

IGS SWITCH: IGS05 + igs05.atx → IGS08 + igs08.atx

- igs05.atx → igs08.atx:
 - Change of robot calibrations due to additional number of calibrated antenna
 - Change of robot calibrations of reference antenna → change of all calibrations done with respect to this reference antenna
 - Inclusion of robot calibrations for antenna+radome that previously did not have robot calibrations
- IGS05 RF → IGS08 RF
 - IGS08 based on ITRF2008
 - But ITRF2008 is based on igs05.atx antenna calibration models and IGS08 RF will be used together with new igs08.atx model → compatibility problem
 - Application of station-dependent position correction in ITRF2008 to take into account switch from igs05.atx to igs08.atx model (PPP using Bernese) → IGS08
 - But correction only available for IGS08 stations

GENERATION OF REGIONAL SOLUTION (pos+vel) CONSISTENT WITH IGS08 RF

- A. Complete reprocessing using igs08.atx antenna calibrations and then tie to IGS08 RF (or ITRF2008)
 - But:, will require time...
- B. Use existing cumulative solution (pos/vel) obtained using igs05.atx calibration model
 - Compute for each station, the position change caused by switch igs05.atx to igs08.atx
 - Apply corrections
 - Perform Helmert transformation to IGS08 using IGS08 stations

EUREF DENSIFICATION OF ITRF2008/IGS08

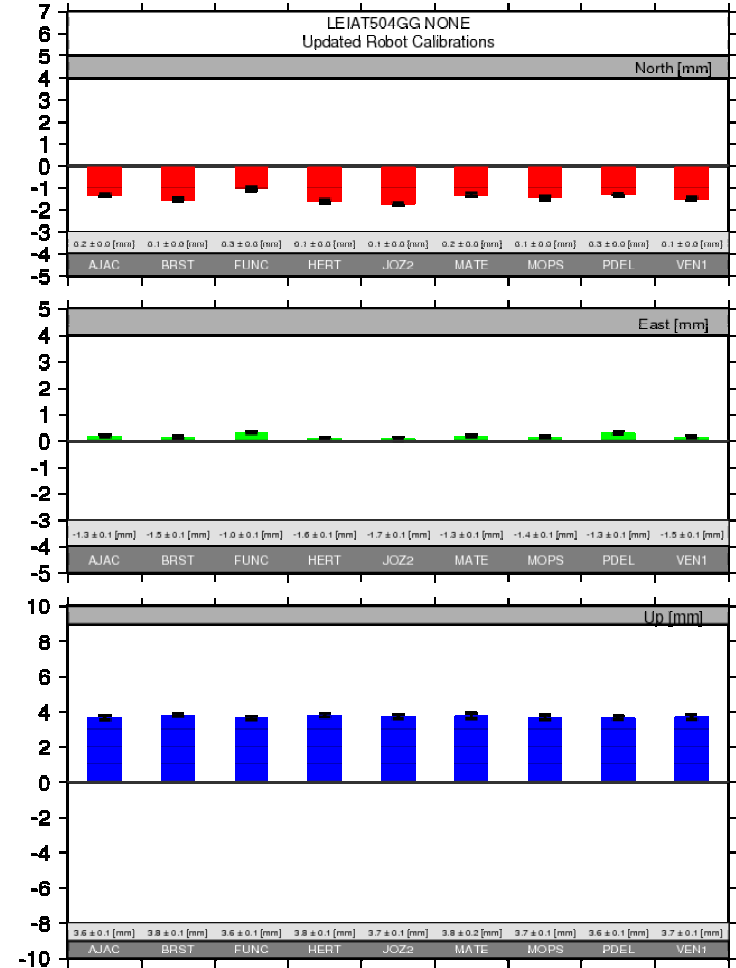
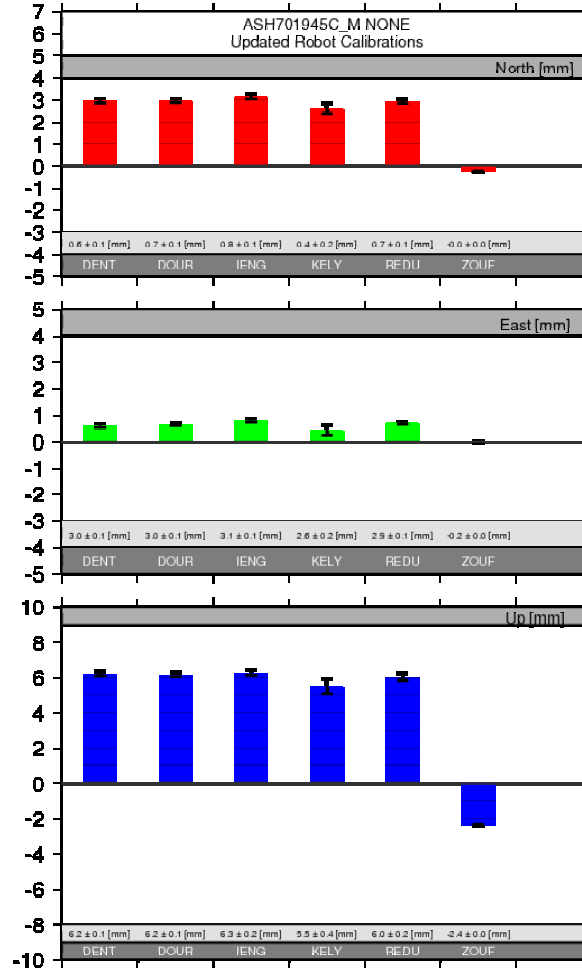
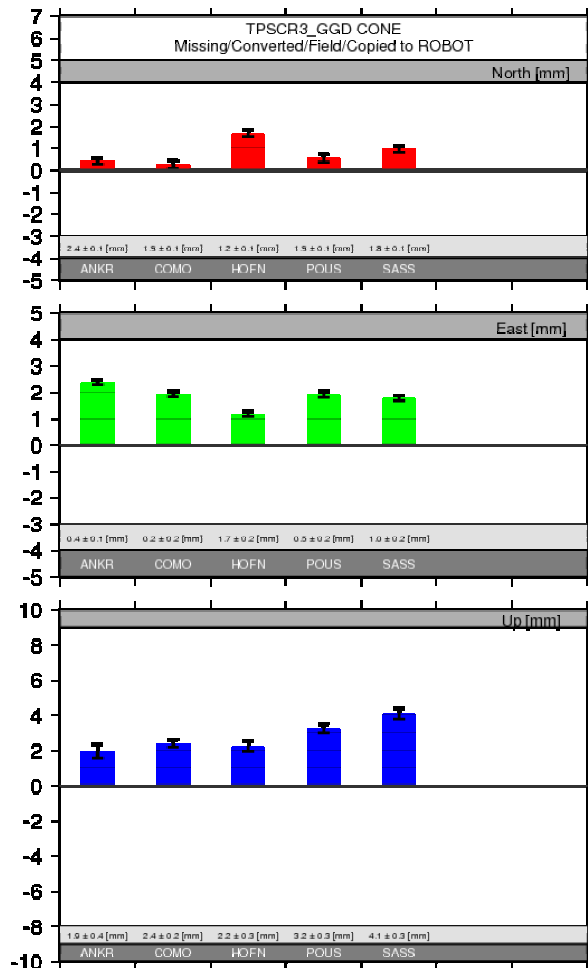
- Reprocessed cumulative EPN solution (igs05.atx antenna model)
 - Application of antenna correction model to obtain positions in consistent with igs08.atx
 - Helmert to IGS08 RF or ITRF2008 (TBD, common stations)
- EPN Class A stations in IGS08/ITRF2008 frame to be used for future EUREF densifications

