THE USE OF GNSS MOISTURE OBSERVATIONS IN METCOOP HARMONIE

E-GVAP meeting in the Netherlands, 28-29 Nov., 2017

Martin Ridal
Magnus Lindskog, Sigurdur Thorsteinsson and Tong Ning

Structure

- NGAA revitalisation
- Recent work
- Operational status
- Future plans and needs

NGAA revitalisation

- Due to quality issues MetCoOp did not assimilate NGAA data but rather the few (28) stations over the MetCoOp domain processed by METO and ROBH processing centres.

- In June, 2015, Lantmäteriet (the Swedish mapping, cadastral and land registration authority) took over the NGAA data processing which includes two parts of work:

    1. Move and modify GIPSY solution to Lantmäteriet servers.
    2. Prepare a new Bernese solution.

- Since 2016, Lantmäteriet send ZTD data to SMHI:
    - Sweden – 383 sites
    - Finland – 88
    - Denmark – 10
    - Norway – 192
    - IGS – 10

  In total 683 sites

- Both Bernese (v 5.2) solution (NGA1) and GIPSY (v 6.2) solution (NGA2) are uploaded to SMHI. Only Bernese solution are further uploaded to E-GVAP due to longer time delay (more than 1.5 hour) of the GIPSY solution caused by long waiting time of JPL ultra rapid orbit and clock product.

SMHI

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Data assimilation of GNSS zenith total delays from a Nordic processing centre

Magnus Lindskog[1], Martin Ridal[1], Sigurdur Thorsteinsson[2], and Tong Ning[3]

[1]Swedish Meteorological and Hydrological Institute, Norrköping, Sweden
[2]Icelandic Meteorological Office, Reykjavík, Iceland
[3]Lantmäteriet, Gävle, Sweden

Correspondence to: Magnus Lindskog (magnus.lindskog@smhi.se)

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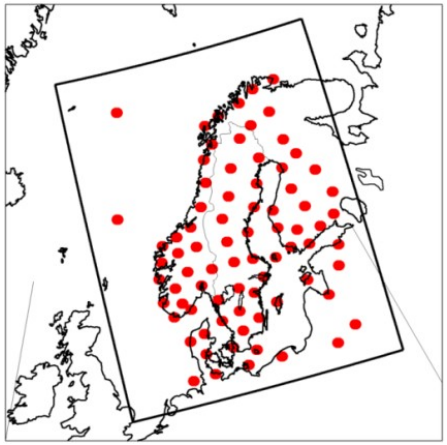
METCOOP OPERATIONAL USE OF GNSS (using 3D-Var in combination with VARBC)



Data from NGA1, METO and ROBH Spatial thinning ~100 km (~80 stations)

METCOOP FUTURE PLANS

- Set-up of MetCoOp Nowcasting system (first version in 2018)
- MetCoOp domain, forecasts each our
- The aim is to use 4D-Var
- ~20 min cut-off time for observations
- GNSS ZTD data each 15 min to 60 min (not decided)

NGAA FUTURE PLANS

The currently time delay for the NGA1 product delivery is about 45 minutes.

The main reason for such time delay is mainly due to the time waiting for fetching all the hourly rinex files. We can get hourly rinex immediately for all SWEPOS station, so in principle NGAA can provide hourly ZTD for all SWEPOS stations within 30 minutes.

However, for other countries, i.e. Finland, Denmark and Norway, we have to wait at least 10 minutes in order to get hourly rinex files for as many stations as possible. Especially for Norwegian stations, We have to wait for more than 20 minutes. So it is difficult for NGAA to provide hourly ZTD within 30 minutes for those countries.

If both SMHI and EGVAP think worthwhile, NGAA could work on data processing in order to provide hourly ZTD for all SWEPOS station with a 20-30 minutes delay. But for other countries, it cannot be done unless they can shorten the time uploading their hourly rinex files.

Regarding status of the current NGAA products, NGAA is still working on producing own satellite clock corrections in order to be able to provide NGA2 (from the GIPSY PPP solution) within 45 minutes and make it operational.