

## **Annex 1 to MoU between EUREF and DMI**

### **On the data to be exchanged between EUREF and DMI/E-GVAP/EUMETNET and the conditions of use**

#### **Purpose**

To describe the data to be exchanged between EUREF and DMI/E-GVAP/EUMETNET and conditions of use.

#### **Background**

The European permanent network of EUREF (EPN) consists of GNSS permanent tracking stations distributed over almost all European countries. The contribution of the data follows specific technical guidelines, but happens on a voluntary basis of the responsible station manager. The data can freely be used for all scientific and practical activities related to precise geo-referencing and navigation, Earth science research and multidisciplinary applications.

Various types of meteorological observations are exchanged between the national meteorological institutes, globally, in Europe, and within EUMETNET, under different conditions of use. WMO resolution 40 is the central document governing this.

An important distinction is between the so-called *essential data* and *additional data*. *Essential data* are exchanged globally. They are observational data that the meteorological institutes must make available to their WMO colleagues; restrictions on furthering and use are limited. *Additional data* are observations that institutes can decide to distribute, or be requested to distribute by individual meteorological institutes. Often it is only done on request and to a limited number of receiving institutes. The conditions on use and furthering are stronger; furthering requires an acceptance from the originating institute. When forwarded on the GTS (Global Telecommunication System between meteorological offices) the data are flagged as being *essential* or *additional*.

#### **Responsibilities**

EUREF will provide to E-GVAP/EUMETNET free access to the EPN raw data (hourly and daily satellite observation files in RINEX format) for the determination of ZTD, IWV and other meteorological applications

DMI/E-GVAP/EUMETNET will provide to EUREF the following data:

- Hourly

Observations of pressure, T2m, and RH2m from the nearest SYNOP site to the EUREF GNSS stations. From essential data + additional data from institutes on Annex 2 list.

- Daily
  - Observations of pressure, T2m and RH2m from SYNOP sites, with a time resolution of 3 hours. From essential data + additional data from institutes on Annex 2 list.

- Radiosonde observations of pressure, temperature and humidity from radiosondes within 50 km of a EUREF GNSS site. From essential data.
- Water vapour radiometer data from sites located within 50 km of GNSS receiver. Pending agreement with data owner in each case.

The *Annex 2 of the MoU between EUREF and DMI/E-GVAP/EUMETNET* is a list of meteorological institutes that have agreed that for extraction of the data mentioned below their *additional data* may be used.

Met.no has stopped discriminating between essential and additional data from Norway and now declare all their data as essential. Therefore signing of annex 2 is not relevant for met.no.

### **Conditions of use.**

For the data exchanged between EUREF and DMI/E-GVAP/EUMETNET the conditions of use are:

#### ***A: EUREF use of meteorological data***

The meteorological data will be used for GNSS data processing, validation of GNSS processing and products, and for scientific studies.

The meteorological data will not be sold or used for any direct economical gain or profit, nor forwarded to third parties, unless a separate written agreement has been made to the contrary.

#### ***B: Meteorological use of GNSS data***

Raw GNSS data (RINEX format) will not be forwarded to third parties unless specifically agreed with EUREF in advance.

The data will be used solely with the purpose of estimation of atmospheric GNSS delays and further computation of atmospheric water vapour. Actual positions determined in connection with the delay estimation will not be distributed. The GNSS delays will be utilised in numerical weather prediction models and IWV used to assist forecasters to monitor the weather. The goal is to enhance the skill of the meteorological forecasts.

GNSS delay data and associated error estimates will be distributed free of charge within the meteorological community (including EUREF if required) for use in weather forecasting and climate monitoring. The distribution between E-GVAP and the meteorological community will take place via the Global Telecommunication System and password restricted ftp.

The GNSS delays derived from EUREF data or provided by EUREF will not be sold or used for any direct commercial gain or profit unless a separate written agreement has been made to the contrary.