What is required from us:

- Need finalised repro1 EPN solution (LAC, combination, stacking)
- Need to compute the antenna correction for each EPN station

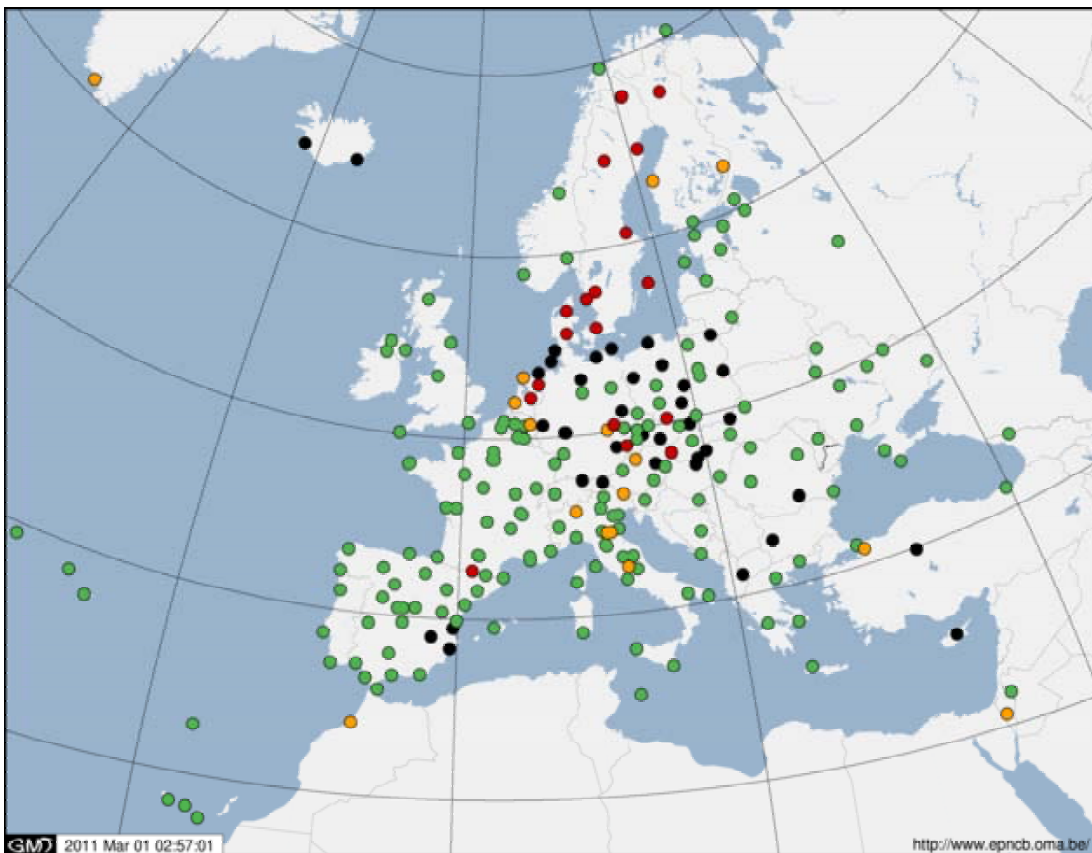
DIFFERENCE IGS08.ATX – IGS05.ATX TYPE CALIBRATIONS

In general: up to 4 mm (stdev= 0.05 mm) in horizontal and 8 mm (stdev=0.08 mm) in vertical



INDIVIDUAL ANTENNA CALIBRATIONS IN THE EPN

Individual calibrations (16%) Robot calibrations (70%)



Origin of individual calibrations:
GEO++

Except:

SenStadt Berlin:

