MEMORANDUM OF UNDERSTANDING

between

A: EUREF, the Reference Frame Sub-Commission for Europe of the International Association of Geodesy (IAG)

and

B: DMI, the Danish Meteorological Institute, acting on behalf of the members of EUMETNET, the Network of European Meteorological Services.

1. Parties

A: EUREF (www.euref-iag.eu) is the Reference Frame Sub-commission for Europe of the International Association of Geodesy (IAG).

EUREF is responsible for the definition, realization and maintenance of the European Reference Systems, to be used Europe-wide in all scientific and practical activities related to precise geo-referencing and navigation, Earth Sciences research and multidisciplinary applications.

B: DMI (www.dmi.dk) is the *responsible member* in **EUMETNET** (www.eumetnet.eu.org), for coordination of **E-GVAP**, the EUMETNET GPS Water Vapour Programme, (egvap.dmi.dk). The purpose of E-GVAP is the establishment of an inter-European observing system for delivering of near real-time GNSS zenith delay estimates for operational meteorology. EUMETNET is a network of 21 European national meteorological services, facilitating committing inter-European collaboration within meteorology.

2. Background

One of the main projects included in the EUREF activities is the EUREF Permanent Network (EPN) that covers homogeneously the European continent. This project deals with the maintenance, data collection, archiving, processing and analysis of a GNSS network.

The EPN data are processed in order to obtain the best achievable accuracy. For that, the computations need the modelling of a considerable number of geo-dependent effects, some of them requiring accurate and reliable atmosphere parameters.

The EPN sites are used within many projects in order to make zenith total delay estimates usable for meteorological applications such as numerical weather prediction and climate change, and many of the EPN Analysis Centres are also involved in GPS meteorology related projects.

There is already a close collaboration between EUREF, European GNSS Analysis Centres and European national meteorological institutes (represented by E-GVAP/EUMETNET) for the near real-time determination of Zenith Total Delay (ZTD) and Integrated Water Vapour (IWV).

3. Purpose

Considering

- that EUREF needs to access meteorological data provided by the national meteorological institutes;

- that the European national meteorological institutes, represented by E-GVAP/EUMETNET, need to have continued access to EPN data and products;

- the importance of cooperation between the meteorological and geodetic communities in Europe,

the purpose of this Memorandum of Understanding is to create the conditions to facilitate the data exchange and to promote the increase in the cooperation between the two parties, for the benefit of both.

4. Responsibilities

The responsibilities of the parties are as follows:

- EUREF will provide to E-GVAP/EUMETNET free access to the EPN raw data for the determination of ZTD, IWV and other meteorological applications. The data and conditions of use are more precisely specified in annex 1.

- E-GVAP/EUMETNET will provide to EUREF free access to meteorological data for GNSS data processing, analysis, and validation. The data and conditions of use are specified more precisely in annex 1.

- EUREF and E-GVAP/EUMETNET will create common guidelines for the exchange of data.

Furthermore,

- EUREF will contact the European GNSS network operators inviting them to collaborate with European national meteorological institutes on co-located observations (GNSS and meteorological observations) and support GNSS data processing from dense national networks to contribute to meteorological applications;

- E-GVAP/EUMETNET will contact the European national meteorological institutes inviting them to collaborate with the responsible for national GNSS networks and/or EPN stations to provide the necessary meteorological data for GNSS data processing and analysis.

- Use of data exchanged under this MoU for publications must be acknowledged by citation to the relevant data providing party (EUREF or EUMETNET).

5. Amendments

This Memorandum of Understanding may be revised or cancelled by initiative of any of the parties by a written agreement.

Date: 6 October 2006

The Chairman of EUREF	The director general of DMI
João Agria Torres	Peter Aakjær