Minutes of the 1´st plenary E-GVAP meeting, held Wednesday, November 18, 2009, at KNMI

These minutes are to be seen as a supplement to the presentations. The presentations from the meeting are available at the egvap homepage (uid egvap and pw gps2user).

Agenda
Start of meeting 9:00

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 representative.
3. European projects.
4. Information from the E-GVAP team, including
    a. Status
    b. The effect on E-GVAP of the EUMETNET movement to an EIG
    c. Beginning collaboration with EUCOS
    d. De-central data submission
    e. Active quality control (views by expert teams + discussion).
    f. Access to data from North America and other non European data.
5. Outlook, discussion of work in coming period.
6. Time of next plenary meeting
7. Any other matter

Finish of meeting no later than 16:00.

Attendees Jonathan Jones, Gemma Bennitt, and James Ovens, UKMO; Sofus Linge Lystad met.no; Siebren de Haan, KNMI, Enric Terradellas, AEMET; Balint Varga, Hungarian metservice; Henrik Vedel, DMI; Pierre Jeannet, MeteoSwiss. Jenny Hanafin, Univ. of Ireland; and Elmar Brockmann, Swisstopo/LPT; partook in the meeting before lunch.

Many thanks to Siebren organising all practical matters associated with the meeting.

1) Agenda accepted, with the add-on of item “European Projects”. 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. The presentation of SMHI/NGAA did make it to the meeting, while Martin Ridal himself unfortunately got ill in the last moment.

Met.no Sofus reported that at met.no there is currently no assimilation of E-GVAP data. The Nowegian GNSS data come from the national mapping agency NMA, who owns vast majority of the sites. As the company is in part to function on commercial terms, the distribution of sites is not even over the country, with a poorer coverage in particular North of Trondheim. Two new NMA sites have been set up on islands in the far north, on locations owned and run by met.no. Sofus requested a change on the validation maps, to make it more easy to see if sites has disappeared from the processing. Currently the spot becomes red if there is a delay, but relatively quickly the sites simply disappear from the map, making it difficult to spot if there is a long term problem in data delivery to the processing centre.

Henrik noted that in this period it has been important not only for the Norwegian sites, but also for Finnish, and occasionally for Irish sites. It was decided to change somewhat the monitoring in the future, to make it more easy to detect “sites with no data”, yet not cluster the map with sites which are no longer functional or intended to be included in the processing.

Regarding use of Ekofisk as a supersite, there is a problem being allowed to further the raw data beyond NMA and SMHI. Forwarding ZTD is OK. Probably data will become available also from platforms owned by Statoil, from a location west of Kristianssand, quite a bit North of Ekofisk.

AEMET Enric reported that GNSS data processing is functioning well at IGE, which is expected to include an additional 50 sites next year.

Jana Sanchez is now preparing for assimilation of GNSS data in Harmonie. Current there is however no active assimilation into neither HIRLAM or Harmonie models (ALADIN, AROME), but passive monitoring.

Enric described very briefly work done at AEMET in Barcelona on now-casting, both in terms of construction of IWV maps and of usage of these in actual now-casting. Further he mentioned a paper by Schneider et al, inter-comparing GNSS IWV to IWV from a large number of other observing systems. Note, that the “package of presentations” available from the meeting, includes as bonus articles and presentation describing this work. Thanks to Enric for help collecting this.

Finally Enric mentioned that his duties at AEMET has changed, he has become leader of a WMO project on forecasting and observation of dust in Northern Africa and Southern Europe, which means he will stop as an E-GVAP representative. Good luck to Enric with the new project, and thanks for the work in E-GVAP, where clearly the situation regarding Spanish NRT GNSS data is much better today than 5 years ago.

OMSZ is new in E-GVAP since this term. Balint told he had knowledge about a network of 33 GPS stations in Hungary, and would investigate the possibility of getting data from those for processing, after having learnt under the meetings about the data requirement. Regarding assimilation OMSZ uses the Aladin model, and will therefore be able to use the majority of the assimilation software developed for Aladin at Meteo France and in the Harmonie collaboration.

3) Based on a request from Jenny, we discussed the possibility of making common proposals for international research projects. Henrik pointed out, that E-GVAP itself is not a research project as such, but that on-going research in the processing and usage of ground based GNSS data for meteorology and climate obviously is of great importance to the members of E-GVAP, and since many of the participants in the expert team and plenary meetings are among the leading scientists in the field, it is only natural to (remember to) discuss possible future research applications at our meetings.

Jenny sparked a discussion about a “climate reprocessing project” on the global or European scale. We all liked the idea of such a project. It is important and should be done. However, some of us believed it would be difficult to establish and control, since a high number of institutions will need to be involved, and there is a tendency for climate monitoring funding on the large scale to be available within very large projects, where some of the “key players” are already defined.

Henrik mentioned the possibility of future openings in the field of processing and usage of slants and gradients, where one can hope that the Galileo project will result in calls for applications. In this field E-GVAP experts are among the leading worldwide, on both the processing and user side.

