

## **Minutes of the 2nd plenary E-GVAP meeting, held Friday, September 24, 2010, at Met.no.**

These minutes are to be seen as a supplement to the presentations. The presentations from the meeting are available via the E-GVAP homepage (uid egvap, pw gps2user).

### **Agenda**

1. Practicalities, agenda, minutes from previous meeting.
2. Status and updates on the ground based GNSS meteorological status in each member country, by each member.
3. Information from the E-GVAP team, including
  - Status
  - Beginning collaboration with EUCOS
  - De-central data submission
  - Active quality control (views by expert teams + discussion).
  - Access to data from North America and other non European data.
4. Outlook, discussion of work in coming period.
5. Time of next plenary meeting
6. Any other matter

**Attendees** Sofus Linge Lystad met.no; Florence Bresson, Meteo France; Jonathan Jones, Gemma Bennett, UKMO; Siebren de Haan, KNMI, Jana Sanchez Arriola, AEMET; Martin Ridal, SMHI; Henrik Vedel, DMI.

Many thanks to Sofus and his helpers at met.no for organising all practical matters associated with the meeting.

1) Agenda accepted. Minutes of previous meeting accepted.

2) See member presentations. Notice that the DMI presentation includes information received from a number of other members, who were not able to attend the meeting.

**Met.no** Sofus reported that processing of data from the Norwegian GNSS sites will soon be set up at met.no. It will be set up similar to the processing at NGAA, with help from Jan Johansson from Chalmers, Sweden and Oddgeir Kristiansen from NMA (the Norwegian Mapping Agency). A benefit of this will be that a number of sites, for which there are limitations on data transfer, for example at oilrigs in the North Sea, can be included in the processing at met.no, on top of the Norwegian sites currently being processed by NGAA at SMHI.

On the assimilation side, E-GVAP data are not used at met.no yet. But several people from the model department took part in the expert team meeting as guests, and a new method for bias correction in assimilation of ZTDs has been made and tested recently by the model people at met.no. A presentation of this work was done by Roger Randriamampianina, met.no, at the expert team meeting, and is included in the presentations from the meeting.

**Meteo France** Plan in collaboration with SGN to increase the density of the GNSS network in certain areas, and to reduce access time to the data. Timeliness is critical to Meteo France and considered a key focus area. Likewise is economy, and it was decided to approach DWD about

membership (see action list). On the user side E-GVAP data are assimilated into Arpege and Arome, the whitelist based scheme is being replaced with a blacklist scheme.

**AEMET** Jana has replaced Enric as AEMET representative. She is from the NWP data assimilation side, and has worked on assimilation of ZTD data previously.

Currently E-GVAP data are assimilated in passive mode at AEMET. In the next months active assimilation will be set up. E-GVAP data are used to validate SAF products in AEMET's Satellite Department (article available). PW is currently not used for now casting, but work on the use in now casting and validation of E-GVAP data has been made (articles available). On the network side there is a gradual densification in Spain, but observations are lacking in the SE region.

**SMHI** Plan to run new experiments with assimilation in 2011 with HARMONIE. And to use the data in climate studies, for model validation and trend analysis. NGAA is run at SMHI, processing data from of the order 500 sites. Part of the processing software and setup is being updated, which will lead to improved stability and reduced biases.

**UKMO** On the processing side METO will start to do processing of global data (METG), and prepare to do sub-hourly processing (METR) to meet timeliness criteria (30 min.) of UK 1.5 km model. On the assimilation side data are currently used in UK4 and NAE, and will become used in global model.

**KNMI** Process KNMI and KNM1 solutions, the latter being a real-time solution. Experiments with assimilation in rapid update cycle in combination with ModeS data from Schipol and SYNOP pressures from Netherlands with very promising results. Active assimilation in experimental setup.

**MeteoSwiss** (From report by Pierre Jeannet) No current use of the data by the NWP people, await changes which are currently being done to the COSMO model. Use data in validation of other observations at Payerne. Continue work, at the Geodesy and Geodynamics Lab, ETH Zurich, on tomography.

**DWD** (From report by Karolin Eichler in the NWP model group). Have made impact study, with COSMO-DE and conclude that timeliness is an issue. Interested in the quality control files planned in the active quality control (AQC) being set up in E-GVAP. Have noticed intermittent data gaps in the Germany+ region covered by COSMO-DE.

**DMI** Active assimilation in experimental setup. Planning operational assimilation later in 2010. Timeliness is a concern already today. Has started rapid update cycle (hourly) in experimental mode, wants to make it operational in 2011. This will increase wish to reduce access times to ZTD data.

**RHMS** (Henrik) We still have no access to Serbian data and need to work on this.

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**Met Eireann** (Henrik) Sandra Spillane and Eoin Whelan are now running IRE2 solution at Met Ayrean.

