COST ES1206: Austrian activities

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COST MC meeting, 11-09-2014, Golden Sands, Bulgaria
Access to GNSS observations of about 90 Austrian sites in near real-time

ZTDs, Gradients, ZWDs and SWDs for ~90\* regional and ~150\* global GNSS sites

VMF1 mapping coefficients and ray-traced ZHDs and ZWDs on a global 2.5°x2.0° grid and for all GNSS sites of the IGS

* ZWD and SWD depends on the available meteo data
VARBC (variational bias correction) is a new method to replace the old static method to calculate the bias in the NWP system where the ZTD has been assimilated.

Old way: bias is fixed for different seasons

New way: bias is estimated during the assimilation process together with the model variables and is updated after every forecast run
COST related research projects

**GNSS-ATom (10/2013 – 09/2015)**

Find „best“ approach to obtain SWD (differenced / undifferenced)

Reconstruct wet refractivities \((N_{\text{wet}})\) from SWD \((x = A^{-1} \text{ m})\)

Assimilation of \(N_{\text{wet}}\) into high-resolution weather model AROME

*Gregor Möller, Robert Weber, Johannes Böhm: GNSS Tomography of the Atmosphere – Expectation from Galileo FOC, Conference Paper, 4th International Colloquium, Prague, Czech Republic, 4-6 Dec 2013*
The assimilation of the 3D tomography wet refractivity index into the high resolution AROME model is conducted in collaboration with Meteo France.

So far the forward observation operator has been developed. More work is undergoing for the pre-processing part.

Simple equation (Smith and Weintraub 1953) for refractivity calculation is used for writing the operator: \( N_{\text{wet}} = k_3(e/T^2) \)
TROPSY (01/2013 – 09/2014)

Troposphere model GPT2w – operable in blind mode / with data reflecting the actual state of the troposphere.

GPT2w provides mean, annual and semiannual terms of \( p, T, T_m, dT, Q, \lambda, ah, aw \) on a global 1° grid


COST related research projects

**ISR-Atmosphere (10/2014 – 09/2015)**

Use of Galileo two frequency Inter-Satellite Ranges (ISR) in K-Band for Troposphere Tomography and Ionosphere Monitoring

**RADIATE VLBI (05/2013 – 04/2016)**

Improved VMF1 with higher spatial resolution and gradients

**GNSS signal generator**

Providing GPS L1 and Galileo E1/E5 signals of a full GPS / Galileo constellation
Thank You

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