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ASI/CGS products and services in support of GNSS-meteorology

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For more than a decade, ASI/CGS has supported ground-based GNSS meteorology in Europe participating in various projects such as MAGIC, COST-716, TOUGH, E-GVAP (phase I and II) and providing Zenith Tropospheric path Delays (ZTD) derived from a European network of GNSS stations covering mainly the central Mediterranean area. Working in close cooperation with the meteorological community, GNSS data are analyzed in order to provide ZTD with different latencies ranging from post-processing, useful for climate studies, to near-real time, for hourly assimilation into Numerical Weather Prediction (NWP) model. However advancements in NWP models (such as the Met Office UKV 1.5km model) with rapid update cycles require observations with improved timeliness and with greater spatial and temporal resolution than is currently available. To fulfil this requirement a sub-hourly PPP processing has been set-up, and is under evaluation, thanks to the availability of the IGS RT orbit and clock corrections. Moreover ZTD estimates are the input data for developing new and enhanced products: ZTD residuals fields and Integrated Water Vapour (IWV) maps. The former will be helpful in augmenting empirical tropospheric models for positioning applications. The latter are useful for nowcasting and severe weather monitoring since they let to follow IWV time evolution.
We present an overview of the developed products and services; the new directions in support of NWP applications and the nowcasting and forecasting of severe weather events that emerge within E-GVAP phase III and the EU COST Action “Advanced Global Navigation Satellite Systems tropospheric products for monitoring Severe Weather Events and Climate” (GNSS4SWEC).
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