



## **On E-GVAP and the use of E-EGVAP data**

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The main purpose of E-GVAP (EIG EUMETNET GNSS Water Vapour Programme) is to support operational meteorology by provision atmospheric delay data derived from ground based GNSS observations. The delay data, zenith total delay (ZTD) are sensitive to water vapour, pressure and weakly to temperature. In practice the delays mainly provide information about integrated water vapour to NWP models and forecasters. Thereby they help fill the gap in the meteorological water vapour observing system, which is very sparse, despite water vapour being able to cluster much more densely than total airmass.

The majority of the GNSS sites providing raw data are owned by geodetic institutions, both public and private. More than 20 geodetic institutions are involved in the data processing. As such E-GVAP is based on a very close collaboration between geodesy and meteorology.

The presentation will provide an overview of the E-GVAP setup and products, including future plans driven by developments in NWP resolution and timeliness requirements, as well as progress in GNSS data processing capabilities.

The hope and expectation is that extra humidity observations will improve NWP skill, in particular regarding precipitation, an area where NWP can still improve a lot. Examples will be given how NWP assimilation is set up. Which products are used, which type of preprocessing. The impact in a few specific cases, as well as in general will be discussed. Finally we will consider next generation products and tools for assimilation of them, including the use of zenith total delay gradients, slant total delays and 3D water vapour derived by tomography.