



Numerical Modelling Division (Staff) – *Gergely Bölöni (Head)*

- Data assimilation from Nov. 2013 (At first case studies from winter and summer months)
- ZTD data in E-GVAP format included all operating GPS receivers in Hungary (35)
- Applied NWP model type: AROME 2.5 km grid distance
- 3DVAR assimilation method
- Verification: objective scores + case studies
- Already done:
 - converting data to E-GVAP format (by Szabolcs Rózsa, BME)
 - adaptation of bias correction and tests for assimilation (Máté Mile, OMSz)



FÖMI



OMSZ



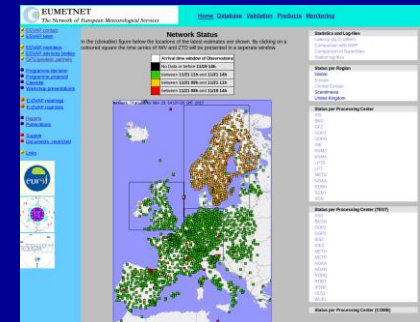
BME

?

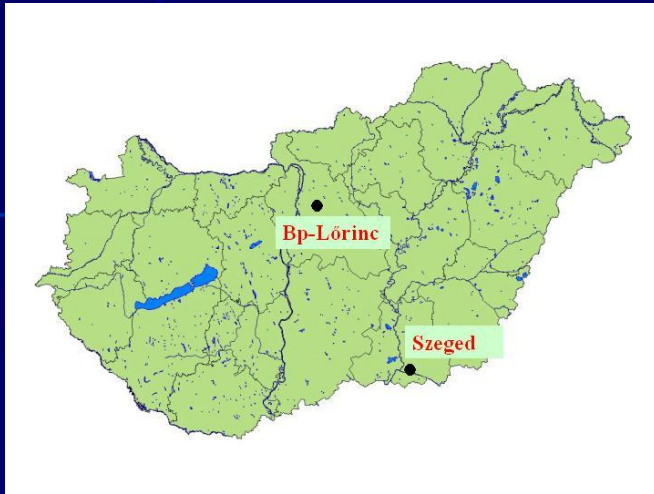
Current state of data
flow in Hungary

Until 31. Jan. 2015

E-GVAP



Finished project



Installation of a GPS receiver in July 2014

Flat terrain, 2 km from inhabited area

Best equipped observatory of OMSz (in point of remote sensing)

Comparisons and/or verifications of results with microwave radiometer and radiosonde



27 October, 2014

E-GVAP Expert Teams and Plenary
Meeting



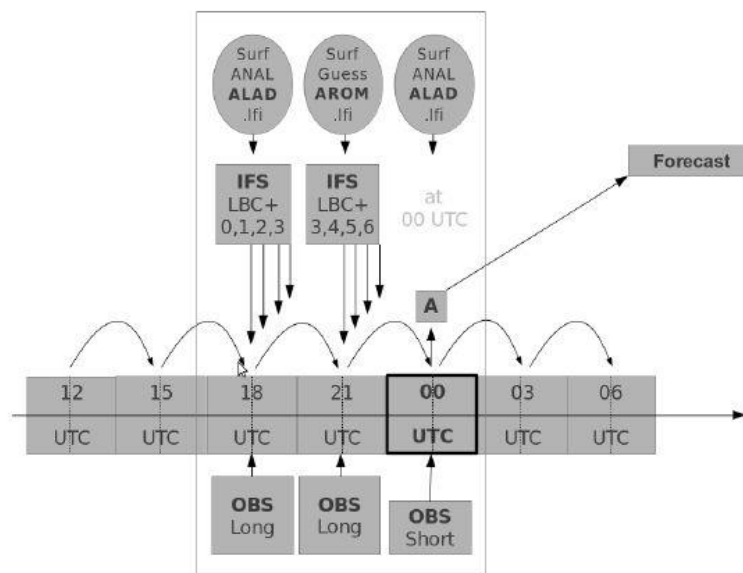
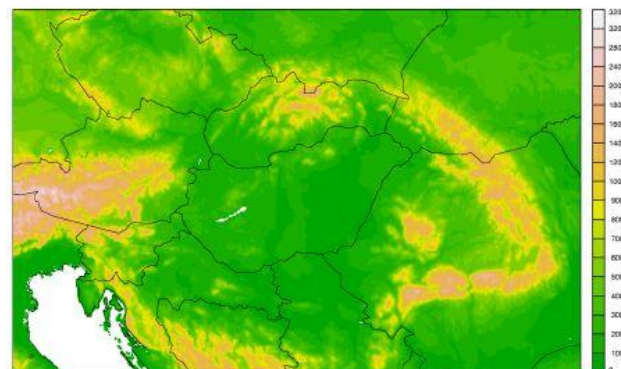
27 October, 2014

