

Description of Moroccan GPS meteorology network

Since 2012, the Moroccan Meteorological service (DMN) has implemented a project of acquisition and installation of 10 Ground-based GPS stations intended to meteorological use. The main phases of this project are:

- the installation of the hardware on different sites,
- the concentration of the GPS stations measurements in the DMN,
- the locally processing of raw data in order to produce ZTD and IWV.



The GPS hardware part contains a receiver and an antenna:

- The receivers are Ashtech Proflex type, which are designed to collect, store and transfer high-quality raw GPS data in Rinex format (Receiver Independent Exchange format).

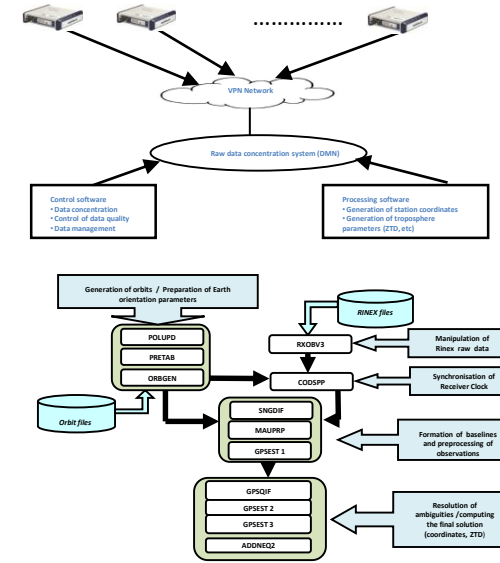


- The GPS station antenna is CHOKE RING type responsible for capturing the L-bands signals transmitted from GPS satellite. It can provide millimeter precision.



Operational GPS data processing

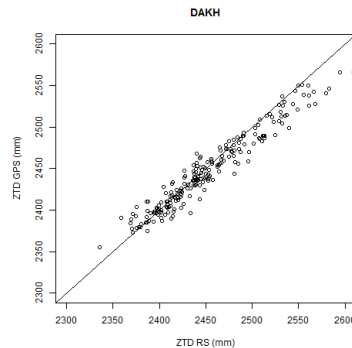
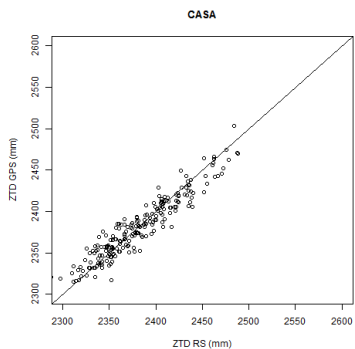
- The concentration of raw data measured by GPS stations, in near real-time to a central server via the IP VPN network of DMN .



- The processing of Moroccan network GPS data by the BERNESE software in order to produce tropospheric parameters (ZTD, gradients..).
- the production of local ZTD file in Bufr format required by data assimilation in Arome model.

Comparison of ZTD from GPS and radiosondes

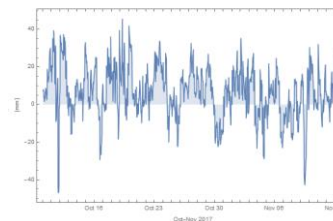
- The Comparison of two Moroccan GPS sites (CASA and DAKH) ZTD with ZTD calculated from radiosondes available nearby over almost one year (2016) (Hdidou FZ, Mordane S, Sbi S. *Global positioning systems meteorology over Morocco: accuracy assessment and comparison of zenith tropospheric delay from global positioning systems and radiosondes. Meteorol Appl. (accepted)*).



Assimilation of ZTD in AROME-MAROC model

- The monitoring of ZTD observations versus AROME model in order to produce the white list of Moroccan GPS stations (observation minus guess every 3 hours).

Monitoring of FES station over a period of 2 months (October-November 2017)



- The assimilation of a single observation of ZTD in AROME-MAROC in FES (Lon=-4.9734747, Lat= 33.9301157).