**OMSZ** Henrik have had positive contacts with Ambrus Kenyeres from the Geodetic Observatory, Institute of Geodesy, Cartography and Remote Sensing in Budapest, who is considering setting up NRT GNSS ZTD estimation. Access to the raw data for processing by a foreign institution is not possible. Unfortunately Ambrus could not come to the expert team meeting.

**3 and 4** (see DMI/KNMI/METO presentations) Extracts and discussion:

The expert team meeting the day before, was well attended, both by experts, and by guests from the observing and NWP model parts of met.no, and by a colleague from NOAA. (Jan Dousa (GOP), Jonathan Jones and Gemma Bennitt (METO/UKMO), Elmar Brockmann (LPT/SwissTopo), Patrick Moll (Meteo France), Jana Sanchez Arriola (AEMET), Sofus Linge Lystad + about 5 guests (met.no), Galina Dick (GFZ), Romain Fages (SGN), Siebren de Haan (KNMI), Isidora Jankov (NOAA), Oddgeir Kristiansen (NMA), Rosa Pacione (ASI), Marcelino Valdes and Miguel Cano (IGE), Henrik Vedel (DMI) The presentations of the experts are available together with the presentations from the plenary meeting.

**Collaboration with EUCOS** The software for implementation of E-GVAP data monitoring in the EUCOS quality monitoring portal (QMP) is currently being made. This is a collaboration between EUCOS, a private contractor of EUCOS, and the E-GVAP team. The purpose is to produce monitoring and validation results in a format similar to that used for other EUMETNET observing systems, and used and understood by many people in meteorology. The current E-GVAP specific monitoring and validation will continue in parallel, it is necessary at least as long as we are developing the system. To become available later this year.

**De-central data dissemination.** The robustness of the data distribution systems was discussed. It was clarified that the UKMO part of the system used in connection with upload of data, encoding to BUFR and distribution onto GTS, is now in the operational part of UKMO, meaning that backup servers etc. are available in case of failure. In principle de-central data dissemination is possible, now we will use a flagging file in AQC, but we decided to postpone a decision on this until agreements with NOAA on data format in data exchange is in place.

**Active quality control** Siebren and Henrik has demonstrated that using simple robust statistics it is possible to identify in almost real-time an AC having intermittent problem with the quality of its ZTDs for many sites. This is done by inter comparison of ZTDs from many ACs processing the same sites (e.g. the supersites). What remains is now to find precisely which levels to use in the first public (on the ftp-server) version and define the format of the presentation. Henrik presented a simple flagging file format and Siebren a graphical visualisation, which can both be used in a first public setup, for automatic (data assimilation) routines and operators (and E-GVAP monitoring people) respectively. To become available at ftp-server later this year.

**Access to data from North America and other non European data.** The attempted collaboration with NOAA about data access has entered a very positive state. A testimony to that is that Isidora Jonkov, a scientist from NOAA, took part in the expert team meeting and gave a presentation. This work will continue, important aspects on our practical level is to agree on a data format (e.g. the current WMO approved BUFR format used by us) and how to avoid (too many) sites appearing with the same name before being corrected. On the formal level a general EIG EUMETNET - NOAA MoU is to be signed, and a specific sub MoU about the ZTD/IWV data exchange that we

are interested in, is to be made and signed as well. It has been agreed with the NOAA people that we should define a (limited) set of common supersites and collaborate on quality control.

We made this list of **action items**:

1. Contact to DWD about membership. Henrik+.
2. Archive for processed data, investigate possibilities and views of suppliers, Henrik+
3. Clarifying DWD question whether ZTD data which are delivered late to E-GVAP are/are not put on GTS. Henrik & Dave Offiler.
4. URD and sub hourly data.
  - Make inquiry about need for sub hourly data, Henrik
  - Make inquiry about possibility of producing data sub hourly, Henrik
  - Possibility for distribution of slants. Prepare change of URD accordingly. Initiate via Henrik.
5. Definition of common minimum requirements to processing as regards problems with access to data from individual sites, and to satellite orbit and clock estimates. Jonathan, with input from Siebren+.
6. Question of de-central data submission delayed until clarification of NOAA collaboration. (A "pause" action). "Naming file" synchronisation will be an issue in this regard (=how to avoid multiple sites with same name appearing in data uploaded to GTS?).

#### 5) Next meetings.

- It was found that it is beneficial to keep having the expert team meetings and the plenary meeting next to one another. And that the combined producer and user expert team meeting should be assigned 1 1/2 day and the plenary meeting 1/2 day.
- Florence offered to have the next meeting at Meteo France in Toulouse. Tentatively week 42 (Oct. 17-21) was chosen. Henrik will write members and experts not present whether two days in week 42 are acceptable.