



GNSSMET - Contribution of tropospheric zenith delays derived from GNSS data to weather forecast in alpine areas

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In Europe and abroad several regional project were initiated to derive the zenith wet delay (ZWD) from ground based GNSS observation data. ZWD-estimations are subsequently used as additional data source for Numerical Weather Models in order to obtain high temporal and spatial resolution of the humidity field with an improved accuracy. Errors in the weather forecast analysis occur in particular in alpine areas, where predicted models do not reproduce the mountain atmosphere correctly.

The project GNSSMET makes use of continuous measurements of a regional network consisting of 8 GPS/GLONASS reference stations, located in Carinthia, Austria. This network has been extended with surrounding IGS and EUREF stations. The aim of the project is to provide GNSS based measurements of the tropospheric water vapour content with a temporal delay of less than one hour to use them within the INCA (Integrated Nowcasting through Comprehensive Analysis) system, operated by the Austrian Meteorological Service (ZAMG).

In this presentation we quantify the impact of the GNSS data on INCA forecasts and the contribution of already existing GLONASS data (in addition to GPS observations) on the ZWD estimation. Moreover, it is planned to qualify potential improvements provided by a fully operational GALILEO system. Compared to the current situation an improvement in accuracy of the ZWD by about 30-40% is expected as well as a higher temporal (30 min or less) resolution of the estimates.