E-GVAP

The EUMETNET GPS water vapour programme

Purpose

The main purpose of E-GVAP is to provide ground based GPS delay data in near real time (NRT) for use in operational numerical weather prediction (NWP) models and now-casting to the participating EUMETNET members.

Timelines

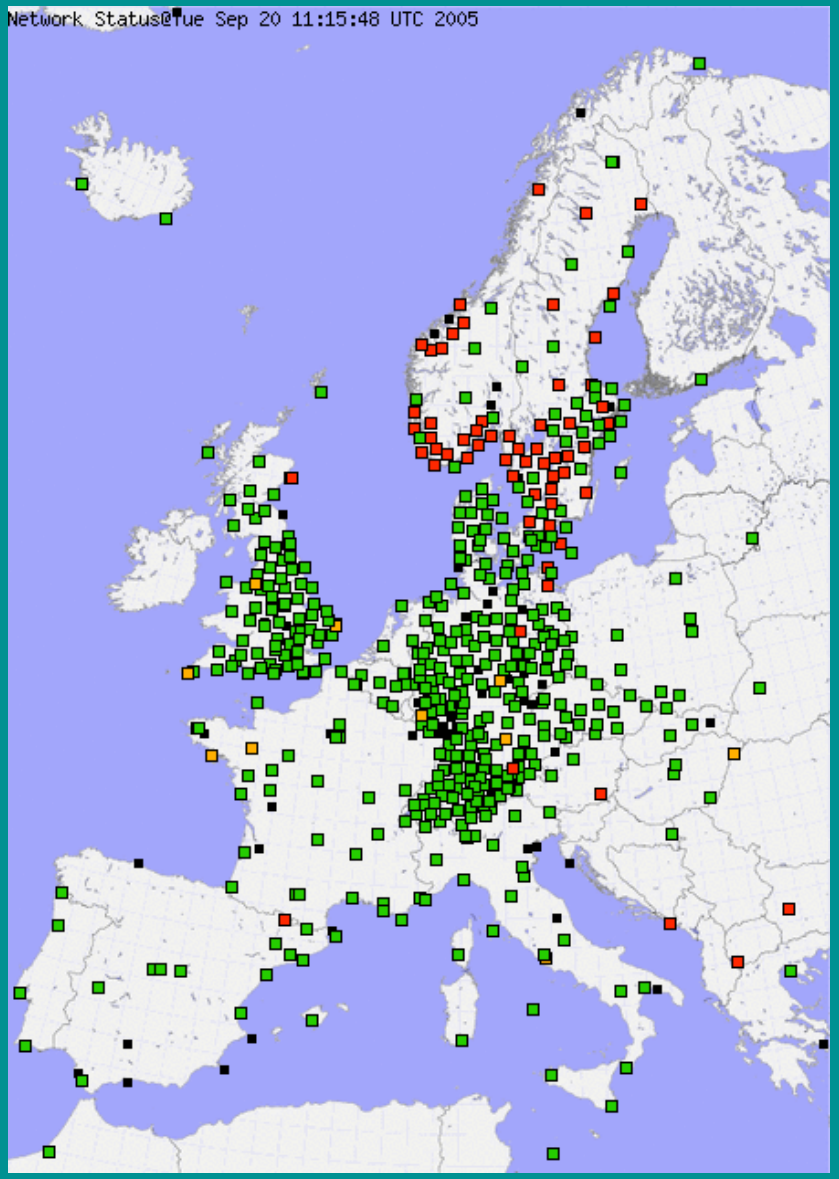
- COST716 ended in 2004.
- TOUGH ends by January 2006
- E-GVAP started April 1’st 2005, planned to run for 4 years.
- Transfer of E-GVAP observing system to EUCOS (becoming a ’permanent’ meteorological observing system) when E-GVAP finishes.

Status map for 2005-09-20 from the COST716 / E-GVAP validation site.

