# NORS:
## Ensuring the quality of the GMES Atmosphere Service

**NORS coordinator:**
Martine De Mazière
Belgian Institute
for Space Aeronomy
Ringlaan 3
1180 Brussels, Belgium
T: +32-2-3730363
E: martine.demaziere@
aeronomie.be

The GMES (Global Monitoring for Environment and Security) Atmosphere Service should become operational by the end of 2014. Today we are preparing it with the prototype project MACC-II (http://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 GMES Atmosphere Service (GAS)". The project aims at demonstrating the value of ground – based remote sensing data from the Network for the Detection of Atmospheric Composition Change (NDACC, http://www.ndacc.org) for quality assessment and improvement of the GAS 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 optimize 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 GAS 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 GAS products using the independent NDACC data will be built. NORS will also support the GAS long-term re-analyses.

The project addresses the different domains of GAS, 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 GAS.

In the long-term, NORS can provide

(1) a fully operational Rapid Data Delivery System, adopted by NDACC stations worldwide, for most GAS products, enhancing the availability of the ground-based remote sensing data for supporting the quality assessment of the GAS;

(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, derived 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 GAS assimilation analyses, for better understanding the quality of the GAS products;

(6) standard and customized quality assessment reports of GAS 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 GAS after 2014.