in Copernicus Pre-operational Atmospheric Server, Richard Engelen with contributions from Leonor Tarrason

See: 21_NORS_PM2_RE

RE gives feedback on the questions he has been asked to comment by MDM at this meeting with regards to the interaction between NORS and MACC-II.

RE is very positive about the validation server and lists a few desired improvements. He reminds that it is very important to know who will be the users of the validation server as it influences the balance between flexibility and clear, good-looking interface.

He asks us to think about the following points:

- Who are the users of the NORS services?
- Can the NORS infrastructure be extended to other data sets?
- Is the focus on detailed validation or on routine verification?
- Copernicus Atmosphere Service will need good validation and NORS can provide a competitive input.
- MACC-II will need some bridging between the end of the project (planned July 2014) and the beginning of Copernicus (presumably April 2015) and is negotiating this with the European Commission at the moment. MACC-II follow-on will not have specific funding for NORS, but parts could be implemented if there are no real additional costs.

BB thinks asking for a data delivery within 3 hours is putting too much pressure on the stations. RE answers that he's not saying that 3 hours should be the standard. The earlier, the better. He says a week would be perfect, a month is OK, but more than a month is too long. Data received after one month could still be used for validation reports but not for routine work.

3.5.3. Discussion about possible extension of NORS, Stijn Vermoote

MDM comments that the continuation of data delivery and service maintenance implies costs and cannot be done for free. The continuation of this kind of work will require some support from the EC.

SV says that the presentation of RE with regards to the timing of Copernicus is quite realistic. There will be no operational Copernicus service before April 2015. There will be no operational money before 2015. NORS finishes in July 2014, just like MACC-II. The

European Commission knows that the timing gap is an issue. The regulation (legal framework) has to be set up before April 2014 (next election of the EU parliament). The EC is looking at ways to continue Atmosphere and Ocean service lines. The other services already have other sources of funding. The member states have to decide to continue funding. By 28 October there should be a final text that should be approved in the beginning of November about bridging the activities until Copernicus. The draft text is very open at the moment to allow for the different components to be taken on board. Of course, budgets are limited. The aim of Horizon 2020 is not to fund Copernicus. There are some funds in Horizon 2020 for basic research in Earth Observation, that will certainly provide lots of opportunities for this consortium. The Copernicus Climate Service will start under FP7, in parallel to the other Services.

Another possibility is to continue the project for a few months without additional funding. This way we can continue to use the framework provided by the EC. This has to be discussed and agreed within the consortium. Under these circumstances, the EC will make an exception, but it will not bridge the whole 9 months.

SV thinks there will be a way to include NORS outputs once the service line gets operational. At the moment, in situ activities are included in the cost calculation of the Copernicus service line. The EC is not going to dictate to the delegated body (ECMWF) what needs to be included. There will be a vague description, on purpose, to allow the delegated body to incorporate all necessary elements.

MDM asks if she understood well that a funded extension of NORS should then go through the text that is in preparation and that is mostly dedicated to MACC-II. SV says it really depends of MACC-II. The EC leaves it open to MACC-II if they want to take (parts of) NORS on board, but will not force it in any way.

SV says that in Horizon 2020 the budget for earth observation will be much more limited, but there will be more budget for pure research focused activities. The Horizon 2020 calls will be launched for 2014 and 2015 at the same date, on 11 December 2013. The submission dates will be different of course.

With the development of the Copernicus services in mind, SV says that we should draw the attention of ECMWF. He asks us to put things on paper so that he can present them at the unit dealing with the Copernicus service. SV proposes to draft a white paper indicating the added value we can provide to the Copernicus Atmospheric Services, the needs to develop this and the estimated costs. This document should not be long, but should clearly explain why our work would be of value in the Copernicus Atmospheric Services. SV will transmit it to DG Enterprise, and is ready to go with MDM talking with the responsible persons (P. Breger and M. Facchini).

AI-PM2-70: MDM to write a white paper on the interest of NORS in the Copernicus Atmospheric Services.

SV also stresses that when we want some ideas to be put forward in Horizon 2020, we should lobby with our national authorities, because they are the ones who should defend their national interests at the European Commission.

SV says that the situation is evolving and that it's in our own interest to track this closely.

3.5.4. Role of NORS in WMO and NDACC, Martine De Mazière, BIRA-IASB, on behalf of Geir Braathen

See: 22_NORS_PM2_GB

MDM gives a presentation about the Role of NORS in WMO and NDACC on behalf of Geir Braathen.

3.5.5. ESA's atmospheric Cal/Val activities, Bojan Bojkov, ESA

See: 23_NORS_PM2_BB

BB presents ESA's atmospheric Cal/Val activities and the use of NORS for ESA.

RE asks why it's such a difficult issue for ESA to protect the budget for validation. BB says it's not as bad as it used to be and that thinking has changed in ESA. He says it's the first budget to be cut, since it's the last budget in the chain. And it is thought that validation can always be solved later. BB says there is some public relations work to be done on this to make clear that it's an essential part of a mission.

3.5.6. Insights into INSPIRE, Anne De Rudder, BIRA-IASB

See: 24_NORS_PM2_ADR

ADR gives a presentation about INSPIRE and the compliance of NORS.

SH asks how INSPIRE is related to ISO standards. ADR answers that INSPIRE is inspired from the ISO standards and follows several recommendations. SV comments that ISO standards go much further.

MDM says that with the GEOMS standard metadata we are INSPIRE compliant. In fact we are even more specific than INSPIRE. But she suggests that we draw a sort of correspondence map at the end of the project.

SV comments that the principles of INSPIRE go much further than just metadata matters. ADR agrees and says she focused on metadata in her presentation because it was more of our interest.

SN asks ADR more information on the regulation for publishing of data and metadata. ADR says that the ideal rule in INSPIRE is that the member states should provide the data to the INSPIRE network, but the problem is they are not the owner. The owners are the international consortia in scientific projects.

3.5.7. Feedback by Hennie Kelder and Stijn Vermoote

MDM invites SV, HK and the members of the SC to provide feedback on the report of the second year and on what has been presented at this meeting.

HK says he is impressed by the progress in the second progress year. The results are very nice. He is looking forward to see the upcoming documents on data use, uncertainty budgets

and data representativeness. He is also impressed by the validation server and its realisation since last year. He stresses the importance of this project product for general validation activities. The objective of fast delivery of data in 1 month is realised for 80% and the remaining 20% will follow soon. The interaction with MACC-II has been much improved since last year. He stresses that the interaction with the model groups is very important. The project outreach has been well done. There are lots of publications and presentations. The website is very nice. The project is well promoted by MDM to NDACC, CEOS and WMO to highlight the importance of the project. He says the minimal delays that have been shown are not too serious and can be recovered in the next year. The project management by NK and MDM is excellent. He compliments MDM for combining the coordination of such a big project with the directorship of BIRA-IASB. He concludes by saying NORS is a scientifically very important project that is well on its way to reach its objectives. He also compliments the group for its good collaboration and nice spirit.

MDM thanks HK for his nice words.

SV agrees with everything that HK says. He comes back to the two additional tasks he has already mentioned earlier:

1. To think about an eventual extension of project under the current grant agreement without additional funding.
2. To write a white paper. He stresses again that it's the community itself that should express its needs and make publicity.

He mentions that he is not worried by the small delays. We are good on track and he encourages us to continue on the same path.

MDM thanks the whole consortium for the nice working spirit and NK for the project management.

3.5.8. Organization and content of the final workshop at the occasion of the final NORS meeting (July 2014), Martine De Mazière, BIRA-IASB

See: 25_NORS_PM2_MDM

MDM explains the contractual commitment of organizing the final meeting in the form of a workshop, open to the community. The contract says that the aim of the workshop is to show NORS achievements to a wider audience, including NDACC members who are not belonging to the NORS consortium, including MACC partners, satellite teams, other GAS or GMES actors, some European policy makers, and the local press, although this last group will most likely not be interested. We aim at an attendance of around 50 to 75 people.

The contract mentions that the meeting location should be Brussels, but she wonders if that statement is firm.

MDM presents a few options for organizing this workshop.

A first option would be to align with MACC-II. They have a workshop planned in January 2014 in Brussels, but that would be too early. The final workshop would then be a smaller event in Reading. But given the possible extension of MACC-II, she wonders if we can rely on that.

Another option would be to align with a NDACC Steering Committee meeting. But the problem is that the next meeting will be in October 2014 in California, which is not very practical, especially in an EC context.

Another option would be to align with a NDACC Working group meeting. For example the NDACC IR and TCCON WG meeting in May 2014 in Jena, Germany. But that would be too early as well.

We could also align with a SPARC or satellite-oriented meeting. The next SPARC meeting will be in January 2014 in New-Zealand, so that's excluded. She doesn't know if other meetings are planned in 2014. BB mentions an ACVE meeting towards the end of 2014 (October-November).

We could of course also go on our own. But that would imply more logistics and probably difficulties to get interest.

MDM asks all if they see other options.

SGB asks if she knows more about WMO meetings. MDM answers negatively. She says we could ask Geir Braathen. These meetings are generally held in Geneva.

RE says that the MACC-II general assembly meeting in January 2014 is too early. Nevertheless, the whole NORS consortium is invited to present material at this meeting.

The option of aligning with NDACC working group meetings is MDM's preferred option. That means we should coordinate with all the working groups to have it simultaneously.

SV says we can make use of the infrastructure of REA. He says they have rooms, but 50 to 75 people is probably a bit much. The biggest rooms at REA are occupied for the evaluations. He also says the meeting does not have to take place in Brussels.

BB says we can use ESA's facilities (ESTEC and ESRIN) for free.

About the format of the meeting, MDM says there will be science talks from NORS and other participants, like MACC and a demonstration of the validation server. She thinks one day should be sufficient. Potential guests are the EC, NDACC, MACC, ESA, satellite teams, Cooperating networks of NDACC, Belspo and other national science policies, Copernicus users forum, Jean-Pascal van Ypersele from IPCC, EEA.

BB says that all these people will not likely travel for just one day of meeting. He thinks American and Asian colleagues who are going through the same issues in their own missions could be interested as well. We should have a meeting on 1,5 to 2 days. MDM agrees.

SV suggests that we take a look at the FP7 research infrastructures projects. Their planning could offer us some more options. MDM says we could combine with ACTRIS.

3.5.9. AOB

It looks like the consortium members have agreed that the workshop will be organised in October. The summer is never a convenient period due to holidays. September is usually a very busy month. So this brings us to October. We will see if we can align with another meeting. This is a valid reason to ask for a 3 months extension without funding, just to organise the workshop and perhaps finish some deliverables, but not for any additional scientific work.

MDM asks if all agree to request a 3 months non-paid delay. All agree.

AI-PM2-71: NK to request a non-funded 3 months extension of the project under the existing grant agreement to REA.

MDM says the idea rose to organise the final workshop together with ACTRIS. ACTRIS is an EU project funded under FP7 research infrastructures. It will end in March 2015. The title is Aerosols, Clouds, and Trace gases Research InfraStructure Network and it is led by Gelsomina Pappalardo and Paolo Laj. They are trying to continue as an ESFRI (European Strategy Forum on Research Infrastructures). These are coordinated by the EC. The member states have to commit to make them live on. ICOS and IAGOS are ESFRI examples. We should make an effort to get more involved in ACTRIS. EMPA and BIRA are involved in this project. At the moment ACTRIS is more focusing on Aerosol LIDAR and in situ trace gases measurements. They are now orienting more to vertical profiles. We should do some lobbying to our national delegates to get NDACC more involved in ACTRIS. We should at least invite the Actris people to our workshop if not coordinated with them. There will be a call for Horizon 2020 in December 2013 as heard earlier in the meeting. The ACTRIS team will submit a proposal. MDM says we should follow this closely and get more involved.

MDM will get in contact with ACTRIS to see if they will have an event in October 2014. If not, then we will ask for ESA support to organise the workshop.

AI-PM2-72: MDM to contact the ACTRIS team about the organisation of the NORS final workshop.

MDM still keeps the NDACC WG meetings in mind. She asks SGB when the NDACC LIDAR WG is planned. She answers in November 2013 in California (only every two years). So this is not an option.

MDM is not optimistic on the subject of a funded continuation of NORS. She will stay in contact with RE and Vincent-Henri Peuch about this, but doubts that we could get any financial support.

MDM will write a draft white paper in the next month and circulate it within the consortium. Then we can start to lobby.

AR asks if the workshop will be oriented at presenting NORS results. In this case, the participation of other groups will be limited. But if we focus more on NDACC, then there could be some kind of competition with NDACC symposia, but it would certainly draw more people. He thinks we should be careful not to call ourselves "NDACC". MDM says that we are NDACC and doesn't think there would be any competition.

MDM says we could combine both orientations. Besides the “NDACC meeting”, we could have a half day reserved for the NORS results and presentations to the EC.

SGB asks how we know when the validation server has been updated. SN says on the server itself there is a specific page with information about changes.

SN says that all data should already be there. If it’s not in the report then it’s a problem with the data. SGB says the LIDAR and SAOZ (UV-Vis) data at OHP are not in the reports, but they are in NDACC. SN should check if the LIDAR algorithms have been implemented. SGB says the LATMOS institute is not in the server. S&T will keep SGB informed.

SN and LB ask for feedback on missing things, bugs, etc.

Once the server goes operational (in about two months) it will not be password protected anymore, even if it’s not implemented at BIRA-IASB yet.

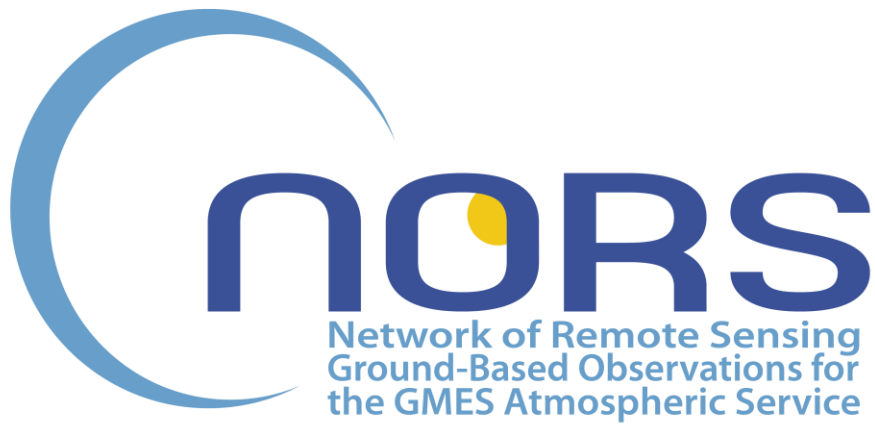
MDM reminds all about the call for abstracts to participate to the MACC-II meeting in January 2014.

MDM thanks NK for the organisation of the meeting and all the participants for this fruitful meeting. She closes the meeting.

End of Meeting

4. Open Action Items

AI #	Description	Assigned to	Status
AI-PMT5-32	A bibliography search was made for publications concerning comparisons between NORS-type products and satellite data used by MACC II. The results of this search have been distributed to all partners in order to add other studies not included in the document.	All	Ongoing
AI-PMT6-55	AR to check the reporting about the uncertainties in the files.	Andreas Richter	Ongoing
AI-PM2-69	NK to organise a technical working group to discuss the issues raised during the second progress meeting and the GEOMS implementation.	NK	Open
AI-PM2-70	MDM to write a white paper on the interest of NORS in the Copernicus Atmospheric Services.	MDM	Ongoing
AI-PM2-71	NK to request a non-funded 3 months extension of the project under the existing grant agreement to REA.	NK	Open
AI-PM2-72	MDM to contact the ACTRIS team about the organisation of the NORS final workshop.	MDM	Open



PMT Teleconference #8

12 December 2013

Meeting Minutes

1. Introduction

The eighth PMT Meeting was organized in the form of a teleconference on Thursday the 12th of December 2013.

The teleconference started at 10h00 and ended at 11h15.

2. Participants

Name		Short name	Role in project	Institute
Martine	De Mazière	MDM	Project Coordinator	BIRA-IASB
Nathalie	Kalb	NK	Project Manager	BIRA-IASB
Bavo	Langerock	BL	Scientist	BIRA-IASB
Andreas	Richter	AR	WP4 Lead	UBremen
Stephan	Henne	SH	WP5 Lead	EMPA
Thomas	Blumenstock	TB	WP7 Lead	KIT
Sander	Niemeijer	SN	WP8 Lead	S&T
Leo	Breebaart	LB	Collaborator in WP8	S&T
Emmanuel	Mahieu	EM	WP9 Lead	ULg
Klemens	Hocke	KH	WP3 Lead	UBern
Sophie	Godin-Beekman	SGB	WP6 Lead	CNRS
Olga	Puentedura	OP	Collaborator in WP4	INTA
Cristina	Robles	CR	Collaborator in WP4	INTA

Excused:

Name		Short name	Role in project	Institute
Maud	Pastel	MP	Collaborator in WP6	CNRS

3. Agenda

1. Status of the project and progress of work packages
2. Status of deliverables
3. Status of milestones
4. NORS White Paper and follow-on.
5. MACCII GA
6. NORS Final Workshop
7. Status of action items
8. AOB

4. Minutes

MDM welcomes the participants.

4.1. Status of the project and progress of work packages

4.1.1. WP1 Project coordination

All minutes of meetings can be found on the private part of the website (documents). NK will circulate the minutes of this teleconference for correction and load the final version up on the website.

4.1.2. WP2 Project outreach

The public part of the website contains publications and presentations. The private part of the website contains the deliverables and working documents. To access the private part of the website, one has to create an account (at the bottom of the Login Form).

4.1.3. WP3 Rapid data delivery at 4 NDACC stations

KH says that the MAXDOAS data from Izana are being delivered in rapid delivery modus. At UBern automatic processing and delivery is in place. Some stations are delivering in 6 weeks instead of 4, but development is ongoing. There is a quite large spread in delivery timing between the different stations.

MDM asks if KH has been in contact with the stations that are not delivering in rapid delivery modus. She says that for the 4 pilot stations we should have rapid delivery in place since last August. She asks him to follow this closely.

KH says that there is an issue with La Reunion. Data are not being delivered. BL says that at the moment the instrument is not working at La Reunion. He also mentions that the naming will be changed from La Reunion to LAREUNION.SAINTDENIS and LAREUNION.MAIDO.

4.1.4. WP4 Advanced characterisation of NORS data products

AR reviews the work progress reports collected from the participants in WP4. He will circulate the document.

Task 4.1 Data Formats

BIRA-IASB

- A new GEOMS UVVIS data format is currently under development in collaboration with the GEOMS Metadata Board (Ian Boyd). The reason for this format change is that all the variables corresponding to the three viewing geometries (zenith, off-axis, and direct-sun) are declared as mandatory in the current file format, leading to a large number of variables with only fill values if only one geometry is reported. S&T experienced some problems in reading such files (all variables should be tested in order to determine whether they contain only fill values or not). In the new format, separate files will be created for each of the three geometries, with geometry name appearing in the file name. By this way, the number of variables with only fill values

will be significantly reduced. The new file format is expected to be ready by mid of January at the latest.

UBremen

- MW data is in RD mode
- CO will be finished by end of the year, other gases to be added shortly
- UV/vis – no data from Ny-Alesund, still experiencing formatting problems

Task 4.2 Information Content and Harmonization of Networks / Techniques

INTA

- INTA is working on systematic comparisons of periods of parallel FTIR and MAX-DOAS measurements. INTA is working with KIT in the comparison of NO₂ measured by FTIR and MAX-DOAS at Izaña station. The effective SZA was taken into account to make both kinds of observations comparable with very good results. INTA had a first presentation of this work in a Spanish meeting for remote sensing.