4 & 5) See relevant parts of presentations by DMI, KNMI and UKMO.
Key points and discussion:

- Start of *de-central data dissemination* and *active quality control* has been delayed. The main reason being that the de-centralisation will make it impossible to exclude observations considered poor by the quality control from dissemination, which is however what will be attempted in a few other observing programmes under EUMETNET planning to invoke active quality control. As explained in the proposal for active quality control in E-GVAP made by Henrik, one can instead use a separate *flagging file,* containing information about likely erroneous ZTD data and being available at the E-GVAP server. However, before deciding to take this approach, the E-GVAP team has been awaiting the go ahead from the active users. This we got in connection with the joint expert team the day before the plenary meeting.
- The plan is now to set up very soon a first version of active quality control, based on inter comparison of supersite ZTDs from different ACs.
- Henrik is to update the proposal and communicate with the users about the best practical way in which to setup the flagging file approach.

- *Combined solutions*. These are ZTDs derived by combining statistically ZTDs from the individual ACs when at least three ACs process a given site. Rosa Pacione from ASI demonstrated that the so-called ASI combined solution (named “asic” or “ASIC” in the COST-files) is of higher quality than the individual AC ZTDs. Siebren is also making a combined solution at KNMI, using a different statistical method. Inter comparison of the two combined solutions showed very fine agreement, though the amount of data involved was limited. In connection with the expert team meeting it was decided to start uploading of combined solutions to the E-GVAP server. They will be put in a separate directory, not to confuse them with the standard NRT ZTDs.
- In the longer run the combined solutions may be used in the active quality control and even be distributed for assimilation. First we need to gain experience with them, in particular their timeliness relative to the standard NRT ZTDs will be important regarding the usefulness of the combined ZTDs. Clearly they will be useful in the general validation, as is also post processed ZTDs.

- *Naming of GNSS sites.* It is not realistic for “meteorology” to control the real naming of GNSS sites, as the sites are set up and owned by others, for completely different purposes. In geodesy a system exists for provision of unique names, however it is not used for all sites. If we use only data from such sites, we limit the number of sites providing ZTDs to E-GVAP.
- Currently an a program automatically renames new sites with duplicate names in connection with the handling of the incoming files at UKMO. However, this will not be possible when using de-central data dissemination.
- At the expert team meeting a practical solution was agreed. E-GVAP will maintain a file with names and coordinates of all GNSS sites providing data to E-GVAP. The ACs will be requested not to upload data from any new GNSS sites, before having verified the names are not in conflict with the existing names on the list. Further we will recommend all ACs to use

the unique naming system for geodesy, but as the ACs do not own all the sites for which they process data, this is not by itself enough to solve the problem.

- Obviously the problem gets even bigger when global exchange of GNSS data expands.

- *Future of GOPE* At the expert team meeting Jan Dousa, who is running the processing at GOPE, told that the institute behind, the Geodetic Observatory Pecny and the Research Institute of Geodesy, Topography and Cartography is having financial troubles. Precisely what will happen is unclear at the moment. Potentially it could mean that the processing taking place at GOPE will need to moved to another institute. From E-GVAP we had become allowed by PB-OBS to support GOPE with computing equipment for 5000 euros in 2009, but on request of Jan Dousa this has been postponed, while an eventual restructuring of the institute is being considered by local authorities. Jan Dousa is a central person in the development of European NRT GNSS data processing, it is important that from E-GVAP we try to support him.

- *Access to global ZTD data.* From the E-GVAP team requests have been made for access to NRT ZTDs from North America. Since 2004 national met. institutions in the US and Canada have had access to European NRT ZTD data via the GTS (started in the COST 716 project, continued in TOUGH and E-GVAP). Unfortunately, this has been lifted to a "higher level" in EUMETNET and NOAA/NCEP, where exchange of also other types of observations is involved, and it is currently out of the hands of the E-GVAP team. We expect it will soon get into our hands again. Meanwhile we will attempt to get NRT ZTDs from other continents.

- Continue open access to NRT ZTD data by non members, provided both that conditions of use are followed, and that there is no misuse, e.g., in the form of an NMS using E-GVAP data operationally without being, or clearly preparing to become, a member of E-GVAP.

- *External database and third party access to E-GVAP data.* We are getting more and more requests for access to the E-GVAP data, many of which are not related to meteorological use of the data. We do not in E-GVAP have the server capacity to store online all the data. Neither is it a basic function of E-GVAP to serve non meteorological users of the data.

  Dave Offiler has been in contact with people at the large database BIGC in England. Apparently we can decide ourselves on the conditions of access and conditions of use to E-GVAP data which might get stored at the database. Before deciding to send E-GVAP data to the database Henrik is to contact all ACs, to learn their standpoint regarding third party use of the NRT GNSS ZTD (and IWV) data. Currently the MoU´s we have do only permit circulation of the data within meteorology. If the ACs agree on a wider distribution (for scientific, non-commercial purposes) we will approach again BIGC. In case E-GVAP data become available via an external database, we will make a document on conditions of usage, and a document detailing the nature of the nature the data, in particular that they have been derived under tight time constraints (NRT) and are derived using different software over the time span of European GNSS meteorology, wherefore the data are not suitable for climate monitoring.

6) Next meetings.

- Joint expert team meeting, Thursday, September 23, 2010, at met.no, in Oslo, Norway.
- Plenary meeting, Friday, September 24, 2010 at met.no, in Oslo, Norway.

Some people voiced a wish to separate again the expert team and plenary meetings. Only few plenary meeting participants took advantage of the possibility to partake in an expert team meeting, and separating them in time would enable the E-GVAP team to meet more times a year.

It was agreed that in connection with future meetings we will bring a presentation on ground based GNSS meteorology, to introduce the field to local meteorologists.