NORS PROJECT

Dr M De Mazière from BIRA-IASB highlights how NORS contributes to ensuring the quality of the Copernicus[1] Atmosphere Service

NORS is an EU FP7 project for preparing the assessment and improvement of the quality of the Copernicus Atmosphere Service[1] products using ground-based remote-sensing network data. Sustainable support to a NORS-type activity is required to guarantee reliable, high quality information about the atmosphere and its impact on air-quality, ozone and ultraviolet radiation, and climate on the long-term and the global scale.

The Copernicus Atmosphere Service (CAS) should become operational by the end of 2014. Today we are preparing it with the prototype project MACC-II (www.gmes-atmosphere.eu) and the supporting project NORS (http://nors.aeronomie.be; FP7 grant agreement 284421).

NORS stands for 'Demonstration Network Of ground-based Remote Sensing Observations in support of the Copernicus Atmosphere Service'. The project began in November 2011 and will last until mid-2014. It aims at demonstrating the value of ground-based remote sensing data from the Network for the Detection of Atmospheric Composition Change NDACC (www.ndacc.org), for quality assessment and improvement of CAS products. NDACC is a global research network with a strong European contribution, providing high quality reference observational data for understanding the physical and chemical state of the stratosphere and troposphere, and for assessing the impact of atmospheric composition changes on climate.

To achieve its objectives, NORS will carry out research and developments to optimise the NDACC data products: their quality, their characterisation and their rapid availability. NORS will also provide an evaluation of the consistency between the ground-based NDACC data and the satellite data assimilated in the CAS production chain. As ground-based remote sensing data form the ideal link between *in situ* surface concentration and satellite column data, NORS will investigate the development of integrated troposphere products and integrated ozone products. A web-based application for the operational validation of the CAS products using the independent NDACC data will be built. NORS will also support the CAS long-term re-analyses.

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The project addresses the different domains of CAS, namely 'ozone and UV', 'air quality' and 'climate'.

Since NORS initially focuses on data from European stations, Europe will take the lead in NDACC to demonstrate the capability of this global research network to become more operational and to serve CAS.

In the long-term, NORS can provide: 1) a fully operational rapid data delivery system, adopted by NDACC stations worldwide, and for most CAS products, enhancing the availability of the ground-based remote sensing data for supporting the quality assessment of the CAS; 2) improved maturity, quality assurance and characterisation of the information content and uncertainties of the remote-sensing data products; 3) the methodology to derive tropospheric column data from the integration of surface *in situ* data with representativeness information and model profiles, and its demonstration at selected sites; 4) the methodology to derive integrated ozone profiles and tropo and stratospheric column data and its demonstration at selected sites; 5) a compilation of evaluations of satellite data used in the CAS assimilation analyses, for better understanding the quality of the CAS products; and 6) standard and customised quality assessment reports of CAS products that are available on a regular basis via a web server.

This will be achieved if NORS continues to live with MACC-II in the operational CAS after 2014. This also requires sustainable support to ground-based remote-sensing network observations for atmospheric monitoring.

[1] Formerly known as GMES, Global Monitoring for Environment and Security

NDACC Sites

▲ Operational NDACC stations
▲ NDACC stations selected as pilot stations in NORS
▲ Stations to be developed in NORS to potentially become NDACC stations

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