BIRA-IASB

- Continuation of the work on the development of a method for the retrieval of tropospheric NO₂ columns from daytime zenith-sky scattered sunlight observations: When applying this method to CINDI campaign measurements, a good consistency is found with MAX-DOAS and direct-sun retrievals. Some issues related to the application of the photochemical correction for stratospheric NO₂ diurnal variation and to the determination of the residuals amount of NO₂ in the reference spectrum are still under investigation. This zenith retrieval is also currently tested at the OHP station.
- The stratospheric NO₂ photochemical correction tool developed at BIRA is being tested by LATMOS at different SAOZ stations: Good agreement is obtained during twilight between measured and modelled diurnal variations of the stratospheric NO₂ column. This agreement is significantly improved when using effective SZA at the location of the air mass instead of the SZA at the stations. Some remaining discrepancies at polar stations are under investigation.
- MAX-DOAS retrievals of tropospheric NO₂, H₂CO, O₃, and aerosols are currently under progress at the Jungfraujoch station.
- In collaboration with ULg and UBremen, delivery of the deliverable D4.5 ‘NORS data consistency’ (date of issue: 31/10/2013)

UBremen

- Deliverable 4.6 “Carbon monoxide mid- and near infra-red data assessment” finalised with contributions from UBremen, IASB, ULiege, KIT
- Deliverable 4.4 “Spatial Representativeness of NORS observations” finalised with contributions from UBremen, CNRS, INTA, IASB, UBern, MPIC Mainz

MPIC

- Validation studies of the MPIC cloud classification scheme were performed using MODIS and OMI cloud products and AERONET data. For that purpose, 2 years of measurements in Wuxi, China were used. The comparison results indicate that the algorithm yields very reasonable and consistent cloud information.

ULg

- ULg made good progress as to the retrieval of H₂CO from Jungfraujoch FTIR observations, using now a multi-window approach. Comparisons with MAX-DOAS data from IASB and model results are very encouraging

Task 4.4 Comparison to Satellite Observations

CNRS

- A comparison between OHP ozone lidar data and satellite measurements was presented by M.Pastel at the NDACC lidar working group at Table Mountain Observatory (California) in November.

INTA

- INTA is currently working on a classification of the observations with latest inputs from the partners. They are on time for the deliverable D4.7, the plan being to circulate a draft in March 2014.

Recent and planned presentations at conferences:

- Tack, F., et al., Tropospheric nitrogen dioxide column retrieval based on ground-based zenith-sky DOAS observations, EGU 2014
- Hendrick, F., MAX-DOAS retrievals of tropospheric NO₂, H₂CO, O₃, and aerosols at the Jungfraujoch station, EGU 2014
- UB plans to present NORS related MAX-DOAS work at the EGU
- MPI plans to present cloud validation and probably other NORS-related results at the EGU meeting next year.
- C. Robles González, M. Navarro, O. Puentedura, F. Hase, M. Schneider, E. Cuevas and M. Gil Ojeda, Intercomparison of the NO₂ vertical column densities measured over Izaña with two ground-based remote sensing techniques: DOAS nad FTIR. XV Congreso de la Asociación Española de Teledetección. Madrid, October 22nd-24th, 2013
- Petri et al. CO work to be presented at MACC Open Science Conference

MDM says that we should publish the presentations that AR mentioned on the NORS website.

AI-PMT8-73: AR to provide NK the recent presentations from WP4 to publish them on the NORS website.

4.1.5. WP5 Integration of tropospheric products

SH says there has been lots of documentation work, namely in deliverables. Currently SH is working on MAXDOAS comparisons for NO₂ at Jungfraujoch. He has received data from BIRA-IASB. He intends to perform the same work for Izaña, but has not received data yet.

4.1.6. WP6 Integration of ozone products

SGB says that MP has been working on the implementation of the algorithm that has been presented at the second NORS Progress Meeting. At the moment she is focusing on the Alpine station, working on the bias correction between the instruments and the measurements

errors in order to provide the ozone profiles for the Alpine station. They are planning to make comparisons with satellite data in January.

MP has submitted the software deliverable.

MDM asks if they intend to do the same work for another station. SGB answers that it is planned for the 4 pilot stations, depending on the data that they will receive. She also mentions that this work has been presented at the NDACC LIDAR Working Group meeting. They have promoted the possibility to have other LIDAR stations joining.

MDM asks SGB to send NK the presentation given at the NDACC LIDAR Working Group meeting.

Report of WP6 activities sent by MP prior to the meeting:

The main objective of this work package is to develop a methodology for integrating ground-based data sources to provide consistent ozone vertical distribution time series as well as tropospheric and stratospheric ozone columns at 4 NDACC stations (NyAlesund, Alpine station (OHP), Izaña, La Réunion). The new database is due at the end of April 2014.

The current study is focused on the Alpine station where data from the lidar DIAL data at OHP (44°N, 6°E), Microwave data at Bern (47°N, 7°E) and FTIR data at the Jungfrauchjoch station (47°N, 8°E) is used. Based on the assumption that the O₃ bias between the 3 stations is due to the variation of the equivalent latitude and the instrumental bias.

The database will therefore be built as follow:

$$O_{3 \text{ new database}}(z) = \sum (W_{\text{equi.}}(z) * W_{\text{error}}(z) * A(z)) * O_{3 \text{ FTIR,MW,LIDAR}}(z)$$

Where $W_{\text{equi.}}$ stands for the weights given by the neural network analysis, W_{error} the weight corresponding to the measurement error and A the instrument bias correction.

All parameters in the equation is now defined and calculated except for W_{error} , which has to be calculated for each instrument profile.

We expect to make our first comparison with MLS data by the end of January 2014.

4.1.7. WP7 Reanalysis of ground-based time series back to 2003

TB says that the deadline for D7.1 Re-analysed time series is end of January 2014. He has received lots of feedback from the partners. The Microwave and UV-vis time series are in good shape. Most of the sites are already archiving data or are very close to it. He is not sure about Ny-Alesund. The LIDAR group is waiting for ISSI guidelines. The FTIR data are in good shape for Jungfraujoch and Izana. For La Reunion and Ny-Alesund, they are waiting for the SFIT4 release. TB asks to postpone the deadline.

BL says that it's important to use SFIT4, because it has the error budget analysis incorporated, in a standardized way.

EM says that for Jungfraujoch they use SFIT2. He says that for the systematic error, there is no error budget included. For the random budget, matrices and values are included. They don't intend to wait for SFIT4. They will of course include Sfit-4 once it becomes available, but in the mean time they will continue to deliver rapid delivery and consolidated data, even if part of information is missing.

SGB comments the LIDAR issue. The work ongoing at ISSI is to try to standardize the vertical resolution definition of the LIDAR measurements and the uncertainty. At the moment the standardized vertical resolution module has been defined. They are implementing this module in the retrieval at Ny-Alesund. There will be no standardized uncertainty definition of the LIDAR measurements within the timeframe of NORS.

MDM says delay will be discussed in point 2 of the agenda (status of deliverables).

4.1.8. WP8 Web-based server for validation of GAS products using NORS data products

LB says that the feedback report on the validation server (D9.1) contained over 70 raised issues. They are working to solve them. They have written responses to these issues in a document (attached to these minutes). Some solutions have already been integrated in the test server. The plan is to make the test server public by removing the guest password before the end of the year. The remaining issues will be solved in 2014.

Deliverable D8.4 Ready-to-use Validation Server that should have been delivered in November will thus be delivered end of December.

MDM asks about the implementation of the server at BIRA. SN suggests making the transition in Spring next year. The deployment should be discussed early next year. MDM says we should plan a telecon early next year.

AI-PMT8-74: MDM, BL, SN and LB to plan a telecon early next year to discuss the moving of the NORS server.

MDM suggests adding a link on the MACC webpages to the NORS server. The suggested domain name is: nors-server.aeronomie.be.

LB says that they are welcoming any comments on the server, even after it goes public. The report with the answers to the feedback and the current status will be merged into the webpage. SN adds that the report also reviews what is in and out of scope of the project. He asks MDM to review it.

S&T will contact BIRA about the implementation of the validation server at BIRA.

4.1.9. WP9 Validation of GAS products for O3, NO2, CO, CH4, H2CO, aerosol

EM says that they have issued the feedback report, which acknowledges the nice work done by S&T. The issues have been classified by category.

For the real use of the server, they are relying on WP 3 and 8. EM and SN say that there could be future issues from missing or wrong data. EM fears the squeezing of work in the tasks 9.2, 9.3 and 9.4 in the last few months. MDM reminds that in WP3, rapid delivery should be followed up closely.

MDM says that we should stick to one month of delay in WP7, but not more. We need the data for the validation approaches.

If an extension of 3 or 4 months is granted, it will definitely be without funding, so we should try to produce most of the deliverables within the official timing and keep the extension as back up.

MDM has written the white paper requested by Stijn Vermoote. We also expect a support letter from Vincent Henri-Peuch. MDM and SV will discuss how to take the white paper further.

MDM explains the situation for MACC-II. There will be a call in H2020 to which MACC-II will apply to bridge the gap between the end of the project and the operational phase (April 2015) with funding. This will be MACC-III. The proposal will be reviewed directly by the commission, instead of an evaluation commission first.

According to VHP, this kind of approach is not possible for NORS and there is no room to include some aspects of NORS in MACC, unless the MACC partners clear some room for the NORS activities. MDM thinks that this will be difficult.

Concerning the operational phase, VHP is much more open to integrate NORS in the validation work package led by Henk Eskes. There could also be some support to support the data themselves. The identification of the coordinator is not completely clear, but we can assume it will probably be ECMWF.

MDM summarizes that for the operational phase there is a good chance that we will get some funding through the continuation of MACC. For the bridging period, there is little chance. In H2020 we can try to get funding by submitting a proposal, probably on research aspects, rather than on the operational aspects.

OP asks what to say to the national representatives about the white paper. MDM says that we should explain to the national representatives that we want to continue the activity and ask for their support in the discussions (negotiation process, rating, etc.) about the operational phase of Copernicus.

MDM will check with SV if there is still a chance to get some bridging project between now and the operational phase of MACC. MDM will keep the consortium informed about this matter and about interesting H2020 calls.

4.1.10. WP10 Capacity building and sustainability

MDM summarizes the reports received from the different partners.

Report from Thomas Wagner (TW, MPIC):

Some recent activities of our group are:

- We exchanged knowledge about cloud classification from MAX-DOAS with our Chinese partners. They start applying the cloud classification algorithm to measurements in China and compared to satellite cloud products.
- Currently a colleague from the Chinese academy of science from Beijing is visiting our group. We work together on the data analysis of HCHO, SO₂ and HONO.

Report from Klemens Hocke (KH, UBern):

- I gave a long presentation about NORS in the seminar of IAP-Uni Bern:
Klemens Hocke: NORS, MW-Freitagseminar, Bern, 22 Nov 2013
- The new, transportable ozone microwave radiometer GROMOS-C of Uni Bern has soon its first measurement campaign at Jungfrauoch station
- Sookmyung Women's University (Seoul, Korea) has asked for a support letter from BIRA-IASB, explaining their involvement in NORS, to get national funding. KH comments that they also want to provide their data to the rapid delivery data centre.

Report from Christof Petri (CP, UBremen):

Within WP10 the University of Bremen is exporting the NORS expertise to two solar absorption FTIR-observatories outside of Western-Europe; the first one is located at Paramaribo (Suriname) and the second one at Kourovka (Russia). Below the main activities are summarised in bullet points for the two sites.

- Paramaribo (Suriname, 6°N, 55°W)

After the measurement campaigns in autumn 2012 and in spring 2013 we have conducted a third campaign in autumn 2013 (all partly paid out of NORS). During the latter campaign we performed a side by side comparison between the existing spectrometer in Paramaribo and a upgraded one, which allows correction for source brightness fluctuations. This is especially important in the tropics due to the frequently occurring cirrus clouds. The upgraded instrument has been previously compared with the NDACC-instrument at Bremen.

- Kourovka (Russia, 57°N, 59°O)

The second visit to Yekaterinburg took place from 23.08. to 05.09.2013. Prior to this visit the solar tracking was not working accurately, making the measurements highly labour intensive. During the visit the existing solar tracker was aligned and the diode-tracking is working now.

The alignment of the instrument has been checked by cell measurements. The gas cell brought to Yekaterinburg will stay in Yekaterinburg and will be used for bimonthly lamp measurements. This will allow monitoring the status of the instrumental alignment.

A problem at Yekaterinburg is that the funding for the measurements is not ensured for 2014.

Report from Maud Pastel (CNRS):

- "The lidar team at Rio Gallegos has implemented the OHP retrieval algorithm and are making some comparisons with ozone sonde measurements in order to validate the new ozone lidar profiles.
- Programmes of NRT and consolidated SAOZ data of Rio Gallegos are finished. Data will be stored in NORS/NDACC database in 2014."

Report from Thomas Blumenstock (KIT):

- Addis Abeba: Dr. Gizaw Mengistu Tsidu is visiting us at KIT at the moment. FTIR spectra from Addis have been calibrated last month. Trace gas retrievals are started right now.
- Mexico: TB visited the Altzomoni site, close to Mexico City, in November this year. They replaced a broken reference laser, aligned the spectrometer and made measurements (solar and cell measurements). The instrument is in operation. Colleagues from UNAM Mexico made a lot of measurements this year. Data analysis is ongoing. NDACC certification is in preparation and will be conducted next year.

MDM asks if these sites submit data to the database. TB says that up to now it is not the case, but it will be. The Mexico site is well on its way. For the Addis site, it will take more time.

- Tomsk: A co-worker of Prof. Sinitza, University Tomsk, visited KIT last week and the week before. Frank gave him the latest version of PROFFIT and taught him to use it.

MDM asks where the instrument at Tomsk is located. TB says it is situated at the edge of the town.

Report from Martine De Mazière (BIRA-IASB):

- By the end of November BIRA installed a MAXDOAS instrument and a CIMEL photometer at the University of Bujumbura, Burundi. They are operational and providing data. The sunphotometer will also be included in the AERONET network.
- There is no specific news about the instruments in China, but they are operational and providing data to the rapid data delivery database since more than a year.

4.1.11. WP11 Project management

All partners have received their first progress payment.

4.2. Status of deliverables

4.2.1. D5.1 Description of methodology for data integration (M24 > M25)

Submitted

4.2.2. D8.4 Ready-to-use Validation Server (M21 > M24 > M25)

The NORS validation server is close to achieving ready-to-use status. Over the past period S&T has been investigating and addressing the issues that were identified and raised in Deliverable D9.1 ("The NORS validation server: feedback report") of 8 Nov 2013.

Annexed is a document with S&T's "Developer's Reponse" to D9.1, which lists the issues that have been solved, and which ones are in progress.

During the Progress Meeting of October, it was agreed that the delivery of the ready-to-use server will be signaled by the removal of the guest password authentication, thus making the server publicly accessible (VIP functionality remains only available to authorised user accounts).

4.2.3. D7.1 Re-analysed time series (M27)

MDM confirms that we will request one month of delay.

AI-PMT8-75: NK to request one month delay for the delivery of D7.1 Re-analysed time series (M27>M28).

4.2.4. D4.7 Consistency with satellite data (M30)

OP says that this deliverable is well on its way. They have compiled and classified the information received from the partners. She will ask some more contributions in the coming months from the partners. A draft will be circulated in March. The delivery date is April.

4.2.5. D6.2 Integrated Ozone profile data (M30)

Work is ongoing.

4.2.6. D6.3 Integrated Ozone tropo- and stratospheric column data (M30)

Work is ongoing.

4.2.7. Other deliverables due at the end of the project (M33>M37)

To All: Please check the deliverable coordinators.

- D2.3 Publications / Communications (NK)
- D2.4 Final NORS Workshop & report (MDM/NK)
- D3.3 Final documentation of data delivery system (KH)
- D5.3 Cross comparisons report (SH)
- D9.2 Assessment of GAS products (EM)
- D10.1 NDACC Capacity report (MDM)
- D10.2 NDACC status report (MDM)
- D10.3 NORS capacity and sustainability (MDM)
- D10.4 NORS as an in-situ GAS component (MDM)

4.3. Status of milestones

Still left to report: MS15 NORS validation server operational (M25= November 2013)

One month of delay will be requested for the next milestone (M27= January 2014) which is linked to D7.1. We should then report about:

- MS18 Readiness for validation of the GAS reanalyses (WP7, KIT)

4.4. NORS meetings schedule

Month	Meeting Name	Venue	Date	Time
M2	Kick Off Meeting	BIRA-IASB	Wednesday, 14 December 2011	9:30 AM
M4	PMT Teleconference 1		Thursday, 9 February 2012	10:00 AM
M6	SC Teleconference 1		Thursday, 12 April 2012	10:00 AM
M8	PMT Teleconference 2		Tuesday, 26 June 2012	2:00 PM
M11	PMT Teleconference 3		Thursday, 13 September 2012	10:00 AM
M13	First Progress Review/Meeting	BIRA-IASB	Tuesday 20 & Wednesday 21 November 2012	
M14	PMT Teleconference 4		Thursday, 13 December 2012	10:00 AM
M16	PMT Teleconference 5		Thursday, 26 February 2013	10:00 AM

Month	Meeting Name	Venue	Date	Time
M18	SC Teleconference 2		Thursday, 18 April 2013	10:00 AM
M20	PMT Teleconference 6		Thursday, 20 June 2013	2:00 PM
M22	PMT Teleconference 7		20 August 2013	3:00 PM
M24	Second Progress Review/Meeting	BIRA-IASB	Thursday 17 & Friday 18 October 2013	9:00 AM
M26	PMT Teleconference 8		Thursday, 12 December 2013	10:00 AM
M28	PMT Teleconference 9		Thursday, 13 February 2014 (TBC)	10:00 AM
M30	SC Teleconference 3		Thursday, 10 April 2014 (TBC)	10:00 AM
M32	PMT Teleconference 10		Thursday, 12 June 2014 (TBC)	10:00 AM
M34	PMT Teleconference 11		Thursday, 4 September 2014 (TBC)	10:00 AM
M37	Final Project Review/Meeting/Workshop	BIRA-IASB	November 2014 (TBD)	9:00 AM

MACC-II general assembly

MACC-II will have a general assembly in Brussels in the week of January 27. We are invited to present NORS. The deadline for submitting abstracts is January 10. MDM asks if she should give an overview presentation about NORS, in addition to the individual presentations that will mention NORS. All are in favor. MDM encourages all to submit presentations to make NORS visible as much as possible.

NORS final Workshop

It is not possible to combine the NORS final WS with the ACTRIS team as was suggested at the second progress meeting. But it has been agreed that the NORS and ACTRIS teams should be mutually involved in each other's workshops and meetings. The NORS final WS will be in Brussels but the exact location has not been decided yet. MDM asks all to think about a good title for the WS.

The date would be October or November 2014, in the assumption that an extension of the NORS project is granted. If we don't get an extension, then we will have to organize a final meeting in July, but this will mean much less visibility for NORS.

At the next telecon at the latest, we have to decide.