12 Processing centres are providing the delay data.

Data available at ftp-server at MetO: thorn.meto.gov.uk

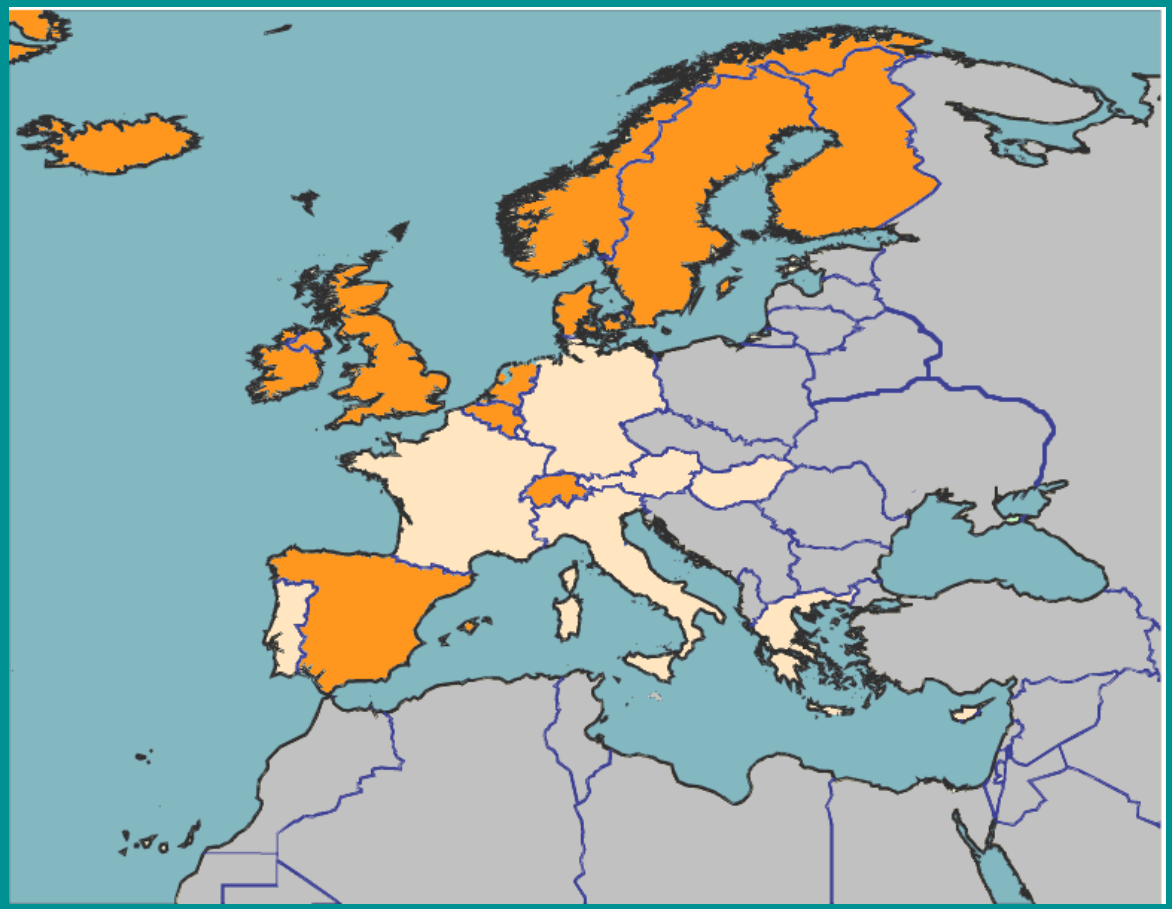
Not all data providers are formally associated with E-GVAP at present.



Some of the important requirements to meteorological data used operationally.

- Reliable: Contineous quality checking and validiation.
- Homogeneous: Quality not (too strongly) depending on site or region.
- Contineous: Problems with data delivery or quality are reported upstream and cured. Future access to data assured many years ahead.
- Coverage: Data available from regions of interest.

E-GVAP and EUMETNET members (national meteorological institutes)



In E-GVAP we will:

1. Gradualy improve quality and homogenety of processing in collaboration with involved GPS processing centres.
2. Secure our future access to GPS data through formal agreements with site owners and processing centres.
3. Increase the spatial density of GPS stations involved.
4. Increase the geographical coverage.
5. Continious monitoring and validation of involved GPS networks and sites.
6. Automatic upstream reporting in case of problems to processing centres and site owners.
7. Produce material helping GPS processing centres in improving quality.
8. Produce material helping meteorological institutes in utilising GPS data.