PENC, BUTE, ZYWI

BPDL, HELG, BYDG

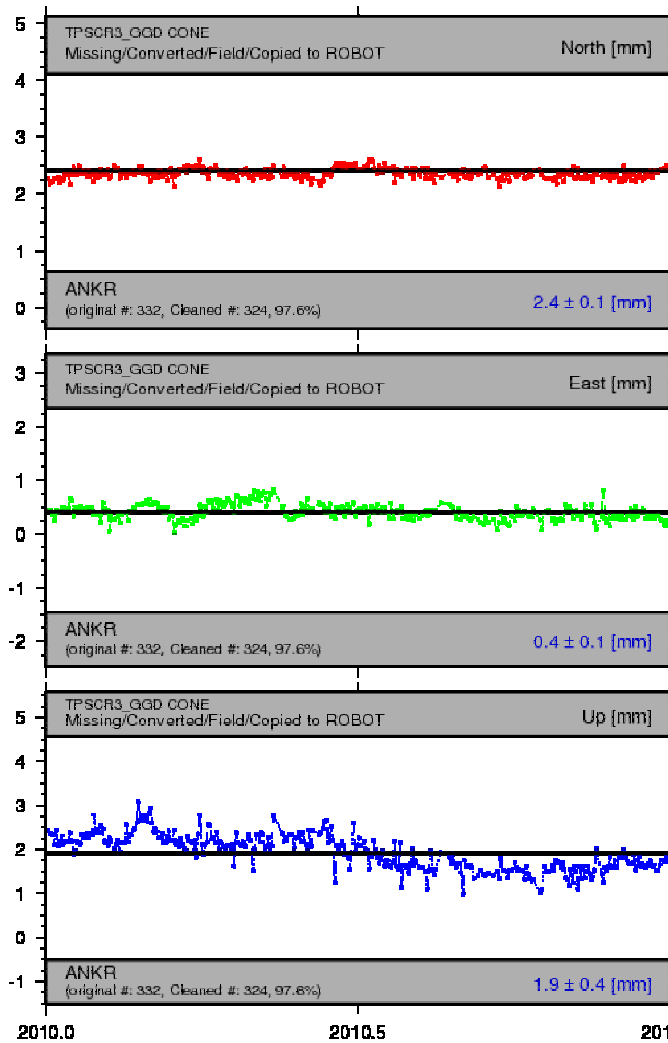
GWWL, LODZ, REDZ

SWKI, USDL, KATO

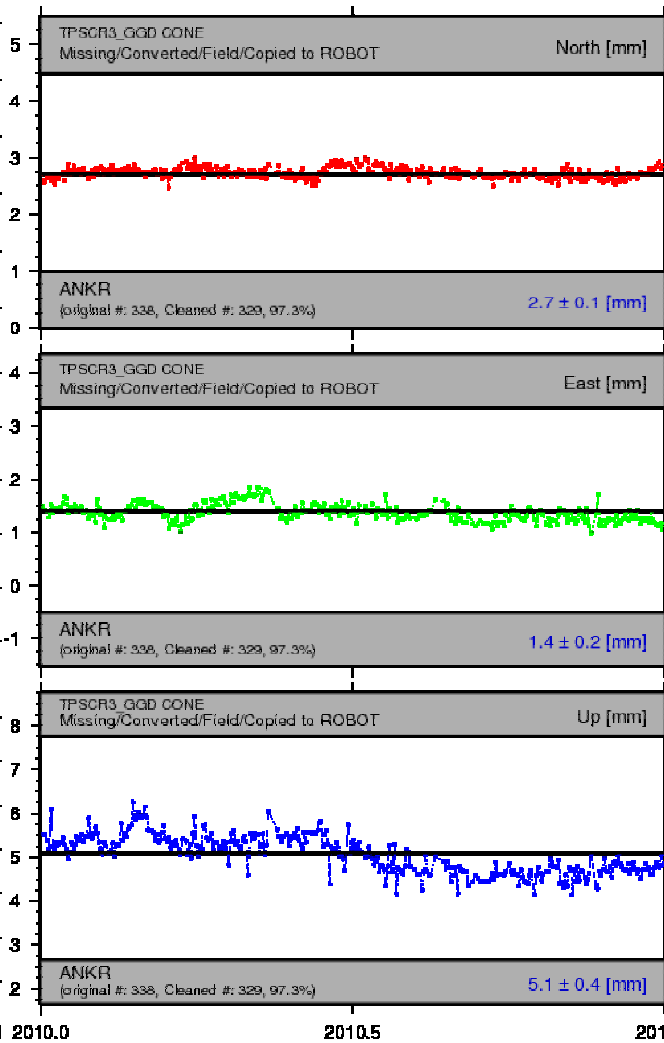
Calibration facilities officially recognized by IGS:
GEO++, Univ. Hannover, Univ. Bonn