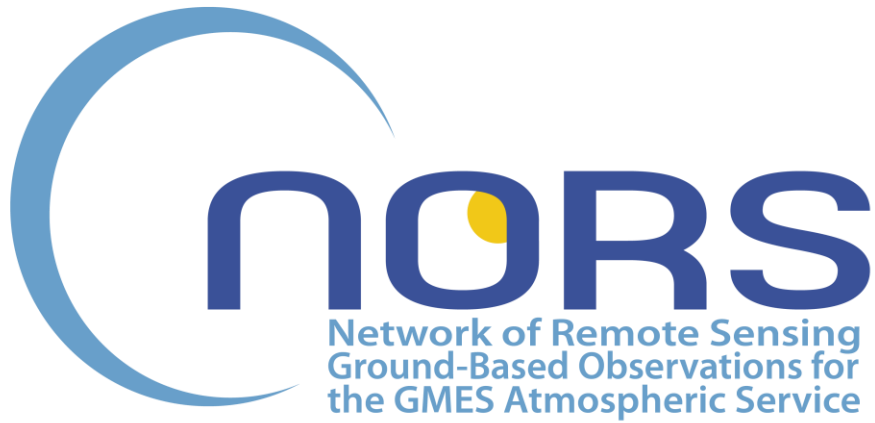
4.5. Status of action items

AI #	Description	Assigned to	Status
AI-PMT5-32	A bibliography search was made for publications concerning comparisons between NORS-type products and satellite data used by MACC II. The results of this search have been distributed to all partners in order to add other studies not included in the document.	All	Closed
AI-PMT6-55	AR to check the reporting about the uncertainties in the files.	Andreas Richter	Open
AI-PM2-69	NK to organise a technical working group to discuss the issues raised during the second progress meeting and the GEOMS implementation.	NK	Cancelled

AI #	Description	Assigned to	Status
AI-PM2-71	NK to request a non-funded 4 months extension of the project under the existing grant agreement to REA.	NK	Closed
AI-PMT8-73	AR to provide NK the recent presentations from WP4 to publish them on the NORS website.	AR/NK	Closed
AI-PMT8-74	MDM, BL, SN and LB to plan a telecon early 2014 to discuss the moving of the NORS server.	MDM, BL, SN and LB	Closed
AI-PMT8-75	NK to request one month delay for the delivery of D7.1 Re-analysed time series (M27>M28).	NK	Closed
AI-PMT8-76	MDM, BL, SN and LB to plan a telecon early 2014 with the GEOMS meta data board.	MDM, BL, SN and LB	Open

AI-PM2-69: Most technical questions are solved. With regards to the GEOMS aspects, there are some issues remaining. We would need a telecon with the GEOMS meta data board. MDM suggests launching a doodle for a GEOMS telecon in January.

AI-PMT8-76: MDM, BL, SN and LB to plan a telecon early 2014 with the GEOMS meta data board.



PMT Teleconference #9

13 February 2014

Meeting Minutes

1. Introduction

The ninth PMT Meeting was organized in the form of a teleconference on Thursday the 13th of February 2014.

The teleconference started at 10h00 and ended at 11h20.

2. Participants

Name		Short name	Role in project	Institute
Martine	De Mazière	MDM	Project Coordinator	BIRA-IASB
Nathalie	Kalb	NK	Project Manager	BIRA-IASB
Bavo	Langerock	BL	Scientist	BIRA-IASB
Andreas	Richter	AR	WP4 Lead	UBremen
Stephan	Henne	SH	WP5 Lead	EMPA
Maud	Pastel	MP	Collaborator in WP6	CNRS
Matthaeus	Kiel	MK	Representing WP7 Lead	KIT
Frank	Hase	FH	Representing WP7 Lead	KIT
Leo	Breebaart	LB	Collaborator in WP8	S&T
Emmanuel	Mahieu	EM	WP9 Lead	ULg

Excused:

Name		Short name	Role in project	Institute
Klemens	Hocke	KH	WP3 Lead	UBern
Sophie	Godin-Beekmann	SGB	WP6 Lead	CNRS
Thomas	Blumenstock	TB	WP7 Lead	KIT
Sander	Niemeijer	SN	WP8 Lead	S&T

3. Agenda

1. Status of the project and progress of work packages
2. Status of deliverables
3. Status of milestones
4. NORS White Paper and follow-on.
5. NORS Final Workshop
6. Status of action items
7. AOB

4. Minutes

MDM welcomes the participants.

4.1. Status of the project and progress of work packages

4.1.1. WP1 Project coordination

All minutes of meetings can be found on the private part of the website (documents). NK will circulate the minutes of this teleconference for correction and load the final version up on the website.

4.1.2. WP2 Project outreach

The public part of the website contains publications, presentations and deliverables that are of public nature. The private part of the website contains the deliverables that are of restricted nature and working documents. To access the private part of the website, one needs an account (see bottom of the Login Form to create an account).

MDM says that she, as well as Christof Petri and Karolien Lefever, gave presentations about NORS at the MACC Open Science Conference. NORS was quite well represented at the meeting.

In the week of 17 February, MDM will present NORS at the CEOS working group on calibration and validation. She has been invited by Bojan Bojkov.

MDM mentions that we published an e-book in Adjacent Government Company (<http://www.adjacentgovernment.co.uk/wp-content/uploads/2014/01/Belgian-Institute-ebook-web.pdf>) to make publicity to the European Commission. This e-book is also available on the NORS webpages under Outreach/Brochures

4.1.3. WP3 Rapid data delivery at 4 NDACC stations

KH could not attend the teleconference and sent a brief progress report prior to the meeting.

Data inventory (5 Feb. 2014):

- Bern, MW (UBern), O3 : until end of January 2014, H2O until end of December 2013
- Izana, FTIR (KIT): CH4, CO, NO2, O3 until begin of January 2014;
UV/VIS DOAS (INTA): NO2, O3 until mid of December 2013
- Jungfraujoch, FTIR (ULg): CH4, CO, O3 until end of January 2014
UV/VIS MAXDOAS (BIRA): O3, NO2 until end of October 2013
- Ny Alesund, MW (UBremen): O3 until end of January 2014;
FTIR (UBremen): just one file for 20020318
- OHP, Lidar (CNRS): O3 until end of January 2014;
UVVIS DOAS(CNRS-LATMOS): NO2, O3 until end of January 2014
- Reunion, FTIR (BIRA): CH4, CO: just 12 files until September 2013;
UVVIS DOAS (CNRS-LATMOS): NO2, O3: until end of December 2013
- Reunion_maido, FTIR (BIRA): CH4, CO, O3, just 13 files until begin of December 2013
- Seoul, MW (UBern + local partner), H2O: until September 2013

- Xianghe, UVVIS MAXDOAS (BIRA + local partner), aerosol, NO₂ until end of December 2013

MDM asks AR to check the status of FTIR at Ny-Alesund with CP to see what the problem is.

MDM asks MP about why there are still no Lidar files at La Reunion. MP says the data are ready but they have problems to send them. They will work on this and give a time schedule for the delivery.

Progress:

- Since the last telecon, there has been progress in rapid data delivery for DOAS and Lidar (La Reunion and OHP).
- In addition DOAS at Izana is now very close to rapid data delivery.
- Seoul, MW started with data delivery (H₂O)

Tasks:

- directory names for La Reunion have not changed yet and there are almost no data from FTIR (Reunion) in RDDS
- Jungfrauoch, DOAS is a few months behind rapid delivery

BL says that the new St-Denis files have not been uploaded with the new name yet. LB mentions that the server is ready to receive them.

For discussion:

- last week there was a discussion (Ian Boyd, Mathias Palm) about adding an optional parameter (H₂O column density) to the GEOMS files (MW, O₃, Ny Alesund). KH: "I would support that data providers can put some more optional parameters into the GEOMS files, since we could avoid many discussions, save time and the data providers would be more happy. However it seems that the NDACC check-in routines do not like unregistered optional parameters, if I understood right."

This discussion point will be discussed during the report on WP4.

4.1.4. WP4 Advanced characterisation of NORS data products

AR reviews the work progress reports collected from the participants in WP4.

Task 4.1 Data Formats

IASB

- The new GEOMS UVVIS.DOAS data format has been made available on AVDC in collaboration with Ian Boyd. In this new format, separate files will be created for each of the three viewing geometries (zenith, off-axis, and direct-sun), with geometry name appearing in the file name. By this way, the number of variables with only fill values are significantly reduced with respect to the previous format in which all the variables for the three geometries were declared as mandatory. The new file format has been implemented in the BIRA-IASB automated DOAS retrieval chain and new data files for Xianghe and Jungfrauoch have been submitted to the NORS/RD database. These files are currently being tested in the NORS validation server by S & T. After the

feedback from S & T, it will be asked to all DOAS groups to implement the new file format.

Task 4.2 Information Content and Harmonization of Networks / Techniques

INTA:

- Extension of work on comparisons FTIR vs. MAX-DOAS in Izana including the effective SZA correction
- SZA correction was also included in comparisons to satellite data
- One year of comparison to SLIMCAT indicating problems in photochemical box model for some regions and time periods possibly related to the double tropopause observed in subtropical regions in summer.
- O3 comparison from Brewer, FTIR, MAX-DOAS in Izana. The report on this work should be an addendum to the already delivered deliverable D4.5.

MDM asks if there is a link between INTA's work and the photochemical correction tool developed by FH for the stratospheric NO₂. She suggests INTA and FH should coordinate about this matter.

AI-PMT9-79: AR to make INTA and FH coordinate about the photochemical correction tool.

UB:

- The different sensitivity of NDACC and TCCON regarding the FTIR CO retrieval is being investigated in more detail. For that the results of an aircraft campaign from 2010 will be included and a crosswise retrieval will be made (TCCON retrieval in the NDACC area and vice versa). Depending on the outcome, the results will be published. MDM asks about which aircraft campaign we are talking. AR is not sure.
- For MAX-DOAS, work is ongoing to link horizontal gradients and temporal evolution of NO₂ columns observed in Athens in different viewing directions to meteorology and boundary layer developments. The results will be presented at the EGU in Vienna (A. Richter)
- Using observations of shipping emissions in Neuwerk at the coast close to Bremen, a detailed comparison is under way of MAX-DOAS observations of NO₂ and SO₂ and simultaneous in-situ measurements. The observation geometry (moving point sources at a distance of about 2 km) in combination with wind driven transport and optical averaging is interesting and challenging. Results will be presented at the EGU (F. Wittrock).
- MAX-DOAS data from Nairobi and Athens have been analysed for HCHO and glyoxal and results are being compared to satellite observations. The results will be presented at EGU (L. Alvarado).
- Work on improving the characterisation and correction of liquid water absorption on MAX-DOAS measurements from ships or at coastal stations is continuing and will be presented at the EGU (E. Peters).

MPIC:

- Main achievement during the last months is the progress for a method for the radiometric calibration of MAX-DOAS instruments. The main improvement was caused by the use of vector radiative transfer model. Absolute calibration methods are important for the comparison of results of radiative transfer simulations with measurements. Eventually they might allow to use standardised thresholds for colour

indices and radiances in cloud classification algorithms. This method will be presented in the upcoming EGU conference.

ULG:

- Recent progress wrt WP4 deals with DOAS data and model results for H₂CO and comparisons with FTIR data. An abstract has been submitted to EGU2014 by Francois.

IASB:

- Continuation of the work on the development of a method for the retrieval of tropospheric NO₂ columns from daytime zenith-sky scattered sunlight observations (lead: F. Tack): A paper on this study is currently under preparation and an abstract has been submitted for a presentation at the EGU 2014/session AS3.12/GI2.10 (MAX-DOAS: Towards vertical profiles of aerosols and tropospheric trace gases).
- Continuation of the work on the development of an empirical cloud filtering method for MAX-DOAS observations based on the color index (lead: C. Gielen): This cloud screening approach is currently being implemented in the BIRA-IASB automated DOAS retrieval chain. A paper on this study is currently under preparation and an abstract has been submitted for a presentation at the EGU 2014/session AS3.12/GI2.10 (MAX-DOAS: Towards vertical profiles of aerosols and tropospheric trace gases).
- MAX-DOAS retrieval of tropospheric NO₂ at the Jungfraujoch station (lead: F. Hendrick): Preliminary comparison results with in-situ measurements show a good agreement between both data sets (work done in collaboration with S. Henne from EMPA; also in relation with WP5).
- MAX-DOAS retrieval of tropospheric H₂CO at the Jungfraujoch station (lead: F. Hendrick): Comparisons with FTIR and model results are currently under progress (work done in collaboration with B. Franco and E. Mahieu from ULg). An abstract on this study has been submitted for a presentation at the EGU 2014/session AS3.12/GI2.10 (MAX-DOAS: Towards vertical profiles of aerosols and tropospheric trace gases).
- The BIRA paper on MAX-DOAS observations of HONO and NO₂ at the Xianghe station has been published in ACP (Hendrick et al., Atmos. Chem. Phys., 14, 765-781, 2014).
- Effort has been put on the retrieval of SO₂ from MAX-DOAS observations at the Xianghe station. We plan to include SO₂ in the BIRA-IASB automated DOAS retrieval chain although it is not officially a NORS molecule. A paper on this study has been recently submitted to ACPD (Wang et al., 2014) and an abstract has been submitted for a presentation at the EGU 2014/session AS3.12/GI2.10 (MAX-DOAS: Towards vertical profiles of aerosols and tropospheric trace gases).

Task 4.4 Comparison to Satellite Observations

INTA:

- Working on D4.7, expected draft submission in March.

MDM says that there has been some work on the UV-vis template. MDM, BL and SN attended a telecon with the Geoms Meta Data Board. They have discussed a few changes in the intercomparison algorithms. MDM will send the minutes to the NORS consortium. MDM

asks when we want to implement these changes, knowing that the re-analysis deliverable is coming up.

BL says the deadline is end of February. The changes will take more time. We are submitting data now that could not be compliant with the latest template in June. All the templates should contain layer boundaries for the regridding and partial column of airmass profile. The regridding is made this way that we have conservation of number of particles.

AR agrees that it is not realistic to apply the template changes now, but says it should definitely be done within this project.

AI-PMT9-80: MDM to send the minutes of the GEOMS Meta Data Board telecon and request feedback.

BL mentions that even when a new template is introduced, data can still be delivered in a previous template. He summarizes that we will apply a new template at the end of the project and that BIRA will follow this new template, so that there will be at least some data in the new template.

FH, BL and MDM discuss the opportunity of including the airmass profile calculation in the retrieval software. BL and MDM are in favor, for user-friendliness' sake, to provide the best information possible in the files themselves. FH fears that the more (possibly redundant) information we provide, the higher the risk of provoking internal inconsistencies will be.

AI-PMT9-81: BL to send around the algorithm document to discuss the opportunity to provide the airmass profile calculation in the files.

4.1.5. WP5 Integration of tropospheric products

SH says that he is working on the MAXDOAS comparisons for NO₂ at Jungfraujoch. FH has provided MAXDOAS data for the years 2010 and 2011. The data contain the horizontal viewing distance which is used in the transport simulations to obtain the representativeness of the MAXDOAS observations. The batch processing is now starting. INTA has not provided data from Izana yet, but promised to do so before the end of the month. FH will present some of this work at EGU.

4.1.6. WP6 Integration of ozone products

MP summarizes the work progress in WP6.

Since December, bias corrections between the instruments and the measurements errors have been implemented in the algorithm.

There are now two programmes: one for Izana, La Réunion and Ny-Alesund and another one for the Alpine station.

The first tests have been made for the Alpine station because of its complexity. The first results show that the parameters (nb of nodes and iterations) used in the training phase of the neural network analysis need to be adjusted. Tests are still undergoing, but in good progress.

At the end of this month MP will request data from Ny-Alesund.

4.1.7. WP7 Reanalysis of ground-based time series back to 2003

FH represents TB who could not attend the telecon.

Microwave (NyAlesund + Bern): ok, data are available

Lidar: pending

DOAS:

JJoch ok, data available

NyA: no feedback until now

The reanalysis of Bremen DOAS is underway, but might not meet the deadline.

FTIR:

Ny-Alesund: according to Mathias Palm, there is a delay due to a computer hardware problem (but no request has been raised during this telecon to extend deadline, so we assume that this is under preparation)

JFJ: nearly finalized, in progress, will be closed in time. EM comments that he still has to upload the methane time series and that this will be done before the end of the week.

In table form:

Station	MWR	Lidar	DOAS	FTIR
NyAle	ok	NA	?	?
Alps	ok	?	ok	ok
Izana	NA	NA	ok?	ok
Reunion	NA	NA	NA	ok

For the LIDAR instruments:

O3 Lidar data at OHP have been reprocessed from 1985 until now. The data will be sent to the NDACC database before the end of February.

There might be some delay for Reunion data.

For the SAOZ instruments

Whole datasets of stratospheric ozone and NO2 data at OHP and Reunion since 2003 were processed in version V3 in January 2014 and will be stored with the new UVVIS template in the NORS/NDACC consolidated database in March 2014.

BL comments that he will meet the deadline (end of February) for the La Reunion FTIR data. He has some delay because the uncertainties in the ozone profiles are much higher than what he found in the literature.

MDM asks LB if the server is ready to deal with the reanalysed time series once they become available as for the validation with MACC data. BL comments that it's the same data, but consolidated instead of rapid data delivery. The data cover several years. The problem is that there are no MACC data before February 2013. BL says that we have more MACC data at BIRA than what has been sent to S&T. This should thus not be an issue anymore once the server has moved to BIRA. LB says there could be some performance issues, because the MACC data are so large. It could take a lot of time to generate the reports.

4.1.8. WP8 Web-based server for validation of GAS products using NORS data products

LB reports about the progress of work in WP8. Lots of progress has been made with regards to the issues reported in the feedback report. The transition from test status to live status went fine. Very positive feedback was received. The switch from 1 UV-Vis to 2 instruments went fine. Many more reports are generated, among others the NO₂ reports. The known issues page has shrunk considerably. Only a few major items remain. Unfortunately some of them are really tricky. During the Christmas holiday there have been problems in the implementation of the metadata catalog updates. Some reports could not be generated because of this.

The server is not yet ready and solid enough to be moved to BIRA. LB says it should be a matter of weeks, but could be more.

BL comments that the versioning issue (double files) has been discussed at the NDACC GEOMS format meeting. LB says that the algorithm now handles this issue correctly. At this meeting it was also decided to share the S&T algorithm on the server site, so that in case of conflicting situations, the data submitters would be contacted to solve the issues.

MDM says that the NORS server is now live. Henk Eskes from the MACC validation sub-project has been asked to add a link on the MACC pages.

LB comments that since the server went live, there have been more requests for VIP user accounts.

AI-PMT9-82: S&T to share the algorithm that deals with versioning issue.

4.1.9. WP9 Validation of GAS products for O₃, NO₂, CO, CH₄, H₂CO, aerosol

EM says they need the server and the data to be fully operational to start this work package. Up to now they have looked at the reports for their usefulness. EM suggests solving the remaining issues specie by specie. He says CO could be a good option since we are on time with it. LB agrees to prioritize CO.

MDM says that NORS has been visible in the last two MACC validation reports for ozone validation. It would be nice to submit something for another molecule in the report of May/June.

4.1.10. WP10 Capacity building and sustainability

KIT:

Addis:

- Dr. Gizaw Mengistu Tsidu (Physics Dept of Addis Ababa Univ.) has got a Georg Forster stipendium from Humboldt-Foundation and is visiting us this year.
- Data analysis of Addis FTIR spectra is conducted right now.
- Bruker 125M is in operation, but N2 liquifier at Addis Univ. is broken at the moment. Repair of this machine (which belongs to the Chemistry Dept.) will be done soon.

Mexico:

- FTIR spectrometer (Bruker 125HR) in Alzomoni, close to Mexico City, is in operation. Data analysis is ongoing.
- NDACC certification is in preparation and will be conducted this year.
- Prof. Michel Grutter from UNAM (University Mexico City) is going to attend EGU and the annual meeting NDACC/IRWG meeting this year.

