**GRUAN GNSS Precipitable Water Task Team**

**Goal:** To develop explicit guidance on hardware, software and data management practices to obtain GNSS PW measurements of consistent quality at all GRUAN sites.

1. **New member:** Rosa Pacione from e-GEOS S.p.A., Matera Space Center, Italy.


3. **Technical document:** TT, LC, GFZ & Bodeker Sci.

4. Develop **data collection client requirement** and initiate **data flow**
Discussions

   - Who is leading the writing from B.S.?
   - 75% complete: Need efforts in Data processing and flow and site maintance
   - How to implement?

2. Certification of GNSS measurement program

3. Develop **data collection client requirement** (LC, sites)

4. Initiate **data flow** (GFZ, sites)

5. **Implementation of uncertainty estimate:** GFZ

6. Interactions among TT, LC, GFZ and sites?

7. Assessment of data usage, issues and potential improvements

8. Update the site inventory for new sites (can Data client do this?)
Additional issues (must be thought how to arise them) and comments to #2:

- Microwave absorbers – could be now pushed on to be installed at all new or relatively new GNSS-sites (maybe could be organized some central delivery through LC, like for RS-prelaunch calibrators)?

- The source(s) of Tm at central data processing (GFZ). Using NWP or reanalysis or Bevis et al. approximation from surface temperature. NWP – then which one (local weather service – but there are many). If reanalysis – then good, but we have to think about data latency time – it pushes GNSS-PW product more far from NRT.

- cut-off angle (one thing is for NT, or NRT processing, another thing is for climate (trends). Both T.Ning & G.Elgered And H.Keernik, K.Rannat have published research, that the best results for IPW trend analysis come with ca 15 degrees. IGS & EGVAP pushes on cut-off 0 degrees (i.e. everything is taken in, including the multipath). Higher cut-off angle will reduce effects of multipath, but increases ZTD uncertainty – the main contributor to IPW uncertainty.

- Data flow (better if LC will comment).

- SOPs for Omnibus (asked from many sources, takes more time. In worst case TT needs to be an initiator to define them). TD6 describes general and gruan-specific requirements, but it should be added what service/maintenance procedures must be done and how often – i.e. the timing regulations to guarantee high-quality service and data product.

- Data collection client – discussed with Michael today. Will be taken on todo list after