REPEATABILITY OF ESTIMATED STATION POSITIONS

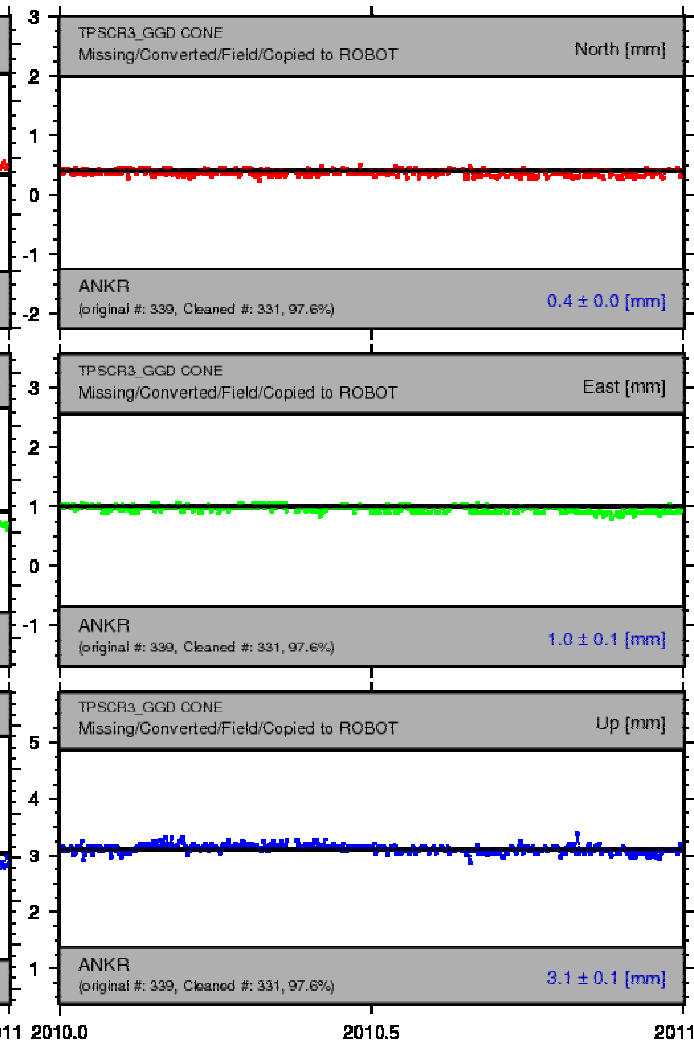
IGS08.ATX - IGS05.ATX



INDIV. CALIB. - IGS05.ATX



INDIV. CALIB - IGS08.ATX



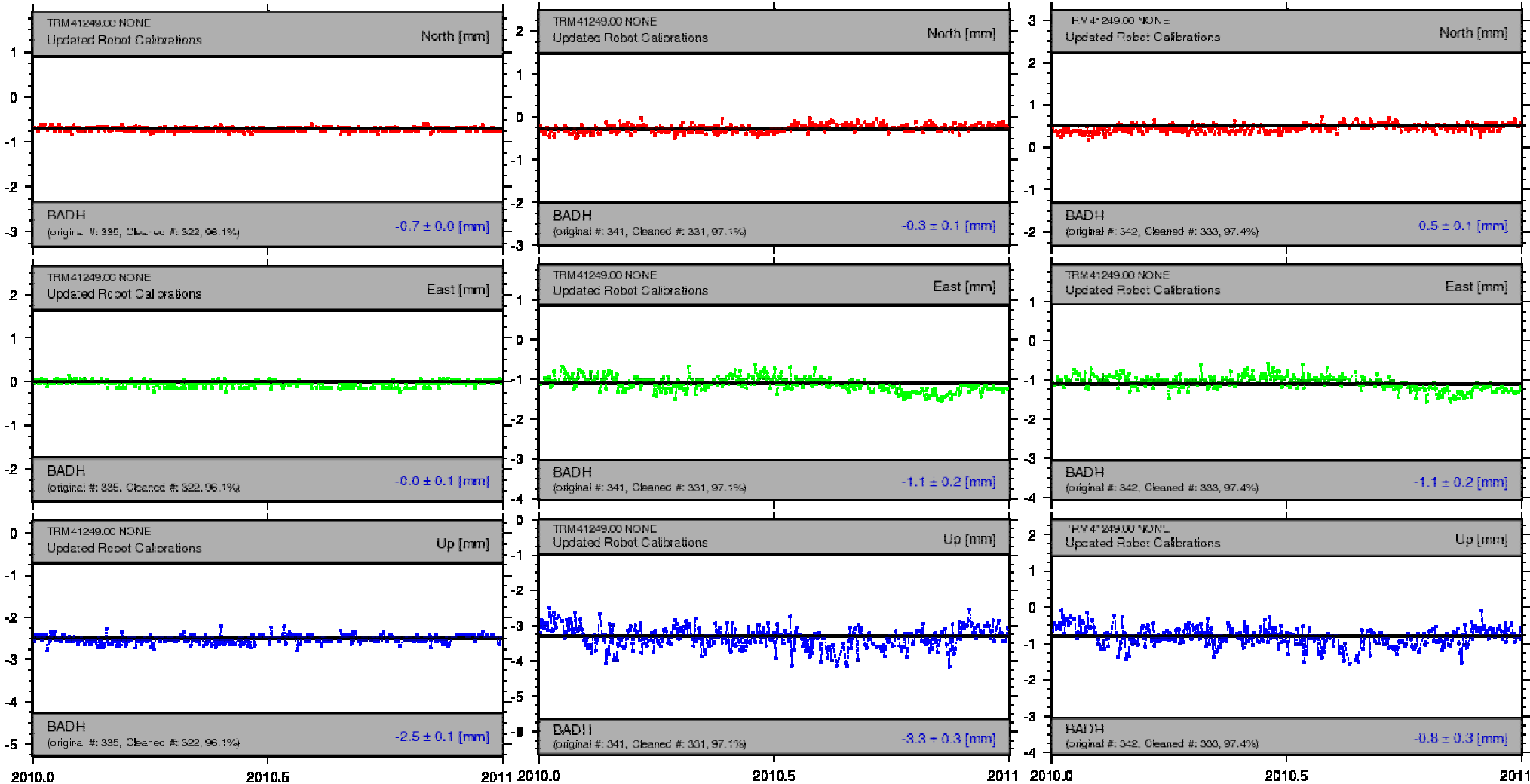
IGS05.ATX dominates noise