Tomsk:

- At Tomsk a Bruker 125M is operated. Originally dedicated for lab spectroscopy, a solar tracker has been added and atmospheric measurements have been conducted since last year.
- A co-worker of Prof. Leonid Sinitza, University Tomsk, visited us end of last year.
- Frank provided the latest version of PROFFIT to analyse Tomsk spectra.

IAP-Bern:

- The microwave radiometers MIAWARA-C and WIRA have been transported in September 2013 to La Reunion and measure water vapor and wind in the middle atmosphere
- The ozone microwave radiometer GROMOS-C started in January 2014 a measurement campaign on Jungfraujoch
- Ansgar Schanz (IAP) works on intercomparison of NORS, MACC and WACCM data of stratospheric ozone. Simon Chabrillat (BIRA) gives advices concerning MACC. Some of the results are shown at Day of IAP (14 Feb. 2014) at University of Bern.

MPIC:

Currently we are working with our Chinese partners on the following topics:

- retrieval of SO₂ DSCDs
- retrieval of HCHO DSCDs
- preparing an automatic analysis scheme using the zenith measurements of individual elevation sequences

These improvements will be applied to the MAX-DOAS measurements at Beijing from 2008 to present.

CNRS:

- Retrieval for stratospheric O₃ and NO₂ SAOZ data in version V3 is ready for RT and consolidated data of Rio Gallegos station in Argentina. The automatic delivery with the new UVVIS template HDF format will be ready in March.

4.1.11. WP11 Project management

Extension of the project:

The four months extension of the project (without additional budget) that we asked for has been accepted. The official end of the project is now 30 November 2014. All deliverables,

milestones and final reporting that were due at M33 are now due at M37. BUT nothing changes for the deliverables and milestones that were due between now and M33.

Electronic only submission:

We took the opportunity of this amendment to choose for the possibility to use electronic-only signature and transmission of the financial statements (Form C) and the electronic-only transmission of the certificates on financial statements and certificates on the methodology (forms D and E), abolishing thus the parallel submission of paper forms. This simplification measure has been proposed by the Commission and the REA to reduce the administrative burden.

Since this option concerns the consortium as a whole, this means that all beneficiaries need to switch to the electronic-only process and that all of them have to appoint a LEAR, which is anyway already the case for most of, if not all, the NORS partners. A guidance note "FP7 Quick Information letter on the electronic-only signature and transmission of Form C and electronic-only transmission of certificates (Forms D and E)" will be sent by email. It provides an overall view of the new reporting modality and includes a complete list of frequently asked questions on this matter.

MDM has sent an email recently about the follow-on of NORS in CAS. MDM thinks that even if there is no funded continuation for the whole consortium in between now and the operational phase of CAS, it's very positive that NORS has been included in MACC-III via BIRA. MDM insists that she will continue lobbying for the continuation of NORS activities. AR comments that within this project there is no funding to produce data, only to integrate, debug, maintain, etc. MDM says it was impossible to get more funding.

4.2. Status of deliverables

4.2.1. D8.4 Ready-to-use Validation Server (M21 > M24 > M25)

submitted

4.2.2. D7.1 Re-analysed time series (M27 > M28)

One month of delay has been requested and accepted for the delivery of D7.1. No additional delay is needed.

4.2.3. D4.7 Consistency with satellite data (M30)

A draft will be circulated between the partners in March.

4.2.4. D6.2 Integrated Ozone profile data (M30)

MP says she's not sure if she will get the Reunion data in time. At the next telecon we should discuss the eventual need of a delay.

4.2.5. D6.3 Integrated Ozone tropo- and stratospheric column data (M30)

Same issue.

4.2.6. Other deliverables due at the end of the project (M33>M37)

D2.3 Publications / Communications (NK)

D2.4 Final NORS Workshop & report (MDM/NK)

- D3.3 Final documentation of data delivery system (KH)
- D5.3 Cross comparisons report (SH)
- D9.2 Assessment of GAS products (EM)
- D10.1 NDACC Capacity report (MDM)
- D10.2 NDACC status report (MDM)
- D10.3 NORS capacity and sustainability (MDM)
- D10.4 NORS as an in-situ GAS component (MDM)

4.3. Status of milestones

One month of delay has been requested and accepted for the next milestone (M27=January -> M28=February 2014) which is linked to D7.1. At the end of February we should report about:

- MS18 Readiness for validation of the GAS reanalyses (WP7, KIT)

4.4. NORS meetings schedule

Month	Meeting Name	Venue	Date	Time
M2	Kick Off Meeting	BIRA-IASB	Wednesday, 14 December 2011	9:30 AM
M4	PMT Teleconference 1		Thursday, 9 February 2012	10:00 AM
M6	SC Teleconference 1		Thursday, 12 April 2012	10:00 AM
M8	PMT Teleconference 2		Tuesday, 26 June 2012	2:00 PM
M11	PMT Teleconference 3		Thursday, 13 September 2012	10:00 AM
M13	First Progress Review/Meeting	BIRA-IASB	Tuesday 20 & Wednesday 21 November 2012	
M14	PMT Teleconference 4		Thursday, 13 December 2012	10:00 AM
M16	PMT Teleconference 5		Thursday, 26 February 2013	10:00 AM
M18	SC Teleconference 2		Thursday, 18 April 2013	10:00 AM
M20	PMT Teleconference 6		Thursday, 20 June 2013	2:00 PM
M22	PMT Teleconference 7		20 August 2013	3:00 PM
M24	Second Progress Review/Meeting	BIRA-IASB	Thursday 17 & Friday 18 October 2013	9:00 AM
M26	PMT Teleconference 8		Thursday, 12 December 2013	10:00 AM
M28	PMT Teleconference 9		Thursday, 13 February 2014	10:00 AM
M30	SC Teleconference 3		Monday, 14 April 2014	10:00 AM
M32	PMT Teleconference 10		Thursday, 12 June 2014 (TBC)	10:00 AM
M34	PMT Teleconference 11		Thursday, 4 September 2014 (TBC)	10:00 AM
M37	Final Project Review/Meeting/Workshop	BIRA-IASB	November 2014 (TBD)	9:00 AM

NORS final Workshop

The NORS final WS will be held in concert with the 2014 NDACC Steering Committee meeting in the week of Nov. 3 in Brussels. We will benefit of the facilities of Belspo (Belgian Science Policy), located quite centrally in Brussels and easily accessible from the main rail stations and airport. To broaden the interest, we intend to make it a common NORS, NDACC and GAW workshop. We also want to link with ACTRIS through a session on “Aerosols, Clouds and Trace Gases”

Draft agenda with suggestions for key-note speakers:

NORS/NDACC/GAW Workshop on ground-based data for the Copernicus Atmosphere Service

Sessions

1. Satellite calibration and validation
Keynote talk by ESA (B. Bojkov ?)
2. Validation of Copernicus Atmosphere Service products
Keynote talk by H. Eskes
3. Decadal time series for trend and climate studies
Keynote talk by J.-P. Van Ypersele
4. Ozone and the Montreal Protocol
Keynote talk by Wolfgang Steinbrecht / N. Harris / B. Hassler
5. Aerosols, Clouds and Trace Gases
Keynote talks by Paolo Laj or G. Pappalardo and M. Schulz (GAW reactive gases)

Timing: plus/minus 20 talks per day
Plus/minus 10 papers / session ⇔ 50 papers ⇔ 2.5 days
No posters

Suggestion for Schedule:

start Day 1 afternoon, Day 2 am + pm + Dinner, Day 3 am;
Day 3 pm: NORS Steering Committee + project review

Comments from the team:

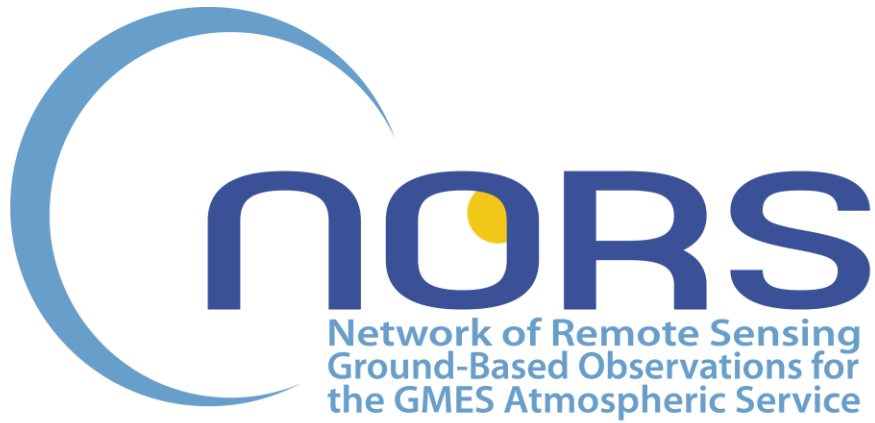
KH suggests as a keynote speaker for the NORS workshop Ansgar Schanz (IAP-Bern) “The daily cycle in stratospheric ozone derived from NORS observations, MACC reanalysis and WACCM simulation data”. He has a lot of new results about this topic which has a large impact on reliable trend detection in long-term ozone series. It would fit in the session “Decadal time series for trend and climate studies”. MDM wants to link with IPCC and invite Jean-Pascal van Ypersele. EM agrees and comments that NDACC lacks visibility in IPCC.

The next teleconference will be one with the Steering Committee. NK will send a doodle to all and the SC.

4.5. Status of action items

AI #	Description	Assigned to	Status
AI-PMT6-55	AR to check the reporting about the uncertainties in the files.	Andreas Richter	Open
AI-PMT9-79	AR to make INTA and FH coordinate about the photochemical correction tool.	Andreas Richter	Open
AI-PMT9-80	MDM to send the minutes of the GEOMS Meta Data Board telecon and request feedback.	Martine De Mazière	Open
AI-PMT9-81	BL to send around the algorithm document to discuss the opportunity to provide the airmass profile calculation in the files.	Bavo Langerock	Open
AI-PMT9-82	S&T to share the algorithm that deals with versioning	Leo	Open

AI #	Description	Assigned to	Status
	issue	Breebaert	



SC Teleconference #3

14 April 2014

Meeting Minutes

1. Introduction

The third SC Meeting was organized in the form of a teleconference on Monday the 14th of April 2014.

The teleconference started at 10h00 and ended at 11h30.

2. Participants

Name		Short name	Role in project	Institute
Martine	De Mazière	MDM	Project Coordinator	BIRA-IASB
Nathalie	Kalb	NK	Project Manager	BIRA-IASB
Bavo	Langerock	BL	Scientist	BIRA-IASB
Klemens	Hocke	KH	WP3 Lead	UBern
Andreas	Richter	AR	WP4 Lead	UBremen
Maud	Pastel	MP	Collaborator in WP6	CNRS
Thomas	Blumenstock	TB	WP7 Lead	KIT
Sander	Niemeijer	SN	WP8 Lead	S&T
Leo	Breebaart	LB	Collaborator in WP8	S&T
Geir	Braathen	GB	Steering Committee	WMO
Oksana	Tarasova	OT	Steering Committee	WMO/GAW
Bojan	Bojkov	BB	Steering Committee	ESA
Jean-Christopher	Lambert	JCL	Steering Committee	BIRA-IASB

Excused:

Name		Short name	Role in project	Institute
Stephan	Henne	SH	WP5 Lead	EMPA
Sophie	Godin-Beckmann	SGB	WP6 Lead	CNRS
Emmanuel	Mahieu	EM	WP9 Lead	ULg
Mette	Müller	HSA	Steering Committee	EEA
Richard	Engelen	RE	Steering Committee	ECMWF/MACC-II
Vincent-Henri	Peuch	VHP	Steering Committee	CNRS

3. Agenda

1. Status of the project and progress of work packages
2. Status of deliverables
3. NORS follow-on
4. NORS Final Workshop
5. Status of action items
6. Interactions between NORS, MACC-II, ESA, GAW and NDACC & Feedback/suggestions from SC members

7. AOB

4. Minutes

MDM welcomes the participants.

4.1. Status of the project and progress of work packages

4.1.1. WP1 Project coordination

All minutes of meetings can be found on the private part of the website (documents). NK will circulate the minutes of this teleconference for correction and load the final version up on the website.

MDM informs the Steering Committee that a four months extension of the project (without additional budget) has been granted to bridge part of the gap between the end of NORS and the start of CAS. The official end of the project is now 30 November 2014. The final workshop will thus take place in November, which is a much more suitable period than the summer period.

4.1.2. WP2 Project outreach

The public part of the website contains publications, presentations and deliverables that are of public nature. The private part of the website contains the deliverables that are of restricted nature and working documents. To access the private part of the website, one needs an account (see bottom of the Login Form to create an account).

Many NORS partners will present NORS material at EGU, especially from WP4. They will be posted on the NORS webpages.

AI-SC3-82: All to send NK their presentations at EGU about NORS

AR mentions that the session at EGU dealing with profiling from UV Vis measurements is almost exclusively about NORS. It is chaired by Stephan Beirle from MPIC and Folkard Wittrock from UBremen.

4.1.3. WP3 Rapid data delivery at 4 NDACC stations

KH says that the data center works well. He would like to make a software in order to visualise who is submitting which data. The goal is to have a good overview on the status of the directory. MDM suggests contacting Jeanette Wild (manager of the NDACC database) to see if she doesn't already have such a tool. GB confirms that she certainly already has such software. LB says that a recursive directory listing with the necessary information is automatically generated on the ftp site of NDACC itself ('ls -r' command). He also adds that, as a VIP user of the validation server, one can see the list of NDACC files that the server knows about, which is basically everything that we generate reports for. This is a nicer interface than the ftp files and allows to quickly drill down to a certain month to see which files are being submitted in the context of NORS (GEOMS template, supported instruments, etc.).

KH estimates that we have achieved about 80% of data submission.

4.1.4. WP4 Advanced characterisation of NORS data products

Data Formats

While the basic definition of the GEOMS data format was done at project start, further refinements were needed to include additional information such as on clouds and to optimise the usability in the validation server. More additions to the format are currently under discussion to account for stations experiencing strongly varying solar zenith angle ranges which is so far not foreseen for UV/Vis instruments and adding information on the spatial volume for which the measurements are representative.

MDM comments that the GEOMS format was adopted in NORS. Along the project, we realise that some issues are missing in the data files or are not well reported. We are thus still improving the formats. This is quite inconvenient for the users. But it improves the usefulness and the consistency in the NDACC database. AR adds that NORS is a demonstration.

TB comments that he doesn't fully agree with these changes. He thinks we should limit these to once every 2-3 years. MDM understands his concerns, but says that some files cannot be used without these changes and we should come to a compromise.

Information Content and Harmonization of Networks / Techniques

The spatial representativeness of NORS observations has been evaluated in detail for all measurement techniques and summarised in D4.4. In addition to the vertical resolution issue which has been dealt with in many previous studies, the horizontal aspect was also taken into consideration. One relevant aspect of this is the change of solar zenith angle along the observational light path which is different for the individual observation techniques (occultation and scattered light geometry). By taking this difference into account, comparisons between MAX-DOAS and FTIR NO₂ columns in Izana could be improved.

Comparisons between measurements of the same constituent using different NORS techniques have been continued, focussing on NO₂ (MAX-DOAS and FTIR), HCHO (MAX-DOAS and FTIR) and O₃ (LIDAR, sonde, MW, FTIR). Good consistency can be achieved but only if appropriate a priori profiles are used.

Comparison between CO FTIR retrievals using different settings and spectral regions have been performed and summarised in D 4.6.

Work on better characterisation of clouds in MAX-DOAS observations continued in several groups, aiming at automated classification and flagging as well as appropriate correction in profiling retrievals. It is planned to include this information in the standard data products.

Work on retrievals of tropospheric NO₂ columns from zenith-sky observations continued, as well as retrievals of tropospheric SO₂ from MAX-DOAS observations in China.

Comparison to Satellite Observations

A literature review and summary of all existing information on satellite data consistency with NDACC (NORS) data has been compiled and is currently being finalised. It will be submitted by the end of April as D4.7.

In addition, several groups perform comparisons between various ground-based NORS data sets and satellite products (O₃, NO₂, HCHO, and SO₂).

MDM asks if the SLIMCAT stratospheric NO₂ model problem has an impact on the tool from FH for the calculation of the diurnal validation. AR is not sure but he thinks it only affects certain latitudes and seasons.

4.1.5. WP5 Integration of tropospheric products

MDM summarizes the report received from SH prior to the meeting.

4.1.5.1. Summary

All tasks in WP5 are progressing as envisaged, given the extension of the project. Final results of the WP (comparison of tropospheric remote sensing data with ground based in-situ observations) have been obtained for three years of FTIR observations at Izana and Jungfraujoch and for two years of MAXDOAS NO₂ observations at Jungfraujoch. The results in general confirm the high quality of the ground based remote sensing instruments when comparing lower tropospheric mean values versus surface in-situ observations. The comparability is increased when instead of in-situ observations, extrapolated in-situ observations, which take the given sampling volumes into account, are compared to the remote sensing data sets. To demonstrate the feasibility of such an in-situ extrapolation was one of the main goals of this WP. Uncertainties and some open questions remain in terms of the remotely sensed tropospheric profile shapes. These will be discussed in more detail in the final report. Currently the remaining transport simulations for MAXDOAS observations at Izana and the subsequent comparisons are completed and work on the final cross comparison report (D5.3) has commenced.

4.1.5.2. T5.2 Emission sensitivities

Emission source sensitivities are required by the surface data extrapolation method to compare different sampling volumes (in-situ, remote sensing sub-columns). Sensitivities are calculated by backward Lagrangian dispersion simulations. These have been completed previously for 3 years of FTIR comparison at Jungfraujoch and Izana.

Since the last progress meeting source sensitivities were also completed for 2 years of MAXDOAS NO₂ observations at Jungfraujoch. These simulations take into account the approximated sampling volume of the MAXDOAS instrument as specified by the horizontal viewing distance obtained from the geometric approach.

Simulations for MAXDOAS O₃ and NO₂ observations at Izana are currently ongoing, after the observational data were delivered by INTA at the beginning of March.

4.1.5.3. T5.2 Extrapolation of surface in-situ data

As for the source sensitivities this task was previously completed for 3 years of FTIR observations at Jungfraujoch and Izana and for 2 years of MAXDOAS NO₂ observations at Jungfraujoch. The extra-polation method (as described in D5.1) had to be modified to accommodate the specific requirements for NO₂ simulations. In contrast to previously simulated species (CO, CH₄ and O₃) NO₂ could not simply be treated as a passive tracer, but NO₂ lifetimes and simplified NO/NO₂/O₃ chemistry had to be considered to achieve reasonable model performance. However, compared with the transport model performance for the FTIR species the performance for NO₂ is relatively poor, but does not show a significant bias (Figure 1). The extrapolation of the surface in-situ observations adjusts the simulated NO₂ profiles such that these can serve as a reference for the MAXDOAS observations.

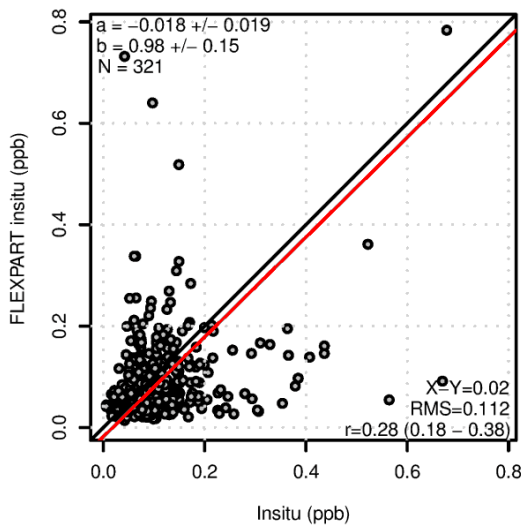


Figure 1: Simulated vs. observed in-situ NO₂ mole fractions at Jungfraujoch for the year 2011.