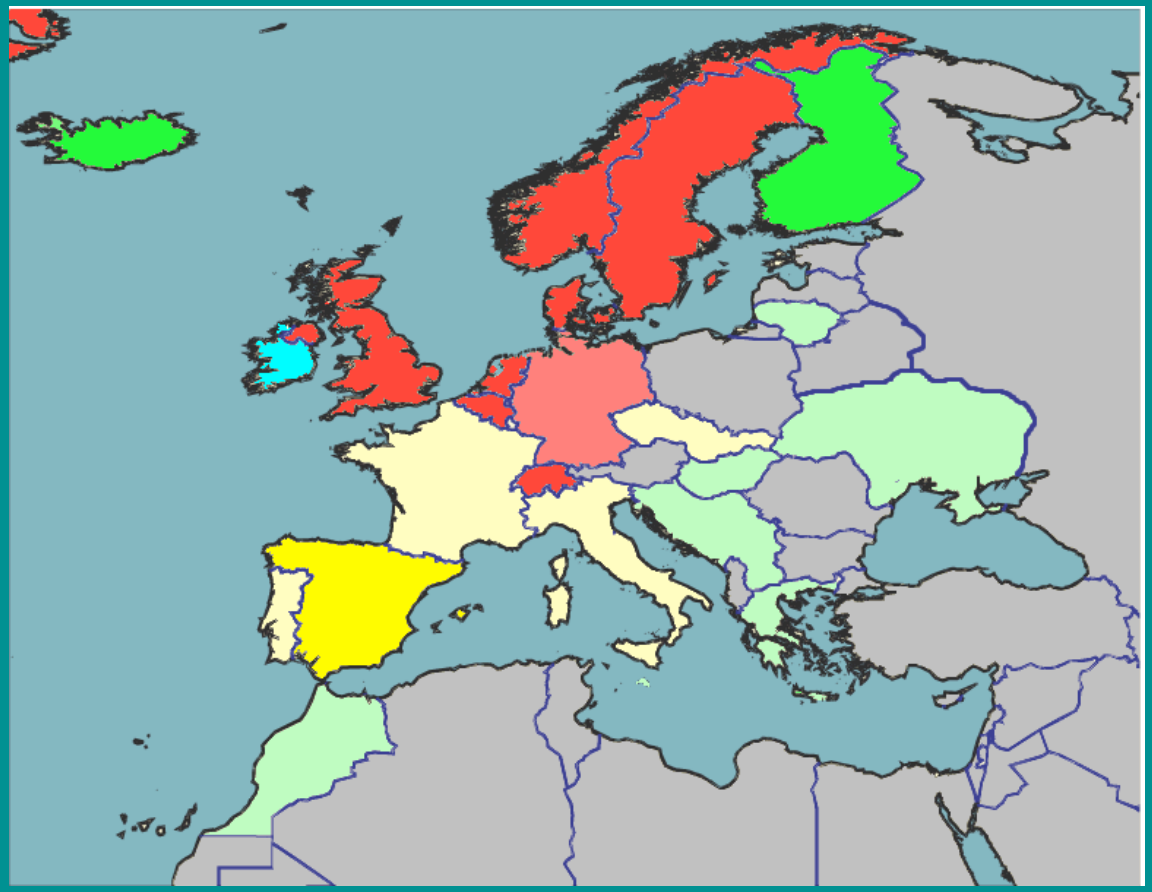
Involvement of GPS processing centres and data owners

1. Through national meteorological agency (E-GVAP member responsibility), eventually setup with the help of the E-GVAP team.

2. Directly with the E-GVAP team.

Density of NRT GPS delay data arriving at thorn versus E-GVAP membership

Red=high, yellow=fair, green=low. Dark color=E-GVAP member.



Data distribution policy

- The GPS delay data processed for E-GVAP will be available to other meteorological institutes. Currently via both GTS and ftp.

What do we expect we can provide the geodetic community?

Meteorological data.

1. Observations, e.g. radiosonding data
2. NWP model data

- Currently for validation.
- In the future also for processing, e.g. improving on the 'a priori Niell map. fct.', or providing a forecasted a priori estimate of the atmospheric delays in different directions.
- Speedup in positioning.

Monitoring and validation.

In E-GVAP automated monitoring and validation with feedback will be set up.

Cost sharing

The national meterological agencies controls many SYNOP sites, nicely equipped with power, data links, fence, and regular visits for maintainance. It would be natural to place some of the future GPS stations at such sites.

In addition to the cost sharing this will make validation against other observations or use of other observations in the GPS processing more straight forward.

Participation in expert teams

Under E-GVAP a liaison group, an expert team on GPS data processing, and an expert team on using GPS data in NWP will be formed.

E-GVAP programme setup

- Manager (responsible member). Setup and running of programme, reporting, connections to third parties. (DMI)
- Database and processing centre. NRT gb GPS delays database, processing of some gb GPS data. (MetO)
- Validation centre. Quality checking and validation. Moving toward automatisation with feedback to processing centres and GPS sites/site owners. (KNMI)
- Operational liaison group. Collaboration between E-GVAP and geodetic community
- Expert team on data processing. Improving data quality and homogeneity, through better processing.
- Expert team on using GPS water vapour data. Assisting members in using GPS water vapour data

EGVAP project team

- Management. Danish Meteorological Institute (DMI), Henrik Vedel. Email:egvap@dmi.dk
- Database and processing. UK Met Office (MetO), Jonathan Jones, Adrian Jupp, John Nash, and Dave Offiler. Email:dave.offiler@metoffice.gov.uk
- Validation. Royal Netherlands Meteorological Institute (KNMI), Siebren de Haan. Email:Siebren.de.Haan@knmi.nl

Conclusion

- E-GVAP was started in April 2005 to enable and coordinate collection and distribution of European near real time ground based GPS water vapour measurements to EUMETNET members for operational meteorology.
- We look forward to a tightening collaboration with the geodetic community, both GPS station owners and data processing centres. As well to an expanded collaboration on GPS meteorology between European meteorological institutes.
- The ’liason group’ and the ’expert teams’ will soon be formed, establishing new links between meteorology and geodesy.

Conclusion, cont.

- In non EGVAP countries with strong GPS-meteorological activitivies we hope that contacts can be made directly between the GPS processing centres and the EGVAP team. We expect that later many of those countries will join EGVAP.

- The GPS delay data processed for E-GVAP will become part of the pool of data normally shared between meteorological institutes (currently via both GTS and ftp).

Further information

- http://egvap.dmi.dk
- Email: egvap@dmi.dk