REPEATABILITY OF ESTIMATED STATION POSITIONS

IGS05.ATX - IGS08.ATX

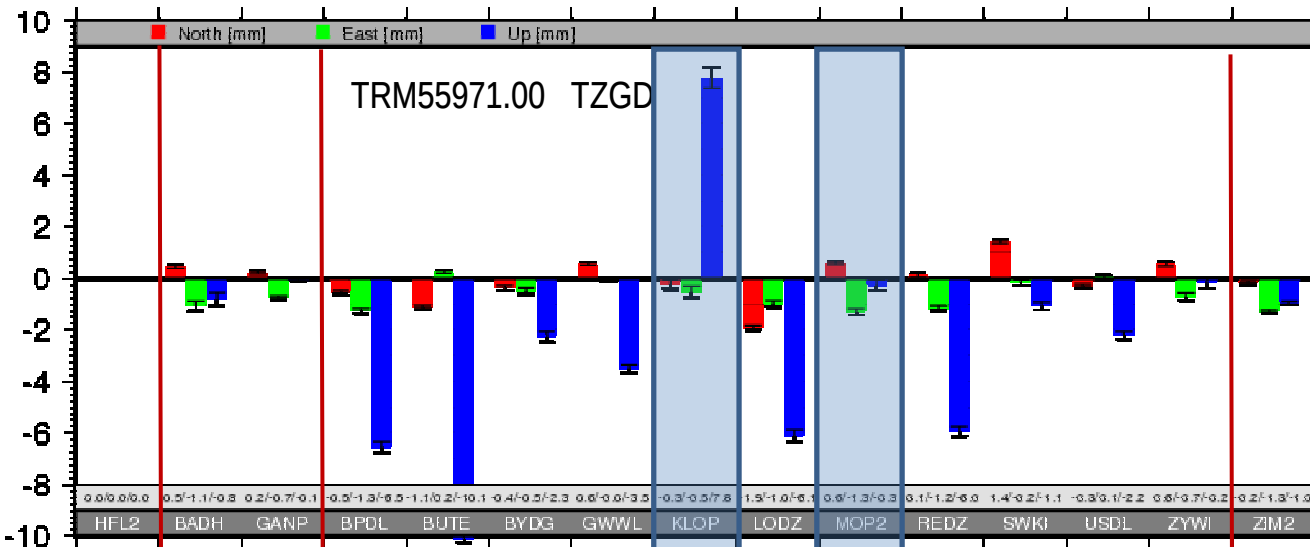
IGS05.ATX – INDIV. CALIB.

IGS08.ATX – INDIV. CALIB.

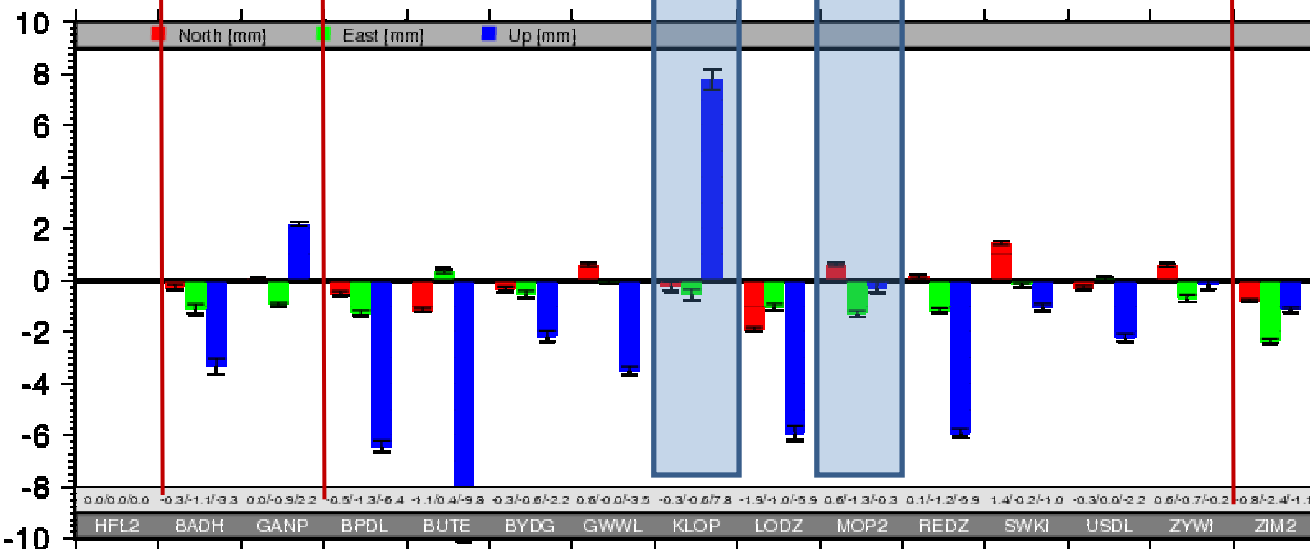


Individual Calibration dominates noise

INDIVIDUAL CALIBRATIONS?