Extrapolation of in-situ data for Izana MAXDOAS observations will commence once source sensitivity calculations are complete. The task should be completed by the end of May 2014.

4.1.5.4. T5.4 Validation

The validation of remote sensing tropospheric products versus the extrapolated in-situ data sets has been completed for the FTIR observations. These results were already presented at the last progress meeting.

For MAXDOAS NO₂ observations from Jungfraujoch first validation/inter-comparison results are now available. While a direct comparison of the mole fractions observed in the lowest MAXDOAS sub-column and by the in-situ monitor show a clear underestimation of the NO₂ mole fractions by the MAXDOAS (Figure 2 left), the comparison between the MAXDOAS observations and the extrapolated in-situ profiles correspond much better. Especially the large underestimation was removed. This behaviour can be explained by the fact that the Jungfraujoch site is often locally influenced by transport events from the planetary boundary layer, while the MAXDOAS signal presents an average over a much larger volume extending up to 50 km towards the Swiss Plateau and, hence, outside the Alpine area where thermally-induced uplift of pollutants may occur. Therefore, the MAXDOAS sampling volume is more representative for the lower free troposphere. The dedicated transport simulations for the different sampling volumes reproduce this difference and, as a consequence, the mole fractions in the extrapolated in-situ profiles, which are specific for the MAXDOAS sampling volumes, are generally smaller than the in-situ observations. The final comparison of the MAXDOAS NO₂ product underlines the very good performance of the MAXDOAS in terms of absolute mole fractions. This is even more remarkable since the instrument is operated in an environment with generally very small NO₂ mole fractions (<0.2 ppb) often close to the detection limits.

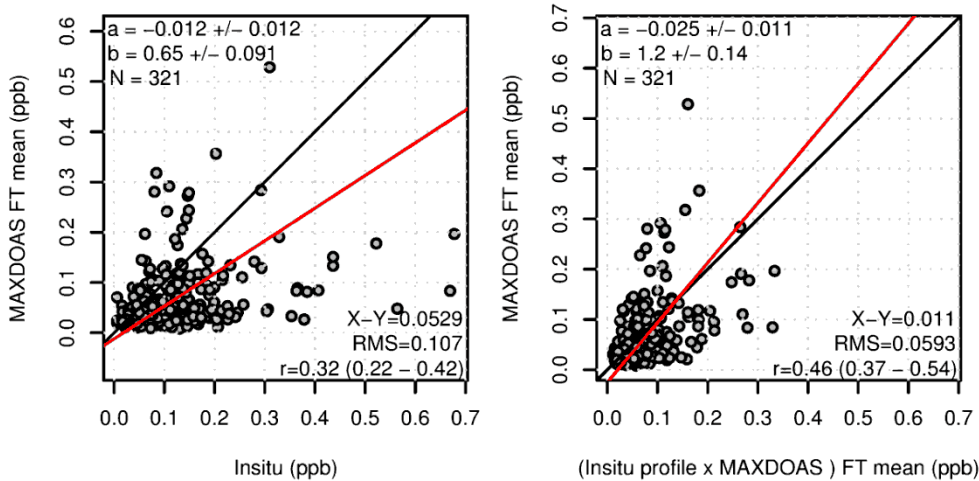


Figure 2: Inter-comparison of NO₂ mole fractions as observed in the lowest MAXDOAS sub-column (y-axis) versus in-situ observations (left) and extrapolated in-situ profiles for the MAXDOAS sampling volume (right).

4.1.6. WP6 Integration of ozone products

The main objective of this work package is to develop a methodology for integrating ground-based data sources to provide consistent ozone vertical distribution time series as well as tropospheric and stratospheric ozone columns at 4 NDACC stations (NyAlesund, Alpine station (OHP), Izaña, La Réunion). The new database is due at the end of April 2014.

The construction of integrated O₃ profiles at the 4 NDACC stations is based on the assumption that O₃ bias between all instruments at each station is linked to instrumental bias except for the Alpine stations where external parameters describing differences in meteorological conditions is required (equivalent latitude)

The database will therefore be built as follow:

For Izaña, La Réunion NyAlesund:

$$O_{3 \text{ new database}}(z) = \sum W_{\text{error}}(z) * A(z) * O_{3 \text{ FTIR,MW,LIDAR}}(z)$$

For the Alpine station:

$$O_{3 \text{ new database}}(z) = \sum (W_{\text{equi.}}(z) * W_{\text{error}}(z) * A(z)) * O_{3 \text{ FTIR,MW,LIDAR}}(z)$$

Where $W_{\text{equi.}}$ stands for the weights given by the neural network analysis, W_{error} the weight corresponding to the measurement error and A the instrument bias correction.

Status for each station:

Alpine stations: Equivalent latitude theta levels used were not high enough. We are currently running our model to retrieve additional levels.

Ny Alesund: For the stratosphere: Comparisons (profiles, column) between FTIR –MW and LIDAR – MW have been done. (There is no coincident data between FTIR and LIDAR measurements). For the troposphere, comparisons (profiles, column) between FTIR -O₃

sondes and LIDAR-O3 sondes have been made. The new database will be available soon. A new MW data will be released by the end of April.

Izaña: Since only the FTIR and the O3 sondes are available, the integration will be simpler. The study should start by the end of the week.

La Reunion: This station is the last of the study. The study will begin during mid-May. The validation of the database will occur during the O3 campaign in June.

In conclusion: Ny-Alesund and Izana station should be finished by the end of April, in any case by the second week of May, should we receive the new MW data. Alpine station will follow shortly after that. La Reunion data will be delivered by the end of June.

MP asks if she should deliver the new product in HDF format. MDM says it would be nice but there is no specific template for this product because it's a merged product. BB says that Ian Boyd will work for ESA for the next year exactly on this issue of supporting NDACC and templates. He suggests MP to contact him. He will be very happy to help her formulating a template for the data submission.

OT says that it seems that there are different methodologies for all stations. MP says that for Ny-Alesund, Izaña and La Reunion it's the same methodology (all instruments are co-located), but for the Alpine station she uses a neural network approach to combine the data from the different instruments that are located at different sites (JFJ, Bern and OHP). OT asks MP if she intends to prepare a guideline on this approach. MP confirms that this is her intention. OT is pleased to hear this.

4.1.7. WP7 Reanalysis of ground-based time series back to 2003

The objective of WP 7 is the re-analysis of ground-based remote sensing data of the four NDACC pilot stations back to 2003. These four stations are Ny-Alesund in the Arctic, Jungfraujoch, OHP and Bern as Alpine sites, Izana (Tenerife Island) in the sub-tropics, and La Reunion in the southern hemisphere. Data from different instruments like DOAS, FTIR, LIDAR and millimetre wave radiometers (MWR) are included as far as available.

The spectra of these NDACC instruments have been reanalysed according to the guidelines as outlined in MS 12: 'Guidelines for re-analysis of time series'. This document was submitted end of June 2013. Following this, the data have been reprocessed. Afterwards the resulting data have been submitted and archived in the NDACC data base. These data is available at the NDACC data archive via <ftp://ftp.cpc.ncep.noaa.gov/ndacc/station/>.

KH comments on the MW data. The Bern data are not consolidated yet¹. It's now in rapid delivery status. It could be used for trend analysis, but he's not confident on submitting to NDACC 'consolidated' yet.

TB comments that the Ny-Alesund MW data are also in rapid delivery status and that they will be submitted in standard mode soon.

¹ There is a jump in the data in 2009 related to a change of spectrometer

4.1.8. WP8 Web-based server for validation of GAS products using NORS data products

After a period of investigating and addressing the feature requests and issues collected during the validation server test phase in deliverable 9.1, on 20 Dec 2013 the NORS validation server went live.

The move from test to ready-to-use server included opening the site to the general Internet (excluding the password-protected VIP-only areas involving e.g. the experimental MACC models); publicising the site's URL; the inclusion of a more complete web site with general information about the validation; and presenting a collection of monthly intercomparison reports going back to February 2013.

A smaller number of issues and features were not yet addressed in the first live release, and these have been worked on in the period since then.

Specifically, for the last two months progress in this work package has involved:

- Improved support for correct ingestion of NORS metadata in the face of NDACC archive updates and deletions, and the subsequent required report regeneration.
- Adding support in the backend for "multiple model comparison" reporting (Taylor plots and time series reporting components)
- Investigating support for MACC models with reanalysis data (fzpr)

In addition, as the server saw more and more use (with e.g. data from new NDACC locations automatically or on request being picked up and added to the system), new issues not covered by 9.1 were identified, discussed, and mostly resolved. Work done here included:

- Discussion and handling of new versions of the UVVIS.DOAS and FTIR GEOMS templates, and subsequent investigation and quality-checking of the generated reports.
- Discussion and handling of intercomparisons with column data only but no profiles (such as now e.g. required by UVVIS.DOAS.ZENITH)
- Identified and reported issues with NDACC data for a number of stations and products.
- Discussion and handling of new intercomparisons not available before (e.g. FTIR.NO2, possibly MWR.H2O)
- Bug fixes and enhancements to web site and back end tool chain.

Remaining issues still outstanding or currently in progress are:

- Resolution of current discussion on algorithmics for zsurf.
- Support for custom user-generated reports.
- Integrating the multiple-model reports into the server and the 'report chain' itself.
- Installation of the server at BIRA.

AI-SC3-83: BIRA-IASB and S&T to plan a telecon about the moving of the server to BIRA.

MDM adds that Henk Eskes from MACC has implemented a link to the NORS server on the MACC webpages.

BB asks to hang on after the telecon with LB and MDM to discuss the implementation of the metadata templates.

4.1.9. WP9 Validation of GAS products for O3, NO2, CO, CH4, H2CO, aerosol

BL summarizes the report received from EM prior to the meeting.

Overall, the WP9 activities are behind schedule. Some issues with the NVS have been identified over the last weeks, in particular with validation report generation. In some instances, only subsets of the archives available in the data base were used to generate validation reports. This was due to metadata on updated or deleted NDACC files not percolating correctly through the system. This has been rapidly and efficiently fixed by S&T, and recent updates to the NDACC database (addition of consolidated or reanalyzed data) have correctly been accounted for by the validation server, demonstrating that this issue is now solved.

The NVS tool has therefore been used to perform validation exercises dealing with stratospheric ozone, and involving FTIR measurements at St Denis (21°S) and Jungfraujoch (47°N), for the period December 2012-December 2013, i.e. including a complete seasonal cycle. MWR measurements were also compared with MACC, for an Arctic station (Ny Alesund) and above Bern. All these results have been included in the last MACC-II validation report (issue nr 9, March 2014; see e.g. Fig. S4 on page 7).

Continuous upload of RDD files (WP3) and recent addition of the reanalyzed time series (WP7) will allow extending the comparisons. Carbon monoxide will likely be the next target of NVS validation investigations.

For the next three-monthly MACC-II validation report, BL intends to use UV-Vis data for aerosol and NO₂. MDM says that at the last telecon we discussed the CO from FTIR; that could also be an option for the next MACC validation report. MDM suggests BL to contact HE.

4.1.10. WP10 Capacity building and sustainability

BIRA-IASB:

We are involved in WP10 with two MAX-DOAS instruments:

- Xianghe, China: the complete time-series of NO₂, HCHO, and aerosols data covering the March 2010-December 2013 have been re-analysed and submitted to the NORS database, as part of WP7. Due to instrumental issues, the instrument is working in zenith mode only since January 2014. Problems will be fixed by beginning of May.
- Bujumbura, Burundi: instrument (including data transfer to BIRA) is operational since end of November 2013. We are still working on the optimisation of the retrieval settings for NO₂, HCHO, and aerosols. Our plan is to submit data covering the November 2013-May 2014 period to the NORS database by the end of the project. We would like to stress the good collaboration with the University of Burundi regarding the maintenance of the instrument.

KIT:

- Addis: Dr. Gizaw Mengistu Tsidu (Physics Dept of Addis Ababa Univ.) has got a Georg Forster stipendium from Humboldt-Foundation and is visiting us this year. Data analysis of Addis FTIR spectra is ongoing.
- Mexico: FTIR spectrometer (Bruker 125HR) in Altzomoni, close to Mexico City, is in operation. Data analysis is ongoing. NDACC certification is in preparation and will be conducted this year. Michel Grutter from UNAM (University Mexico City) is going to attend EGU and his co-worker Wolfgang Stremme is going to attend the annual NDACC/IRWG meeting this year.
- Tomsk: At Tomsk a Bruker 125M is in operation. Originally dedicated for lab spectroscopy, it is now operated in part time for lab and for atmospheric measurements. A co-worker of Prof. Leonid Sinitsa, University Tomsk, visited us end of last year. Frank Hase provided the latest version of PROFFIT to analyse Tomsk's spectra.

INTA:

IN WP 10, INTA is working within the framework of NORS, in the exporting of expertise to the new NDACC station of Belgrano.

The first period of measurement in 2014 started in January at Belgrano station. Both MAXDOAS spectrometers, UV and Vis, are in proper operation. NDACC recommendations have been applied to NORS products (DOAS stratospheric column of ozone and NO₂), although we are still waiting to be officially included in NDACC UVVIS Working Group.

Work concerning the Belgrano measurements during 2013 will be presented in the next EGU meeting.

IAP-Bern:

Seoul: A small MW-radiometer for stratospheric ozone profiling has been operated from December 2013 to the end of March 2014 at JFJ. It's a portable instrument and doesn't need liquid nitrogen for calibration.

MPIC:

There are no new activities since the last report. We are still working with our Chinese colleagues at the following topics:

- retrieval of SO₂ DSCDs
- retrieval of HCHO DSCDs
- preparing an automatic analysis scheme using the zenith measurements of individual elevation sequences of the MAXDOAS spectrometers.

CNRS:

- From the SAOZ team:
Real time retrieval in version V3 for ozone and NO₂ data of SAOZ at Rio Gallegos has been implemented. The automatic delivery with the new UV-VIS HDF format template is ready and will be implemented next week.
An instrument problem appeared for the February-March 2013 period disabling us to consolidate data. It will be done next month together with other years since SAOZ installation in 2008.
- From the lidar team:
The lidar team at Rio Gallegos has implemented the OHP retrieval algorithm. Tests file have been converted into HDF files by the CNRS lidar team.

We are currently helping them for the conversion and the delivery.

TB asks what the certification conditions before archiving are in the different working groups. MDM answers that there should be some form of formal acceptance before submitting to the consolidated NDACC database. But she doesn't know the procedures precisely for the different groups. AR is surprised that it is even possible to submit data to the NDACC database without NDACC certification. He says we should not use data from non-NDACC certified stations in NORS. MDM says this should be discussed in the individual working groups and maybe with the steering committee.

MDM says that although we have made it clear that rapid delivery data are not consolidated NDACC data through a readme file in the rapid delivery database and through a note on the main page of the NDACC website, it is maybe not enough highlighted. GB says that as long as it is clear that rapid delivery data are of lesser quality than the NDACC data, he sees no objection in non-NDACC certified stations delivering data to the rapid delivery data centre.

4.1.11. WP11 Project management

As mentioned earlier, a four months extension of the project (without additional budget) has been granted. The official end of the project is now 30 November 2014.

4.2. Status of deliverables

4.2.1. D7.1 Re-analysed time series (M27 > M28)

submitted

4.2.2. D4.7 Consistency with satellite data (M30)

A draft will be circulated between the partners in April.

4.2.3. D6.2 Integrated Ozone profile data (M30)

MP says that the Reunion data will only be delivered in June. So we need a delay for this deliverable until end of June. MP notes that the Ny-Alesund, Izana and OHP data will be delivered before.

4.2.4. D6.3 Integrated Ozone tropo- and stratospheric column data (M30)

Same issue as for D6.2.

4.2.5. D5.3 Cross comparisons report (M37)

The drafting for this report has been started. Results for FTIR are already available and are incorporated. MAXDOAS results for both sites will be available by the end of May. In parallel to the deliverable report a publication covering the deliverable reports D5.1 and D5.3 is planned to be submitted by the end of the project.

4.2.6. Other deliverables due at the end of the project (M33>M37)

D2.3 Publications / Communications (NK)

D2.4 Final NORS Workshop & report (MDM/NK)

D3.3 Final documentation of data delivery system (KH)

D9.2 Assessment of GAS products (EM)

D10.1 NDACC Capacity report (MDM)

- D10.2 NDACC status report (MDM)
- D10.3 NORS capacity and sustainability (MDM)
- D10.4 NORS as an in-situ GAS (CAS) component (MDM)

4.3. NORS follow-on

MDM summarizes the recent evolutions in terms of follow-on. BIRA will continue some NORS activities (maintain server and fix bugs) to bridge the gap between the end of MACC-II and the operational phase of CAS. Hopefully the situation will get better once we will enter the operational phase of CAS. MDM says that ECMWF has been chosen by the EC to be the coordinator of CAS. Around the end of February 2014, they have issued a sort of vision paper about how they see CAS. MDM reads an extract:

“The second is the technical activity allowing suitable provision of in situ observations from key providers, networks and research infrastructures addressing air quality, radiation and atmospheric composition. Such activities would not actually fund the acquisition of the in situ data, but merely allow their processing (quality control, format and dissemination aspects, etc.) to meet the needs of an operational Service.”

ECMWF has budgeted 1M€ per year for the in-situ component on a total of 13M€ per year for the whole service. In the next few months ECMWF will start the negotiation with the EC. They hope to be able to issue an open call by the end of October 2014 to address all the tasks that are foreseen in the CAS.

MDM says that we should continue to work on trying to include NORS into CAS.

MDM mentions that she has an appointment with Stijn Vermoote and with the coordinator of DG Enterprise at the EC on the 28th of April to discuss the NORS white paper and the continuation of NORS in CAS.

4.4. NORS meetings schedule

Month	Meeting Name	Venue	Date	Time
M2	Kick Off Meeting	BIRA-IASB	Wednesday, 14 December 2011	9:30 AM
M4	PMT Teleconference 1		Thursday, 9 February 2012	10:00 AM
M6	SC Teleconference 1		Thursday, 12 April 2012	10:00 AM
M8	PMT Teleconference 2		Tuesday, 26 June 2012	2:00 PM
M11	PMT Teleconference 3		Thursday, 13 September 2012	10:00 AM
M13	First Progress Review/Meeting	BIRA-IASB	Tuesday 20 & Wednesday 21 November 2012	
M14	PMT Teleconference 4		Thursday, 13 December 2012	10:00 AM
M16	PMT Teleconference 5		Thursday, 26 February 2013	10:00 AM
M18	SC Teleconference 2		Thursday, 18 April 2013	10:00 AM
M20	PMT Teleconference 6		Thursday, 20 June 2013	2:00 PM
M22	PMT Teleconference 7		20 August 2013	3:00 PM
M24	Second Progress Review/Meeting	BIRA-IASB	Thursday 17 & Friday 18 October 2013	9:00 AM
M26	PMT Teleconference 8		Thursday, 12 December 2013	10:00 AM
M28	PMT Teleconference 9		Thursday, 13 February 2014	10:00 AM
M30	SC Teleconference 3		Monday, 14 April 2014	10:00 AM
M32	PMT Teleconference 10		Thursday, 12 June 2014 (TBC)	10:00 AM
M34	PMT Teleconference 11		Thursday, 4 September 2014 (TBC)	10:00 AM
M37	Final Project Review/Meeting/Workshop	BIRA-IASB	November 2014 (TBD)	9:00 AM

NORS final Workshop

MDM summarizes the aim of the workshop for the steering committee.