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AROME DA in Hungary (reminder)

nwp central europe

- 3h Rapid Update Cycle
(8 3DVAR analyses per a day)
- No surface assimilation for soil parameters
(surface updated from 8km ALADIN soil analysis and previous AROME runs)
- Background error statistics based on ensemble DA approach
- Recently Conventional obs. are used



Assimilation of GNSS ZTD used SGOB ZTD observations

- The GPS ZTD observations are disseminated in EGVAP format which has to be converted to OBSOUL ASCII for assimilation
- Hungarian ZTD observations are available through SGOB network (included in E-GVAP) in hourly frequency.
- Impact studies have been made with AROME 3DVAR for January and July of 2014.



Ground-based GPS receiver stations
in SGOB network



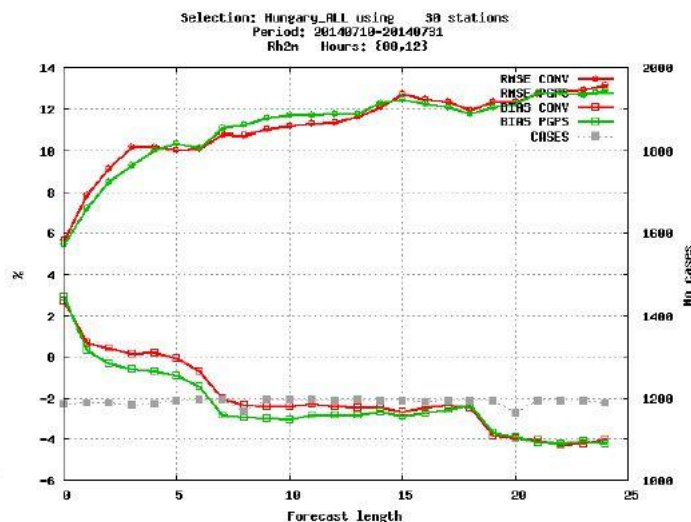
Selected stations during assimilation
(67 - 68 stations inside AROME domain)

Verification results

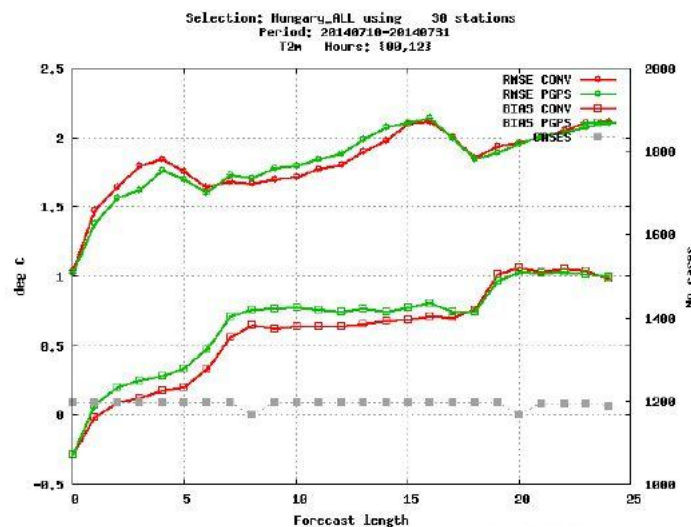
(July 2014)

- 68 ground-based GPS stations were selected i.e. presented in GPSSOL WHITELIST.
- ZTD observations were assimilated on the top of conventional ones in AROME 3DVAR 3h RUC.

HARMONIE verification
2014.07.10. - 07.31.



AROME OPER - Red
AROME PGPS - Green



Verification results

(July 2014)

HARMONIE verification
2014.07.10. - 07.31.

AROME CONV - Red
AROME PGPS - Green