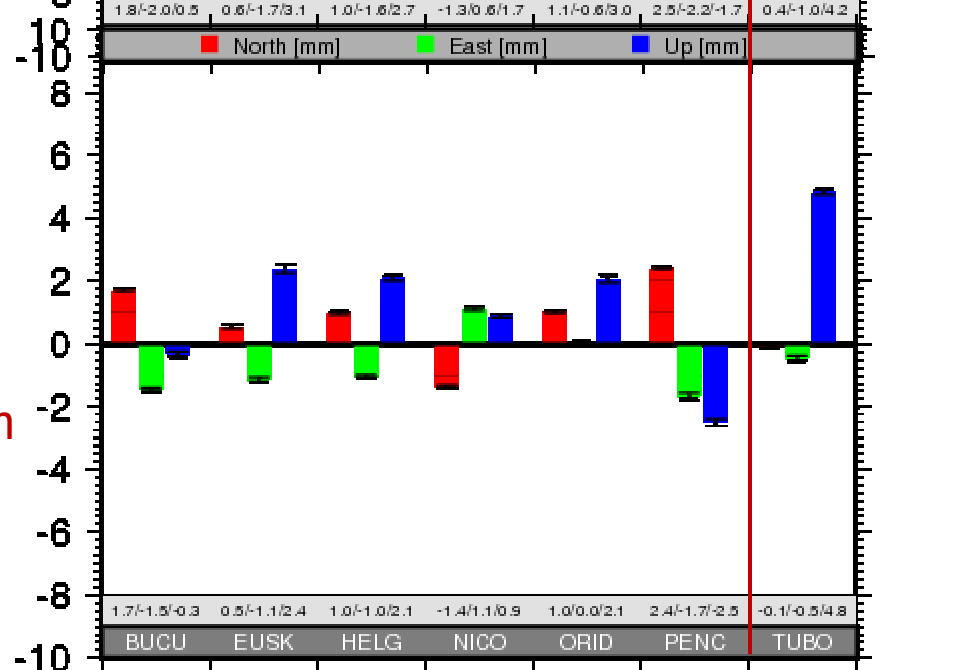
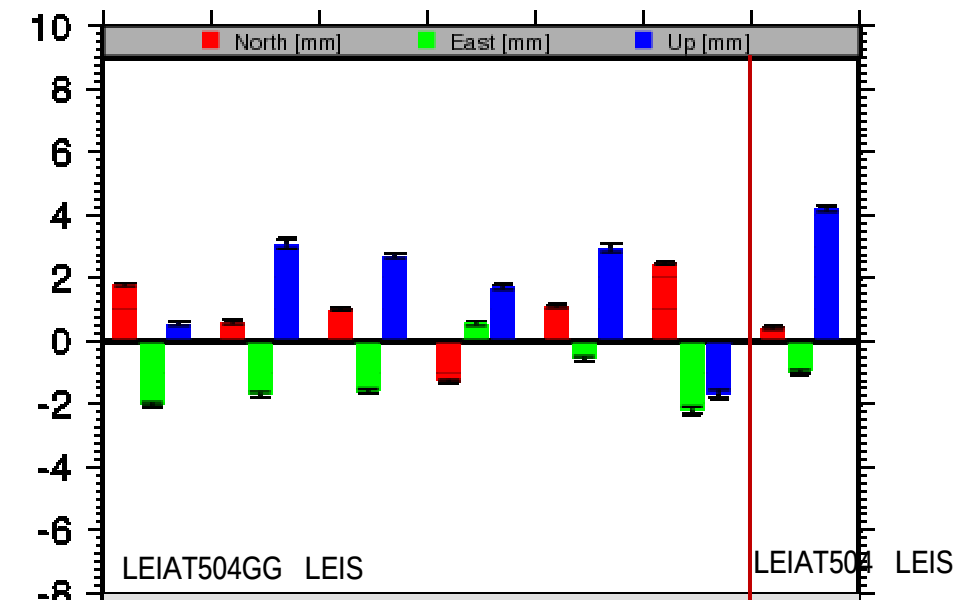
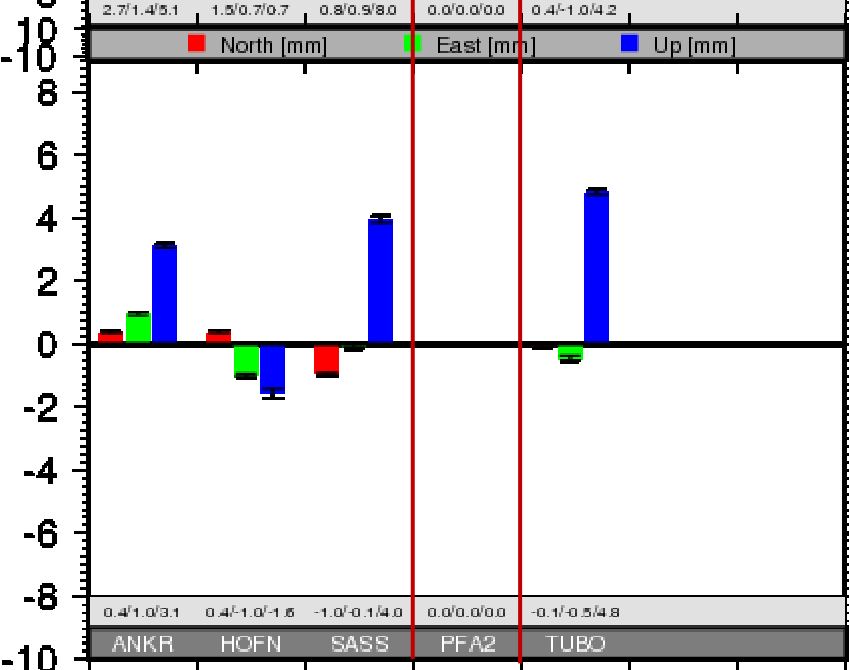
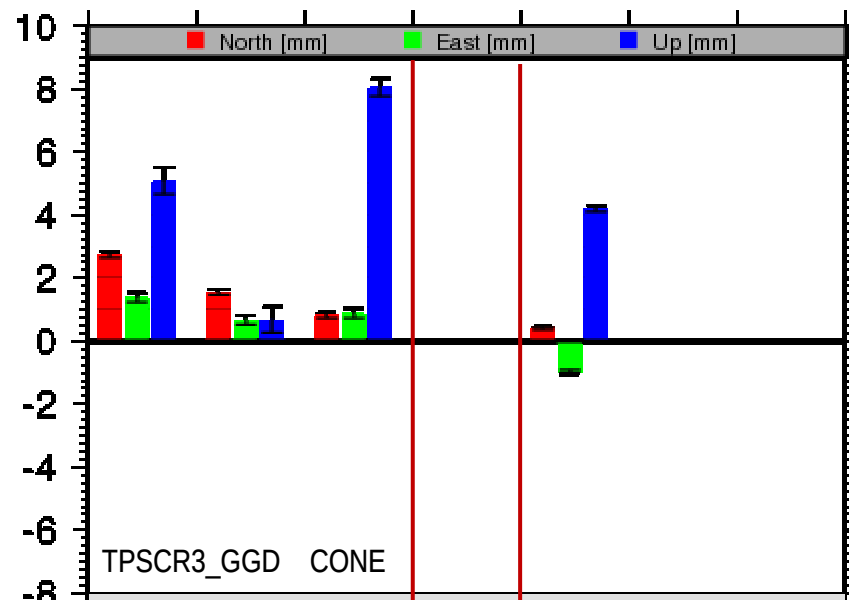