The NORS final WS will be held in concert with the 2014 NDACC Steering Committee meeting in the week of Nov. 3 in Brussels.

Monday 3/11 - Wednesday 5/11 midday: NDACC SC Meeting
Wednesday 5/11 midday - Friday 7/11: NORS WS

We will benefit of the facilities of Belspo (Belgian Science Policy), located quite centrally in Brussels and easily accessible from the main railway stations and airport. To broaden the interest, we intend to make it a common NORS, NDACC and GAW workshop. We also want to link with ACTRIS through a session on “Aerosols, Clouds and Trace Gases”

MDM asks all and in particular GB to contact her about suggestions for keynote speakers and people to invite.

OT says it would be nice to distribute the information about the workshop to the scientific advisory group of GAW. OT would be happy to do that. OT suggests MDM to present the interactions between GAW and NORS at a GAW conference the end of September in Brazil in the frame of the 25 years anniversary of GAW. OT and GB suggest Gelsomina Pappalardo as a speaker at the NORS workshop to connect NORS with GAW and ACTRIS.

Practical information on the workshop will be sent after EGU.

Draft agenda with suggestions for key-note speakers:

NORS/NDACC/GAW Workshop on ground-based data for the Copernicus Atmosphere Service

Sessions

1. Satellite calibration and validation
Keynote talk by B. Bojkov
2. Validation of Copernicus Atmosphere Service products
Keynote talk by H. Eskes (TBC)
3. Decadal time series for trend and climate studies
Keynote talk by J.-P. Van Ypersele (TBC)

Suggestion from KH at PMT telecon 9: “The daily cycle in stratospheric ozone derived from NORS observations, MACC reanalysis and WACCM simulation data” by Ansgar Schanz (IAP-Bern)

4. Ozone and the Montreal Protocol
Keynote talk by Wolfgang Steinbrecht / N. Harris / B. Hassler (TBC)
5. Aerosols, Clouds and Trace Gases

Keynote talks by Paolo Laj or G. Pappalardo and M. Schulz (GAW reactive gases) (TBC)

Timing: plus/minus 20 talks per day
 Plus/minus 10 papers / session ⇔ 50 papers ⇔ 2.5 days
 No posters

Suggestion for Schedule:
 start Day 1 afternoon, Day 2 am + pm + Dinner, Day 3 am;
 Day 3 pm: NORS Steering Committee + project review

4.5. Status of action items

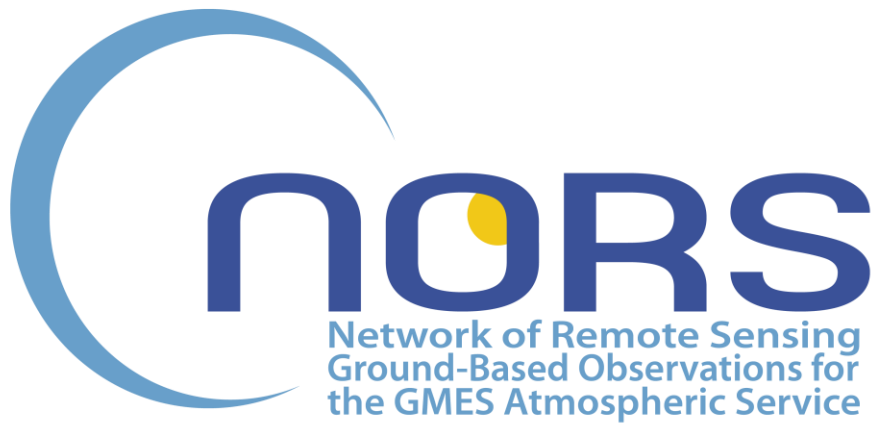
AI #	Description	Assigned to	Status
AI-PMT6-55	AR to check the reporting about the uncertainties in the files.	Andreas Richter	Open
AI-PMT9-79	AR to make INTA and FH coordinate about the photochemical correction tool.	Andreas Richter	Open
AI-PMT9-80	MDM to send the minutes of the GEOMS Metadata Board telecon and request feedback.	Martine De Mazière	Open
AI-PMT9-81	BL to send around the algorithm document to discuss the opportunity to provide the airmass profile calculation in the files.	Bavo Langerock	Open
AI-SC3-82	All to send NK their presentations about NORS at EGU.	All	Open
AI-SC3-83	BIRA-IASB and S&T to plan a telecon about the moving of the server to BIRA.	BL and LB	Open
AI-SC3-84	NK to rearrange the NORS website and make information easier to find.	NK	Open

4.6. Interactions between NORS, MACC-II, ESA, GAW and NDACC & Feedback/suggestions from SC members

GB suggests reviewing the NORS website and adding a map of the stations.

AI-SC3-84 NK will take action to rearrange the website and make information easier to find.

MDM thanks all participants and the members of the SC and closes the meeting.



PMT Teleconference #10

26 June 2014

Meeting Minutes

1. Introduction

The tenth PMT Meeting was organized in the form of a teleconference on 26 June 2014.

The teleconference started at 10:00 and ended at 11:00.

2. Participants

Name		Short name	Role in project	Institute
Martine	De Mazière	MDM	Project Coordinator	BIRA-IASB
Nathalie	Kalb	NK	Project Manager	BIRA-IASB
Bavo	Langerock	BL	Scientist	BIRA-IASB
Klemens	Hocke	KH	WP3 Lead	UBern
Andreas	Richter	AR	WP4 Lead	UBremen
Stephan	Henne	SH	WP5 Lead	EMPA
Maud	Pastel	MP	Collaborator in WP6	CNRS
Sander	Niemeijer	SN	WP8 Lead	S&T
Emmanuel	Mahieu	EM	WP9 Lead	ULg

Excused:

Name		Short name	Role in project	Institute
Thomas	Blumenstock	TB	WP7 Lead	KIT
Sophie	Godin-Beekmann	SGB	WP6 Lead	CNRS
Leo	Breebaart	LB	Collaborator in WP8	S&T

3. Agenda

1. Status of the project and progress of work packages
2. Status of deliverables
3. NORS follow-on update
4. NORS Final Workshop update
5. Status of action items
6. AOB

4. Minutes

MDM welcomes the participants.

4.1. Status of the project and progress of work packages

4.1.1. WP1 Project coordination

All minutes of meetings can be found on the private part of the website (documents). NK will circulate the minutes of this teleconference for correction and load the final version up on the website.

4.1.2. WP2 Project outreach

The public part of the website contains publications, presentations and deliverables that are of public nature. The private part of the website contains the deliverables that are of restricted nature and working documents. To access the private part of the website, one needs an account (see bottom of the Login Form to create an account).

NK has updated the website according to the remarks of Richard Engelen at the last teleconference with Steering Committee and the information about the final workshop.

SN gave different presentations at the MACC-II Users meeting. All the presentations are available. NK will send the link to these.

SN reports about the outcome of this meeting. The procurement of the operational phase is ongoing. The EC wants to contract the coordination of COPERNICUS to a single party which will be ECMWF. ECMWF would issue requests for quotation / invitations to tender for the single aspects around the end of 2014. This means that for NORS we will have to hook up with the group in charge of validation in MACC, a priori the same team as currently. The discussions between the EC and ECMWF will continue until around the end of the year. The aim is to be operational after the first quarter of 2015. AR thinks there will be delay. All agree.

MDM adds that she's writing an editorial for PAN European Networks magazine about NORS, the need for validation data and data acquisition.

4.1.3. WP3 Rapid data delivery at 4 NDACC stations

KH reports that there are now two directory structures for La Reunion, Maito and for La Reunion, Saint-Denis. New data files for UV-Vis have been submitted. Progress has been made since last teleconference in La Reunion, but the situation is not perfect yet. Generally, normal data submission is achieved for about 80%.

MDM has been in contact with the people responsible for the stratospheric ozone LIDAR in La Reunion. They promised to submit data very soon. MP comments that there have been problems with the metadata file. It should be solved before the end of the day.

4.1.4. WP4 Advanced characterisation of NORS data products

AR reports about the status of work in WP4.

Task 4.1 Data Formats

IASB

The new GEOMS UVVIS.DOAS templates have been implemented on AVDC (see <http://avdc.gsfc.nasa.gov/index.php?site=1876901039>), in close collaboration with the GEOMS Metadata Board. The new templates include two new variables (LATITUDE and LONGITUDE) to report the location of the effective air mass probed by the UV-vis instruments. The determination of these effective locations are based on first-order approaches developed within the NDACC/NORS UV-vis WG. Example files have been successfully tested by NDACC (Roger Lin), so the NDACC/NORS RD database is ready to

accept files in the new format. BIRA is submitting ZENITH O3 and NO2 and OFF-AXIS NO2 and aerosol data files in the new format since beginning of June.

CNRS

Updating of GEOMS/UVVIS template from v004 to v006 is ongoing. Minor modification is done. The calculation of the new variables (LATITUDE and LONGITUDE) added in v006 to report the effective airmass location is ongoing. It is expected to be implemented in September

Task 4.2 Information Content and Harmonization of Networks / Techniques

INTA

working in the comparison of FTIR, satellite and DOAS comparison at Izaña observatory for NO2

UB

- FTIR applied improved pressure correction for full data set since 1992
- After some more code updates regarding sfit4 another version of the whole FTIR timeseries of CH4, CO and O3 will be derived
- Improved MAX-DOAS analysis over Bremen and provided one year of tropospheric NO2 columns & profiles for validation of MACC-II regional model data
- Analysis of ship-borne data from a SHIVA cruise for SO2 and NO2; showed that for these measurements, geometric columns derived from 15° elevation are in very good agreement with the results from full profile retrieval, and even 10° elevation data provide good tropospheric vertical columns.

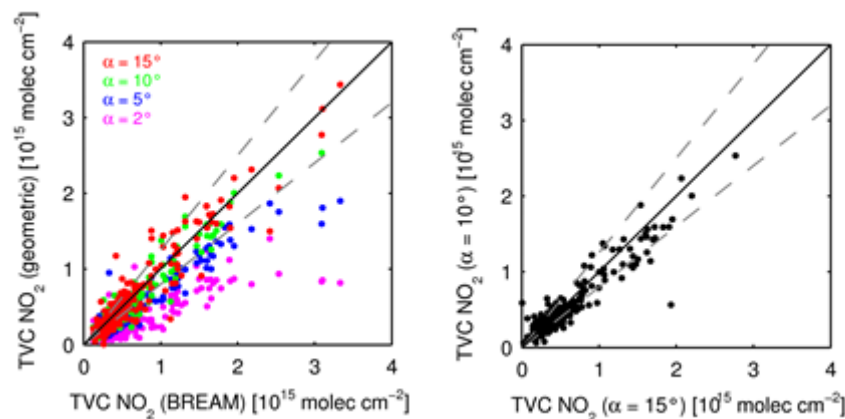


Figure 1: Scatter plot of tropospheric vertical columns derived by the profiling algorithm BREAM and the simple geometric approximation applied to different elevation angles (colour coded). Data are for one day of ship-borne observations during SHIVA. From Schreier et al., submitted to AE, 2014

ULG

Continuation of HCHO retrievals from Jungfraujoch

Task 4.4 Comparison to Satellite Observations

INTA

D4.7 has been delivered by INTA to BIRA. MDM is very happy with this document. She will however interact with INTA about some remaining questions. AR says that he is impressed by the synthesizing efforts of the publications.

MPIC

Contribution to GOME-2 NO₂ validation by IASB by providing tropospheric NO₂ VCDs over Mainz (Julia Remmer) and stratospheric NO₂ VCDs over Kiruna (Myojeong Gu). The Chinese partner Jianzhong Ma contributed tropospheric NO₂ VCDs over Beijing

Presentations / Publications

INTA

Preparing contribution to the 41st Annual European Meeting on Atmospheric Studies by Optical Methods in August entitled "NO₂ seasonal evolution in the background free troposphere from MAXDOAS measurements" applying the approximation of Gomez et al., 2013, to obtain the annual evolution of NO₂ and O₃ at Izaña from MAXDOAS measurements

ULG / IASB

A manuscript is in preparation to report about the respective performances of the MAXDOAS and FTIR techniques in measuring HCHO at a high altitude mostly unpolluted site, involving comparisons with IMAGES and GEOS-Chem model results.

IASB

- The cloud screening method developed at BIRA is now published on AMTD (Gielen et al., A simple and versatile cloud-screening method for MAX-DOAS retrievals, Atmos. Meas. Tech. Discuss., 7, 5883-5920, 2014). This method is implemented in the Xianghe operational process for the creation of hdf files.
- SAOZ and FTIR measurements of stratospheric NO₂ columns at Jungfraujoch have been used to validate the OMI stratospheric NO₂ product developed at KNMI (van Geffen et al., Improved spectral fitting of nitrogen dioxide from OMI in the 405 – 465 nm window, submitted to AMTD)
- MAX-DOAS observations of H₂CO and NO₂ made by BIRA at Jungfraujoch have been presented at the ACTRIS VOCs/NOX Workshop (EMPA, 2-5 June 2014) and at the ACTRIS General Assembly (Clermont-Ferrand, 10-13 June 2014). There is a strong demand of MAX-DOAS NO₂ profiles by the in-situ community in order to make the link between in-situ surface concentrations and the vertical distribution of NO₂.
- Papers in preparation
 - o comparison between MAX-DOAS and FTIR measurements of H₂CO at Jungfraujoch, in collaboration with the University of Liège (Franco et al, to be submitted to AMTD)
 - o comparison between parametrized and OEM-based profiling methods based on MAX-DOAS measurements of NO₂, H₂CO, and aerosols at Xianghe (Vlemmix et al., to be submitted to AMTD)
 - o development of a method for the retrieval of tropospheric NO₂ columns from daytime zenith-sky scattered sunlight observations (Tack et al., to be submitted to AMTD)

BL asks AR to remind CP about the reanalysis of the Bremen FTIR measurements with SFIT 4.

4.1.5. WP5 Integration of tropospheric products

SH says that he is working on the MAXDOAS comparisons (in situ vs. MAXDOAS) at JFJ. The correlation looks similarly bad as AR mentioned. By taking representativeness into account, he is able to improve this behaviour a little bit. He will perform the same work for O₃ and NO₂, but he is not very optimistic about it. The results will be documented in a final report and in a publication.

4.1.6. WP6 Integration of ozone products

MP reports about the status of WP6. For Izana, La Reunion and Ny-Alesund the new products such as ozone profile, tropospheric and stratospheric columns are ready. The validation of these products with MLS and SAGE-II for the profiles and with UV-visible spectrometers for the stratospheric columns has been done. For Izana and La Reunion, we obtain a very good agreement. The validation of Ny-Alesund should be done very soon. For the alpine station, the methodology needs some further modification (bias correction).

The final report for this WP is being written.

MDM asks if MP intends to publish her results. MP says her contract will end by the end of July 2014. She will not have enough time.

4.1.7. WP7 Reanalysis of ground-based time series back to 2003

MDM reads the report sent by TB prior to the teleconference.

As reported last time data has been re-analysed (back to 2003) and archived. MWR data which was still flagged as RD data at the last telecom, are meanwhile consolidated and archived as such. So, MWR, Lidar and FTIR data sets are fully consolidated. Just UV-vis data is flagged as RD data. DOAS data will be formatted and archived in GEOMS data format soon.

BL comments that he used the reanalyzed FTIR and MW measurements at Ny-Alesund and Lidar measurements at OHP to validate the model reanalysis of MACC from 2003 to 2013 for ozone. Some results will be included in the validation report.

KH mentions that he has submitted MW data to the consolidated directory.

MDM asks if the reanalysed time series are also used in the validation server in a standard way. BL says that the validation server is not able to do that at this stage because there is too much data. On the server, we are capable of doing one year. It's possible offline to validate longer time series, but it can't be automated at this stage.

4.1.8. WP8 Web-based server for validation of GAS products using NORS data products

SN summarizes the status of work with regards to the validation server. BIRA and S&T have recently held a telecon about how to implement the system at BIRA. The system will have the same configuration as at S&T. The machine will be shipped back to BIRA.

The report generation has stopped at bit because of a problem of conversion of GRIB-1 to GRIB-2. BL, SN and Yves Christophe are working on this.

S&T is also working on some other reports and trying to include H₂O at the moment.

BL comments that Simon Chabrilat is really interested in grouping the cross-comparisons with the northern hemisphere according to latitude bands. SN says he's not sure what kind of plots are available, but it should be possible to filter the plots on a certain latitude range.

SN asks if there is some documentation or agreement on the methodologies that are used with regards to validation in other workpackages. AR answers negatively but the methodology will be documented in the deliverables. The reason is that it should be kept as simple as possible for MACC. AR explains why some aspects of his comparisons are not manageable in an automated system. SH comments that his methodology is pretty close to S&T's. All agree that towards the end of the project we should compare our methodologies. BL says he is writing the algorithms paper at the moment. It should be finished in July. SH asks to be kept in the loop.

BL comments that he has lots of difficulties to get in contact with the persons who are responsible for the validation in MACC, except for ozone (Simon Chabrilat). AR says that MACC-II will end in just a few weeks. People are thus not enthusiastic about taking new things into the project at the moment. Next to that there are also issues with the design of the MACC validation. MDM says that this is a good point and we should take it into account when promoting continuation.

4.1.9. WP9 Validation of GAS products for O₃, NO₂, CO, CH₄, H₂CO, aerosol

EM summarizes the status of work in WP9. The aim is to provide some validation products for the FTIR measurements for the main targets, but also NO₂ which has been added in the mean time. They had a discussion about the possibility to add formaldehyde. But this has been given up on, to concentrate on the species described in the project.

EM would like to know how the server will evolve and when it will be available at BIRA. SN says it should be in July, but adds that there will be almost no differences.

In conclusion, the aim is to concentrate on the FTIR products and to support the MACC validation.

4.1.10. WP10 Capacity building and sustainability

MDM summarizes the different capacity building activities reports by the different institutes.

BIRA-IASB:

- Xianghe, China: Due to instrumental issues, the instrument was working in zenith mode only since January 2014. Problems are fixed now and the instrument is again working in full MAX-DOAS mode since end of May. Daily NO₂ and aerosols data files are now generated using the latest version (v006) of the GEOMS UVVIS.DOAS template which includes the location (latitude, longitude, altitude) of the effective air

mass. The complete time-series of NO₂, HCHO, and aerosols data files covering the March 2010-December 2013 will be reprocessed by mid of August.

- Bujumbura, Burundi (same as for the previous telecon): instrument (including data transfer to BIRA) is operational since end of November 2013. We are still working on the optimisation of the retrieval settings for NO₂, HCHO, and aerosols. Our plan is to submit data covering the November 2013-May 2014 period to the NORS database by the end of the project. We would like also stress the good collaboration with the University of Burundi regarding the maintenance of the instrument.

KIT:

- FTIR site Altzomoni, Mexico:
Wolfgang Stremme and Eddy Francis Plaza from UNAM Mexico City attended the NDACC workshop in Jena last month. They presented first results of the ongoing NDACC certification process.
- FTIR site Addis Ababa:
Dr. Gizaw Mengistu Tsidu (Addis Ababa University) is visiting us in Karlsruhe right now. He is working on the data analysis of Addis spectra.

