TU WIEN TECHNISCHE UNIVERSITÄT WIEN

Bundesamt für Eich- und Vermessungswesen

EGU

Preparations for the ITRF2020 at TU Wien

Anna Zessner-Spitzenberg[1], David Mayer[2], Andreas Hellerschmied[2], Markus Mikschi[1], and Sigrid Böhm[1]

[1] TU Wien, Higher Geodesy, Department of Geodesy and Geoinformation, Austria
[2] Bundesamt für Eich- und Vermessungswesen, Vienna, Austria

Session G2.2

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Goals

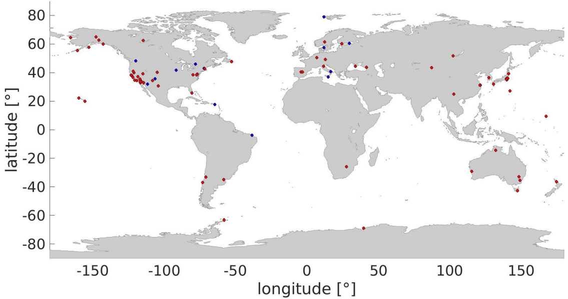
- Contribution to the ITRF2020 with Very Long Baseline Interferometry (VLBI) sessions analysed from the Vienna VLBI Group
- Computing our own TRF
- Analyzing the effect of non-tidal Atomspheric Pressure Loading (APL) and antenna Gravitational Deformation on VLBI results

Methods

- using a selected list of VLBI sessions from the last 40 years (∽6000 sessions)
- new implemented models :
  - Galactic Aberration
  - Antenna Gravitational Deformation
  - EOP High Frequency Model
  - New IERS poletide model (2018)
- computing a global solution with the selected VLBI sessions
- analysing the session with the Vienna VLBI and Satellite Software (VieVS)

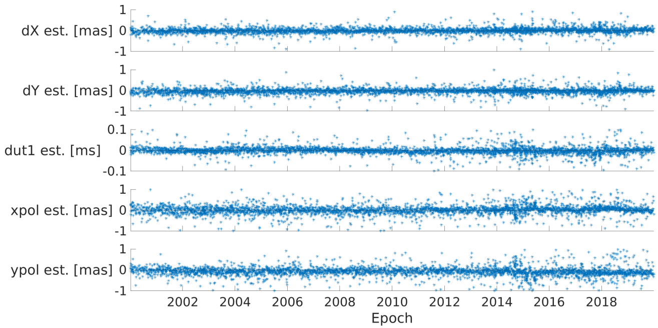
Interim Results - TRF estimated with VieVS

- 6085 S/X VLBI sessions from 1979-2019
- # Stations: 102
- # Sources: 4877



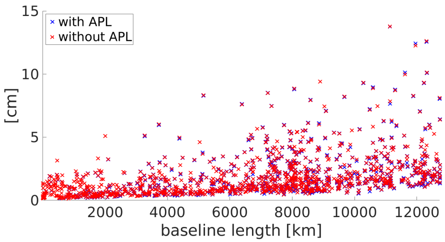
Station distribution included in the TRF. Stations in blue are included in the datum definition.

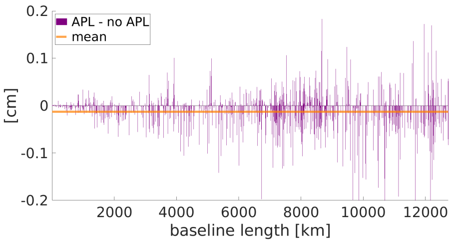
Interim Results - EOP Estimates



Time series of EOP estimates w.r.t. C04 computed from a backward solution from the TRF generated with VieVS.

Interim Results - APL





The figure on the left depicts the weighted baseline length repeatability (blr) of two solutions, one with non-tidal APL (blue) and one without (red). The difference of these solutions is shown in the figure on the right. It is calculated by $blr_{APL} - blr_{noAPL}$*. Further, the mean value of the differences is illustrated in orange.*

Outlook

- comparing our TRF to the ITRF2014 and other TRFs
- analysing the effects of non-tidal APL and antenna Gravitational Deformation on the TRF