INDIV. CALIB. - IGS05.ATX



INDIV. CALIB. - IGS08.ATX

INDIVIDUAL CALIBRATIONS



INDIV.
CALIB.
- IGS05.ATX

INDIV.
CALIB. -
IGS08.ATX

IGS08.ATX in
better
agreement
with indiv.
calib.

INDIVIDUAL CALIBRATIONS

IGS will soon change its antenna calibrations.

The EPN will do the same by taking over the type calibrations from IGS

Questions:

- Should we continue to work with individual calibrations within EPN?
remember: when the igs05.atx was introduced, we had not other choice

Indiv. Calib:

Pro: no changes when update of atx file

Against: Disagreement with IGS

Possible compromise: use IGS type calibrations for IGS stations in the EPN, leave possibility to use indiv. calib for others.

- What about calibrations from SenStadt Berlin?

ANTENNA CALIBRATION MODELS

- Need know position change for each station caused by change of igs05.atx to igs08.atx
- IGS has these offsets for the IGS08 stations (Bernese PPP)
 - For non-IGS08 stations a latitude-dependent antenna correction model is provided to the users
 - But better would be of course to do the same as the IGS and compute the correction from PPP
 - Work in progress at EPN CB!
- Antenna offsets cause the switch from igs05.atx to igs08.atx
- Investigation of effect of the individual antenna calibrations (only used within the EPN) on the estimated station positions
 - Based on PPP analysis: identical data analysis done with once igs05.atx, igs08.atx or indiv. calib.
 - 1 year of data → coordinate shift estimated due to difference in receiver antenna calibration