INTA:

- Measurements at Belgrano are working on. We have not yet received any official communication about NDACC admission of Belgrano in the network.
- We made a contribution during the last EGU with data of Belgrano: "Halogen oxides from MAXDOAS observations at Belgrano station (Antarctica, 78°S) in 2013. Olga Puentedura, Margarita Yela, Manuel Gil, Manuel Perez-Camacho, Monica Navarro-Comas, and Hector Ochoa. Geophysical Research Abstracts Vol. 16, EGU2014-14635, 2014. EGU General Assembly 2014."

IAP-Bern:

- The compact ozone microwave radiometer GROMOS-C arrived at La Reunion and is in operation since begin of June 2014
- Scientists from IAP-Bern and from our partner institute (Sookmyung Women's University, Seoul) attended the ARTS Workshop in Sweden (http://www.sat.ltu.se/workshops/radiative_transfer9/). The workshop was about microwave/submillimetre radiometry, atmospheric radiative transfer and retrieval technique

MPIC:

- Our Chinese Partner Jianzhong Ma has recently sent NO₂ VCDs to BIRA. Gaia Pinardi will use them for the validation of GOME-2.

CNRS:

- SAOZ team :
The automatic delivery of SAOZ real time data of Rio Gallegos with the new UV-Vis template v006 HDF format is ongoing.
It is expected to be implemented in mid-July without some new variables. The full version 6 of the template will be implemented in September.
Consolidated V3 data since the installation of the instrument in 2008 is ready to be submitted.
It will be done in September after validation of v006 HDF template.

- Lidar Team:
A scientist from Argentina is coming to France in September in order to work on the HDF software and delivery.

UBremen:

- Cooperation with Yekaterinburg (FTIR): CP will visit them again later this year
- Cooperation with Paramaribo (FTIR): Local staff was trained to operate the instrument. Because of a hardware failure, the local staff cannot operate the instrument right now. A previous campaign in Spring 2014 worked very well.

4.1.11. WP11 Project management

Our Project Officer, Stijn Vermoote, has informed us that he will be replaced by Monika Kacik in his role as Project Officer of NORS.

Monika Kacik is a very motivated and highly experienced Project Officer and will cover several of the Copernicus Climate Change and Atmosphere projects together with Stijn Vermoote.

Stijn Vermoote said that he really enjoyed working with us and wishes us all the best for the final months of NORS and the NORS/NDACC/GAW workshop in November.

4.2. Status of deliverables

4.2.1. D4.7 Consistency with satellite data (M30)

This deliverable has been submitted during the writing of these minutes.

4.2.2. D6.2 Integrated Ozone profile data (M36) and D6.3 Integrated Ozone tropo- and stratospheric column data (M36)

The initial delivery date of "D6.2 Integrated Ozone profile data" and "D6.3 Integrated Ozone tropo- and stratospheric column data" was M30=April 2014. A delay of two months had been requested and accepted. The reason for this was an O3 campaign at La Reunion in the beginning of June. This campaign was a good opportunity to validate and correct NORS WP6 products at this station. The Ny-Alesund, Izana and OHP data should have been available sooner.

During the writing of these minutes, a new delay until the end of October has been requested and accepted. The reason is an unexpected leave of the person who was responsible for this work and deliverable at the CNRS (responsible partner's institute). In the mean time, a new person has been hired who has already taken over the job and is making good progress. The delay of these deliverables will have no negative impact on any other workpackages.

4.2.3. Other deliverables due at the end of the project (M33>M37)

- D2.3 Publications / Communications (NK)
- D2.4 Final NORS Workshop & report (MDM/NK)
- D3.3 Final documentation of data delivery system (KH)
- D5.3 Cross comparisons report (SH)
- D9.2 Assessment of GAS products (EM)
- D10.1 NDACC Capacity report (MDM)
- D10.2 NDACC status report (MDM)
- D10.3 NORS capacity and sustainability (MDM)

D10.4 NORS as an in-situ GAS (CAS) component (MDM)

These deliverables will be discussed more extensively at the next telecon.

4.3. NORS follow-on

MDM summarizes the recent evolutions in terms of follow-on.

MDM, Stijn Vermoote and the coordinator of DG Enterprise met at the EC on 28 April to discuss the NORS white paper and the continuation of NORS in CAS.

The outcome of this meeting has been circulated by email on 30 April 2014:

“On Monday, April 28, we had a discussion at the DG Enterprise of the EC with P. Breger and M. Rohn about the future of NORS. NORS was represented by Bavo Langerock and myself (MDM); S. Vermoote was also present.

I believe that the need for a continuation of NORS, including support for the data stream (acquisition, analysis, quality control, delivery) and for the validation server activity, was understood.

I believe that our discussion has happened at the right moment, because they are negotiating now with ECMWF as to how ECMWF has to organise the future atmospheric operational service, including the requirements from the EC.

Our impression at the end was

- (1) that they are willing to support NORS-type activities
- (2) that they are looking for sharing costs with other organisations like ESA who are also in need of reference data for validation and NORS-type activities.

We will see further how this gets realised, and I will follow closely the next steps in the development of the Copernicus Atmospheric service in which ECMWF will play the central role.

I think you can help pushing in the same direction if you make it also clear to your national contact points in H2020 and Copernicus that there is a real need to support the ground-based observation component and that they should argue for that in their meetings with the EC about future workprogrammes.

The more voices telling the same story, the more chance we have that the message gets through.”

It was a quite positive meeting but there has not been any follow-up on this matter since then. MDM is still in contact with MACC about continuation.

MDM informs all about the status of the call from the EC about research infrastructure directed towards continuation of ACTRIS. It turns out ACTRIS will not integrate NDACC in their proposal, because there is not enough overlap between NDACC and ACTRIS stations. She has been in contact with NDACC persons about the possibility of submitting a competing proposal about NDACC as research infrastructure. There are several issues: (1) the call is oriented towards aerosols, clouds and reactive trace gases, (2) the call is for research infrastructure (coordination, networking), and thus not so much for research and

data acquisition, (3) there is no volunteer to coordinate a proposal. At the moment there is no intention to submit a proposal from NDACC.

4.4. NORS meetings schedule

Month	Meeting Name	Venue	Date	Time
M2	Kick Off Meeting	BIRA-IASB	Wednesday, 14 December 2011	9:30 AM
M4	PMT Teleconference 1		Thursday, 9 February 2012	10:00 AM
M6	SC Teleconference 1		Thursday, 12 April 2012	10:00 AM
M8	PMT Teleconference 2		Tuesday, 26 June 2012	2:00 PM
M11	PMT Teleconference 3		Thursday, 13 September 2012	10:00 AM
M13	First Progress Review/Meeting	BIRA-IASB	Tuesday 20 & Wednesday 21 November 2012	
M14	PMT Teleconference 4		Thursday, 13 December 2012	10:00 AM
M16	PMT Teleconference 5		Thursday, 26 February 2013	10:00 AM
M18	SC Teleconference 2		Thursday, 18 April 2013	10:00 AM
M20	PMT Teleconference 6		Thursday, 20 June 2013	2:00 PM
M22	PMT Teleconference 7		20 August 2013	3:00 PM
M24	Second Progress Review/Meeting	BIRA-IASB	Thursday 17 & Friday 18 October 2013	9:00 AM
M26	PMT Teleconference 8		Thursday, 12 December 2013	10:00 AM
M28	PMT Teleconference 9		Thursday, 13 February 2014	10:00 AM
M30	SC Teleconference 3		Monday, 14 April 2014	10:00 AM
M32	PMT Teleconference 10		Thursday, 26 June 2014	10:00 AM
M34	PMT Teleconference 11		Thursday, 8 October 2014	10:00 AM
M37	Final Project Review/Meeting/Workshop	BIRA-IASB	5-7 November 2014	

NORS final Workshop

The invitation to the workshop has been sent on 11 June 2014. The deadline for registration and abstract submission is 10 September 2014. The final programme will be published around 1 October 2014.

We solicit abstracts for oral presentations (maximum 15 minutes including discussions).

The programme of the whole week of meetings is as following:

- Monday 3/11 – Wednesday 5/11 AM: **NDACC Steering Committee Meeting** - open to members only and upon invitation
- Wednesday 5/11 PM – Friday 7/11 AM: **NORS/NDACC/GAW Workshop** - open
- Friday 7/11 PM: **NORS Final Review Meeting with Steering Committee** - open to members of the NORS consortium only

Preliminary programme of the **NORS/NDACC/GAW Workshop**:

- Session 1: Satellite applications and validation
Keynote talk by Claus Zehner (ESA - European Space Agency, Italy)
- Session 2: Validation of Copernicus Atmosphere Service products
Keynote talk by Henk Eskes (KNMI - Royal Netherlands Meteorological Institute, Netherlands)
- Session 3: Decadal time series for trend and climate studies

Keynote talk by Jean-Pascal van Ypersele (UCL - Université Catholique de Louvain, IPCC Vice-chair, Belgium)

- Session 4: Stratospheric Ozone and the Montreal Protocol

Keynote talk by Wolfgang Steinbrecht (DWD - Deutsche Wetterdienst, Germany)

- Session 5: Aerosols, Clouds, and Trace Gases (incl. Greenhouse Gases)

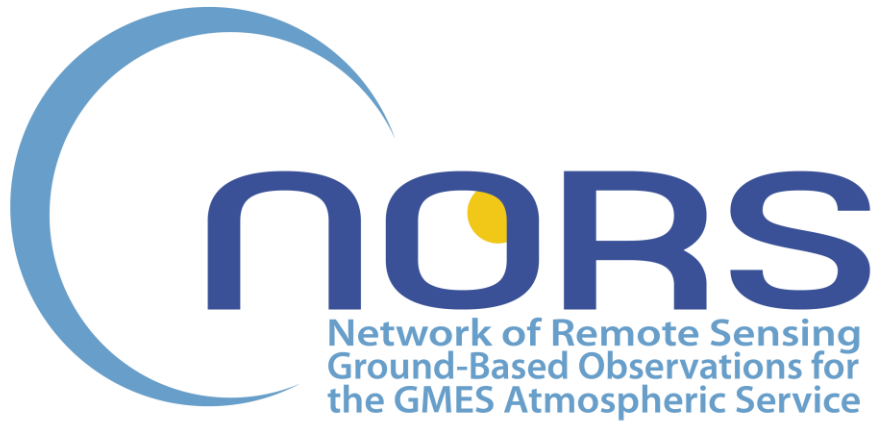
Keynote talk by Gelsomina Pappalardo (CNR - Consiglio Nazionale delle Ricerche, Italy)

4.5. Status of action items

AI #	Description	Assigned to	Status
AI-PMT6-55	AR to check the reporting about the uncertainties in the files.	Andreas Richter	Closed
AI-PMT9-80	MDM to send the minutes of the GEOMS Metadata Board telecon and request feedback.	Martine De Mazière	Closed
AI-PMT9-81	BL to send around the algorithm document to discuss the opportunity to provide the airmass profile calculation in the files.	Bavo Langerock	Closed
AI-SC3-82	All to send NK their presentations about NORS at EGU.	All	Closed

4.6. AOB

MDM thanks all the participants and wishes them a nice summer holiday. She closes the meeting.



PMT Teleconference #11

8 October 2014

Meeting Minutes

1. Introduction

The eleventh PMT Meeting was organized in the form of a teleconference on 8 October 2014.

The teleconference started at 14:00 and ended at 15:00.

2. Participants

Name		Short name	Role in project	Institute
Martine	De Mazière	MDM	Project Coordinator	BIRA-IASB
Nathalie	Kalb	NK	Project Manager	BIRA-IASB
Bavo	Langerock	BL	Scientist	BIRA-IASB
Klemens	Hocke	KH	WP3 Lead	UBern
Andreas	Richter	AR	WP4 Lead	UBremen
Stephan	Henne	SH	WP5 Lead	EMPA
Sophie	Godin-Beekmann	SGB	WP6 Lead	CNRS
Thomas	Blumenstock	TB	WP7 Lead	KIT
Sander	Niemeijer	SN	WP8 Lead	S&T
Leo	Breebaart	LB	Collaborator in WP8	S&T
Emmanuel	Mahieu	EM	WP9 Lead	ULg

Excused:

Name		Short name	Role in project	Institute
Emmanuel	Mahieu	EM	WP9 Lead	ULg

3. Agenda

Status of the project and progress of work packages

Status of deliverables

MACC follow-on

NORS Final Workshop programme

Status of action items

AOB

4. Minutes

MDM welcomes the participants.

4.1. Status of the project and progress of work packages

4.1.1. WP1 Project coordination

All minutes of meetings can be found on the private part of the website (documents).

NK will circulate the minutes of this teleconference for correction and load the final version up on the website.

Our Project Officer, Stijn Vermoote, has informed us that he will be replaced by Monika Kacik in his role as Project Officer of NORS.

Monika Kacik is a very motivated and highly experienced Project Officer and will cover several of the Copernicus Climate Change and Atmosphere projects together with Stijn Vermoote.

Stijn Vermoote said that he really enjoyed working with us and wishes us all the best for the final months of NORS and the NORS/NDACC/GAW workshop in November.

MDM and NK have met Monika Kacik on 12 August at BIRA-IASB to introduce ourselves and give her an introduction to the project.

4.1.2. WP2 Project outreach

The public part of the website contains publications, presentations and deliverables that are of public nature. The private part of the website contains the deliverables that are of restricted nature and working documents. To access the private part of the website, one needs an account (see bottom of the Login Form to create an account).

An editorial for PAN European Networks magazine about NORS, the need for validation data and data acquisition has been published and uploaded on the website.

4.1.3. WP3 Rapid data delivery at 4 NDACC stations

WP 3 is going well. The new station Rio Gallegos (DOAS) rapidly delivers data to RDDS. DOAS instruments are generally in good shape with rapid delivery. Some stations or instruments have delayed submission, e.g. software problem at Izana (DOAS) which will be fixed soon. Generally RDDS made good progress over the last half year, but it has still potential for improvement. The attached table gives an overview (species in brackets indicates that there are only a few data files inside RDDS).



	DOAS	MAX DOAS	Lidar	MWR	FTIR
Ny Alesund	(O ₃ , NO ₂)			O ₃	(CH ₄ , CO)
Bern (Alps 1)				O ₃ , H ₂ O	
Jungfraujoch (Alps 2)	O ₃ , NO ₂				CH ₄ , CO, NO ₂ , O ₃
OHP (Alps 3)	O ₃ , NO ₂		O ₃		
Izana	O ₃ , NO ₂				CH ₄ , CO, NO ₂ , O ₃
Xianghe		aerosol, NO ₂			
Maido, La Réunion			(O ₃)		CH ₄ , CO, NO ₂ , O ₃ , HCl, HF, HNO ₃
St. Denis, La Réunion	O ₃ , NO ₂				
Rio Gallegos	O ₃ , NO ₂				

NORS Workshop, 5-7.11.2014

4.1.4. WP4 Advanced characterisation of NORS data products

AR reports about the status of work in WP4.

ULG:

- a manuscript by Franco et al dealing with HCHO has been accepted by AMTD (joint work with BIRA-IASB).

CNRS:

- GEOMS/UVVIS template v006 was implemented for the real time data of SAOZ O₃ and NO₂ measurements. The data files are sent to NORS/NDACC RD database each day.
- Last validation of the effective air mass location is finished and will be implemented in October.

BIRA-IASB:

- Validation of MACC-II data products using MAX-DOAS observations made by BIRA at Beijing (NO₂), Xianghe (NO₂/H₂CO), and Bujumbura (NO₂). This work is done in collaboration with Bavo Langerock (BIRA), Antje Inness and Johannes Flemming (ECMWF), and Vincent Huijnen (KNMI). The comparisons with MAX-DOAS NO₂ profiles in Beijing will be part of the MACC IFS validation paper led by Antje Inness.
- C. Gielen (BIRA) is working on the retrieval of aerosol and NO₂ profiles from MAX-DOAS observations at Bujumbura (one of the NORS Capacity Building stations). Preliminary results will be shown at the NORS final meeting.
- Comparison between MAX-DOAS and FTIR measurements of H₂CO at Jungfraujoch and simulations by the IMAGES and GEOS-CHEM models. This study led by the University of Liège is now accepted by AMTD (see above) and will be presented at the NORS final meeting
- Comparison between parametrized and OEM-based profiling methods based on MAX-DOAS measurements of NO₂, H₂CO, and aerosols at Xianghe. This study led by Tim Vlemmix (TU Delft) is now published on AMTD.
- Paper in preparation: Development of a method for the retrieval of tropospheric NO₂ columns from daytime zenith-sky scattered sunlight observations (Tack et al., to be submitted to AMTD)

MPI:

- Preparation of an analysis software for the MAX-DOAS measurements with different choices for the selection of the Fraunhofer reference spectrum (e.g. fixed daily, from before or after individual elevation sequences, etc.)
- Development of an algorithm for the absolute calibration of colour indices and O4 DSCDs (or O4 differential AMFs)
- Preparation of set of universal threshold values for cloud classification

IUP-UB:

- Validation of the MACC Lotos-Euro regional model using MAX-DOAS measurements from IUP-Bremen, IASB and KNMI. Comparisons were made with and without averaging kernels. Meteorological and observational parameters were used to evaluate possible impacts. Overall, the absolute agreement and correlation was good but not very good. Details will be presented at the NORS/NDACC workshop

IAP-Bern

- Martin Lainer is working on trajectory mapping of ground-based data of middle atmospheric water vapour

WP4 relevant presentations at the NORs final workshop:

- Hendrick et al., Overview of the progress achieved by the NDACC UV-vis Working Group during the NORS project
- Remmers et al., Azimuthal variability of trace gases and aerosols measured during MADCAT in summer 2013 in Mainz, Germany
- Wagner et al., Absolute calibration of sky radiances, colour indices and O4 DSCDs obtained from MAX-DOAS measurements
- Franco et al., Retrievals of formaldehyde from ground-based FTIR and MAX-DOAS observations at the Jungfraujoch station and comparisons with GEOS-Chem and IMAGES model simulations
- Puentedura et al., Intercomparison of NO₂ total column derived from DOAS and FTIR over the subtropical NDACC Izaña observatory from 2000 to 2012 and validation of OMI and SCIAMACHY NO₂ products
- Frieß et al., On the ability of MAX-DOAS to detect clouds
- Richter et al., Spatial and temporal variability in Athens observed by MAX-DOAS

4.1.5. WP5 Integration of tropospheric products

SH has finished the surface in-situ comparison of MAXDOAS data from Jungfraujoch and Izaña. For Jungfraujoch profile retrievals of NO₂ were available. For Izaña O₃ and NO₂ were obtained with the geometric method. The comparison looks reasonably well for O₃, but for NO₂ there is a lot of noise in both datasets (in-situ and MAXDOAS). This is due to the fact that both instruments are often measuring close to their detection limit. For Izaña the method that takes the representativeness of the samples into account does not improve the comparison a lot, because for the geometric method only a single sampling volume along the line of sight of the MAXDOAS could be taken into account. Results are now being compiled for the final deliverable of the WP.

SH is writing a publication about this work. MDM asks if the publication will be published before the end of the project. SH answers negatively but says that the results will be part of the deliverable.

EM informs SH that he will provide the requested information.

4.1.6. WP6 Integration of ozone products

SGB says that Maud Pastel, the person who was responsible for the deliverables of WP6, left CNRS in July 2014 without completing the work she was committed to. In the mean time, a new person, Sergey Khaykin, has been hired and has already taken over the job and is making good progress. So we are confident that the deliverable will be ready by the end of October. He's working on finishing the merging of the data. Already 3 stations are done; the work on the Alpine station is ongoing. The final results will be presented at the WS.

MP has sent data but SGB needs to check them. SGB says that the merged data sets will be stored on their server.

MDM asks in which format the data will be provided. SGB says that the format is ascii for the moment, but HDF format can be provided. MDM says that it would be useful to have them in HDF if we want to use them for validation of MACC products. BL suggests following the GEOMS guidelines to generate the HDF format.

4.1.7. WP7 Reanalysis of ground-based time series back to 2003

The reanalysis of data sets back up 2003 is finished. MWR, DOAS (UVVIS), FTIR and Lidar data are on the archive. MWR, FTIR and Lidar data files are complete. For DOAS a few data files are (still) missing: (1) NyAlesund DOAS data is missing before 2010, (2) Izana DOAS data is still flagged as RDD data.

4.1.8. WP8 Web-based server for validation of GAS products using NORS data products

LB reports that the cross reports containing comparisons for comparing multiple MACC models vs. single NORS locations have been added to the server. Based on feedback from users, many templates and parameters have been tweaked to improve the quality of the reports. Reports for H₂O comparisons are now available. New stations also continue to be picked up automatically when their data appears on the NDACC archive in the correct format. Administrative tooling was added to the server to better manage and keep track of 'failed' reports (where e.g. when data in products is not correct, or something else goes wrong). The reports are now appearing in google results.

The remaining actions are (1) Install the Server on the virtual machine provided by BIRA, and deploy that virtual machine at BIRA. (2) Move to the new MACC model (requires changes to the ingestion backend).

MDM is happy to hear that new stations are still coming in.

4.1.9. WP9 Validation of GAS products for O₃, NO₂, CO, CH₄, H₂CO, aerosol

EM reports that for O₃, FTIR, Lidar and MW measurements have been compared to MACC products. For CO, FTIR products have been compared for two sites. For H₂CO UV-vis measurements were involved because we decided earlier not to upload any FTIR data.

BL says that validation reports are generated every 3 months, currently it's the operational model (o-suite). At the end of November, BL will use NDACC data to validate that model. He will use MW O₃, Lidar, FTIR O₃, FTIR CO, UV-vis H₂CO, aerosol and NO₂ FTIR.

MDM is happy to hear that more and more NDACC data are used in every report.

MDM asks about methane. BL says that there is not a lot of interest from MACC. But in principle we could do it. SH comments that his comparison of methane with MACC shows a trouble with the reanalysis. There is a strong bias in the model and the vertical structure is off.

4.1.10. WP10 Capacity building and sustainability

MDM summarizes the different capacity building activities reports by the different institutes.

KIT:

- Michel Grutter and Wolfgang Stremme from the FTIR site in Mexico - Altzomoni - asked for NDACC affiliation. The NDACC certification is ongoing. They don't archive data at this moment.
- Addis site: Dr. Gizaw Mengistu, PI of FTIR Addis site has got a Georg-Forster stipendium from Humboldt foundation to visit us. This year he visited us from June 2014 to end of October 2014. He analysed Addis FTIR spectra and submitted a paper on H₂O to AMT. There will be another visit next year.

MDM Comments that the sites BIRA-IASB is dealing with don't have NDACC certification yet, but are submitting data to the RD database. Then the data can be picked up by the server. TB will suggest this to the Mexico team.

MPIC:

- in August Jianzhong Ma from CAS Beijing visited our group. We worked together on the analysis of MAX-DOAS measurements made in Tibet
- in August Fahim Khokhar from NUST, Pakistan visited our group. We worked together on the analysis of car-MAX-DOAS measurements in Pakistan.

CNRS:

- Jacobo Salvador, responsible of the lidar measurements at Rio Gallegos stations spent 10 days at LAMOS in early September in order to retrieve the latest version of the DIAL ozone retrieving programme, including the HDF conversion for NRT retrieval. The objective is to be able to send NRT DIAL ozone profiles of Rio Gallegos by the end of 2014.

4.2. Status of deliverables

4.2.1. D6.2 Integrated Ozone profile data (M36) and D6.3 Integrated Ozone tropo- and stratospheric column data (M36)

The initial delivery date of "D6.2 Integrated Ozone profile data" and "D6.3 Integrated Ozone tropo- and stratospheric column data" was M30=April 2014. A delay of two months had been requested and accepted. The reason for this was an O₃ campaign at La Reunion in the beginning of June. This campaign was a good opportunity to validate and correct NORS WP6 products at this station. The Ny-Alesund, Izana and OHP data should have been available sooner.

During the writing of these minutes, a new delay until the end of October has been requested and accepted. The reason is an unexpected leave of the person who was responsible for this work and deliverable at the CNRS (responsible partner's institute). In the mean time, a new person has been hired who has already taken over the job and is making good progress. The delay of these deliverables will have no negative impact on any other workpackages.

4.2.2. D2.3 Publications / Communications (M37)

NK to write this report, based on the final report.

4.2.3. D2.4 Final NORS Workshop & report (M37)

MDM to write this report after the final workshop. The final report should be submitted 60 days after the end of the project, i.e. 31 January 2015.

4.2.4. D3.3 Final documentation of data delivery system (M37)

KH says he will start to work on this. But he doesn't expect any problem. He will ask inputs in due time.

4.2.5. D5.3 Cross comparisons report (M37)

SH doesn't expect any problem. He started writing and will send around a draft/request for inputs.

4.2.6. D9.2 Assessment of GAS products (M37)

EM is in contact with BL about this document. EM says we will use the results of the reports that are generated by the validation server.

4.2.7. D10.1 NDACC Capacity report (M37)

MDM has started a draft and will send it around to request inputs. She asks all to share their comments about the content of the document or additional stations quite quickly.

4.2.8. D10.2 NDACC status report (M37)

BL will be leading this deliverable and will contact the partners when necessary.

4.2.9. D10.3 NORS capacity and sustainability (M37)

MDM has started a draft and will send it around to request inputs. She will emphasize that sustainability is a big issue and that the continuation of this kind of activities is uncertain.

4.2.10. D10.4 NORS as an in-situ GAS (CAS) component (M37)

MDM has started a draft and will send it around to request inputs.

4.3. MACC follow-on

MDM summarizes the recent evolutions in terms of follow-on.

The MACC final review meeting took place on 10-11 September 2014 in Brussels. ECMWF has been designated to be the coordinator of CAMS. Their plan is to launch open calls for proposals for activities planned in CAMS by the beginning of 2015. There will be a gap between the end of MACC-III (March 2015) and the launch of CAMS (not earlier than September 2015). For some activities, where there exists some sort of monopoly (in situ networks, global production, etc.), there won't be calls but direct negotiation with identified partners. The in situ component will also be done by direct negotiation. Funding will not be granted to fund data acquisition and analysis, but only to fund one person per network to be the interface between CAMS and the network (supervise data stream, assure quality, etc.). So we end up with the same problem for our kind of activities.

MDM is attentive to any possibility of getting funding from ESA, since they are also interested in these data streams.

4.4. NORS Final Workshop programme

The draft programme has been distributed to the PMT, keynote speakers, reviewer and project officer. All agree with the programme.

AR says that the number of posters is relatively small. He suggests NORS people to make a few NORS posters. NK will send an email to NORS people to ask for a few posters.

The presentations of the WPs during the final review meeting should be short summaries of the entire project, not just the second period.

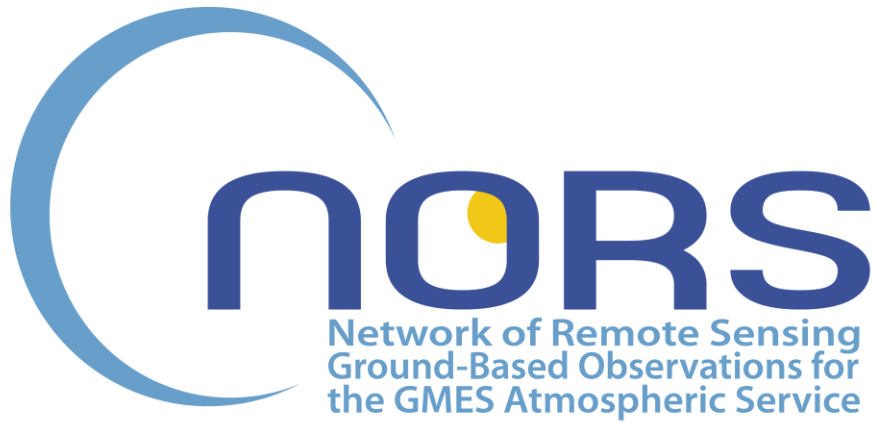
4.5. Status of action items

AI #	Description	Assigned to	Status

All actions have been closed.

4.6. AOB

MDM thanks all the participants and closes the meeting.



Final Meeting

Meeting Minutes

The Final Meeting of NORS took place on Friday the 7th of November 2014, from 13h30 to 17h15 at the premises of Belspo (the Belgian Science Policy Office), 231 avenue Louise, 1050 Brussels, Belgium.

1. Participants

Last name	First Name	Institute
Blumenstock	Thomas	Karlsruhe Institute of Technology (KIT)
Braathen	Geir	WMO
Breebaart	Leo	S&T
De Mazière	Martine	Belgian Institute for Space Aeronomy (BIRA-IASB)
De Rudder	Anne	Belgian Institute for Space Aeronomy (BIRA-IASB)
Engelen	Richard	ECMWF
Franco	Bruno	University of Liège
Frieß	Udo	Institute of Environmental Physics, University of Heidelberg
Gil-Ojeda	Manuel	Instituto nacional de Técnica Aeroespacial (INTA)
Godin-Beekmann	Sophie	LATMOS/CNRS
Goutail	Florence	LATMOS/CNRS
Hendrick	Francois	Belgian Institute for Space Aeronomy (BIRA-IASB)
Henne	Stephan	Empa
Hocke	Klemens	Institute of Applied Physics, University of Bern
Kacik	Monika	Research Executive Agency
Kalb	Nathalie	Belgian Institute for Space Aeronomy (BIRA-IASB)
Kelder	Hennie	University of Technology Eindhoven
Lambert	Jean-Christopher	Belgian Institute for Space Aeronomy (BIRA-IASB)
Langerock	Bavo	Belgian Institute for Space Aeronomy (BIRA-IASB)
Mahieu	Emmanuel	University of Liège
Niemeijer	Sander	S&T
Petri	Christof	IUP, University of Bremen
Pommereau	Jean-Pierre	LATMOS/CNRS
Puenteadura	Olga	Instituto nacional de Técnica Aeroespacial (INTA)
Remmers	Julia	MPI for Chemistry
Richter	Andreas	IUP, University of Bremen
Van Roozendaal	Michel	Belgian Institute for Space Aeronomy (BIRA-IASB)
Vigouroux	Corinne	Belgian Institute for Space Aeronomy (BIRA-IASB)
Wagner	Thomas	MPI for Chemistry

2. Agenda

- 13:30-13:50 Introduction
Martine De Mazière, BIRA-IASB
- 13:50-13:55 Summary of WP3 Rapid data delivery at 4 NDACC stations
Klemens Hocke, IAP Bern
- 13:55-14:10 Summary of WP4 Advanced characterisation of NORS data products
Andreas Richter, IUP, University of Bremen
- 14:10-14:25 Summary of WP5 Integration of tropospheric products
Stephan Henne, Empa
- 14:25-14:30 Summary of WP6 Integration of ozone products
Sophie Godin-Beekmann, LATMOS/CNRS
- 14:30-14:40 Summary of WP7 Reanalysis of ground-based time series back to 2003
Thomas Blumenstock, Karlsruhe Institute of Technology (KIT)
- 14:40-14:55 Summary of WP8 Web-based server for validation of GAS products using NORS data products
Sander Niemeijer, S&T
- 14:55-15:10 Summary of WP9 Validation of GAS products for O₃, NO₂, CO, CH₄, H₂CO, aerosol
Emmanuel Mahieu, University of Liège
- 15:10-15:40 **Coffee/Tea**
- 15:40-15:50 Summary of WP2 Project outreach
Martine De Mazière, BIRA-IASB
- 15:50-16:10 Summary of WP10 Capacity building and sustainability
Martine De Mazière, BIRA-IASB
- 16:10-16:25 Summary of WP1 & WP11 Project coordination & management
Nathalie Kalb, BIRA-IASB
- 16:25-16:55 Feedback by *Hennie Kelder, NORS reviewer*, and *Monika Kacik, REA*
- 16:55-17:15 Discussion about continuation of NORS in Copernicus Atmosphere Monitoring Service (CAMS)
Monika Kacik, REA
- 17:15 **End of meeting**

3. Minutes

3.1. Introduction by Martine De Mazière, BIRA-IASB

See: 01_NORS_FM_MDM

MDM welcomes the participants to the final meeting of NORS. She introduces and welcomes the members of the Steering Committee, the Contracts Officer and the Reviewer.

MDM gives a brief overview of the project and its achievements.

MDM says that all the initial objectives have been achieved or even more. The sustainability is not guaranteed unfortunately.

Most of the results of the NORS project have already been presented during the workshop. The following presentations are very short summaries of the activities performed in the NORS workpackages.

3.2. Summary of WP3 Rapid data delivery at 4 NDACC stations by Klemens Hocke, IAP Bern

See: 02_NORS_FM_KH

KH presents the work performed in the frame of WP3.

HK asks if it is possible to deliver data in near-real time. KH answers that it depends of the station. Some stations, for example in Switzerland, deliver daily files, but others deliver every week or every two weeks.

HK asks if the connection with MACC is secured in the future. RE says that there will be calls in CAMS for the validation activities in connection with in situ data networks, for which the NORS consortium will be able to compete. But no continuation of the activities of NORS in CAMS is foreseen.

MDM adds that the maintenance of the validation server and of the contributions to the MACC validation reports is embedded in the validation subproject of MACC-III, but specifies that it only covers maintenance, and of course provided that the stations continue to provide data. AR fears that most stations are not willing to continue providing data without funding.

MDM has addressed this issue with the EC and Michael Rohn from DG Enterprise. Although all understand the problem, no solution is in view.

3.3. Summary of WP4 Advanced characterisation of NORS data products by Andreas Richter, IUP, University of Bremen

See: 03_NORS_FM_AR

AR presents the work performed in the frame of WP4, following the logic of the seven deliverables.

3.4. Summary of WP5 Integration of tropospheric products by Stephan Henne, Empa

See: 04_NORS_FM_SH

SH presents the work performed in the frame of WP5.

3.5. Summary of WP6 Integration of ozone products by Sophie Godin-Beekmann, LATMOS/CNRS

See: 05_NORS_FM_SGB

SGB presents the work performed in the frame of WP6.

MK asks what was the problem that SGB mentioned about delivering to the server. MDM and SGB answer that the server requires the GEOMS template. Conversion to GEOMS was not part of the NORS contract and it requires averaging kernels, which are not available at the moment.

3.6. Summary of WP7 Reanalysis of ground-based time series back to 2003 by Thomas Blumenstock, Karlsruhe Institute of Technology (KIT)

See: 06_NORS_FM_TB

TB presents the work performed in the frame of WP7.

HK asks if the ozone trends from the ground-based stations correspond with the satellite ozone trends. TB answers that they compare very well. MDM says that CV has written a paper on this and it will also be included in the WMO assessment and in the SI2N initiative.

3.7. Summary of WP8 Web-based server for validation of GAS products using NORS data products by Leo Breebaart, S&T

See: 07_NORS_FM_LB

LB presents the work performed in the frame of WP8 and gives a demonstration of the validation server.

HK asks if there is any interest from other customers in the validation server. SN says that the commercial interest is obviously quite low, but he approaches the EC, ESA and any large organization that could be interested. There is some interest from ESA.

LB asks all to send him feedback and comments about any odd-looking feature, even after the end of the project.

MK asks more precisions about the process of submitting data to the server. LB says that the entry point is NDACC (and thus certification is needed) as well as NDACC-RD for which certification is not required but format compliance is required. The server browses the entire NDACC database and picks up automatically anything that matches the requirements. All the

NDACC stations archive their data. NDACC certification is not needed to submit to the rapid delivery database, but it does require authorization by the database manager.

SGB comments that it would be nice to have an explanation of the figures when browsing the reports. LB agrees that the user friendliness could be improved, by providing more background context information for example.

MDM suggests to provide at least a link to the algorithms paper by Langerock et al.

3.8. Summary of WP9 Validation of GAS products for O3, NO2, CO, CH4, H2CO, aerosol by Emmanuel Mahieu, University of Liège

See: 08_NORS_FM_EM

EM presents the work performed in the frame of WP9.

RE comments that from the different model versions that are shown, only fnyp is an official output from MACC. MDM comments that this is the reason that the tailored plots and cross-comparison plots are only available to VIP users and not to all public. RE says that we can use the plots in the deliverables, but we should mention that only fnyp is an official output from MACC.

3.9. Summary of WP2 Project outreach by Martine De Mazière, BIRA-IASB

See: 09_NORS_FM_MDM

MDM presents the work performed in the frame of WP2.

MK asks if it has been dealt with IPR issues. SN says that everything is open source. MDM will check this.

3.10. Summary of WP10 Capacity building and sustainability by Martine De Mazière, BIRA-IASB

See: 10_NORS_FM_MDM

MDM presents the work performed in the frame of WP10.

3.11. Summary of WP1 & WP11 Project coordination & management by Nathalie Kalb, BIRA-IASB

See: 11_NORS_FM_NK

NK presents the work performed in the frame of WP1 and 11.

3.12. Feedback by Hennie Kelder, NORS reviewer, and Monika Kacik, REA

HK says that he was already impressed at the start of the project by the ambitions of the project and is even more impressed now by the presented achievements. He congratulates the entire NORS team.

He thinks that the cooperation within the consortium and the management of the project was excellent.

According to him, the success of workshop reflects the recognition of the value of NORS for the atmospheric science community.

He says that the biggest question is now how to continue. Long term commitments for some form of continuation are needed.

3.13. Discussion about continuation of NORS in Copernicus Atmosphere Monitoring Service (CAMS) by Monika Kacik, REA

MK thanks everybody for the very interesting presentations.

She says that this is not the best timing to discuss the matter of sustainability, since the delegation agreement with ECMWF should be signed very soon. She can only say that services such as validation will be taken care of via procurements. There is no guarantee that the NORS consortium will win the procurement, but it is very well placed with regards to other competitors given its experience.

MK says that it is difficult for the EC to justify funding for provisioning of data, since it is at the edge of the operational domain. The FP7 programme is a research programme. When it gets operational, then it goes over to ECMWF. In H2020 the main focus is still research but not solely.

MDM asks if there will be room in H2020 to fund research about open questions that were raised in NORS. MK answers that there will be of course funding for research in H2020, but it depends on the topics of the calls. Every year there are new work programmes. She also reminds that before every launch, there is a series of consultations with national delegates.

GB says that the usefulness of the work performed in NORS goes beyond NDACC. It should be applied to a larger scale. There is a need for overarching the different data streams of GAW. Maybe an idea for NORS-II?

MDM is in touch with the initiative to put an atmospheric sciences Research Infrastructure on the ESFRI Roadmap. ESFRI must be supported by the member states. The role of the national delegates is crucial. She says that all should lobby with their national delegates for support.

GB adds that sustainability also comes from relevance to society. He says that NORS should make itself useful to society, like MACC.

SGB asks when the call for the validation activities within MACC will be issued. MK answers that the procurement should be open by the beginning of 2015. MDM will keep the consortium informed.

MDM says that there will be a gap between the end of MACC-III and the operational service of CAMS. Some services will be bridged.

MDM thanks HK for the feedback and MK and the EC for the support and the entire consortium for its good work. She closes the meeting

End of meeting