Recent Activities of the SGO Local Analysis Centre

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Main Activities and Products

EPN related activities and contributions:

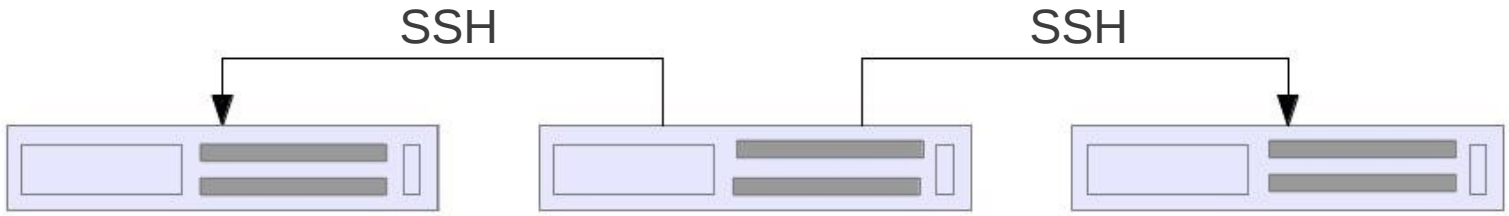
- weekly processing of our EPN sub-network based on IGS final products since GPS week 1143:
  - coordinate estimates (sgowwww7.snx)
  - tropospheric delays (sgowwwwd.tro)
- daily processing based on IGS rapid products since GPS week 1479:
  - coordinate estimates (sgowwwwdr.snx)
- time series analysis (Ambrus Kenyeres)
- station densification for a higher resolution velocity field

Other Activities

National geodetic tasks:

- operation of GnssNet.hu
  - support for land surveyors
  - station maintenance
  - time series for inspection of station's stability
- geodynamic investigations
  - contributing to the CEGRN Consortium
  - MGGA
- estimation of near real-time tropospheric zenith path delays
- introduction of other space geodetic techniques

Processing strategy - hardware



the only task:
- computation

primary task:
- multi-threading
- controlling and setting options

secondary task:
- GNSS data and products storage

the only task:
- computation

Type of all the three machines: Asus RS120-E4PA2, Intel Xeon X3220 2.4Ghz, 4GB DDR2800, 2x250GB WD 7200rpm RAID1
Operation system: Debian 6.0.7
Software: Bernese GPS Software 5.0

Processing strategy - software

Bernese GPS Software V5.0 compiled by GNU compiler used for analyze the GPS only data according to the EPN guidelines:

- satellite system: GPS, sampling rate: 30/180 sec, cut off a.: 3°
- ambiguity resolution algorithm: QIF
- reference frame: IGb08
- PCV file: I08
- sites used for mc: GRAZ, METS, SOFI, PENC, POLV
- Input data: IGS orbit and erp, COD ionosphere model for AR
- Troposphere model: Niell with 5.0 meter abs. and rel. sigma

Switch to the newest version of Bernese

Learning and testing procedure:

- the software was installed on Ubuntu 12.04 platform
- Ifort intel compiler V13.0.1, Perl V5.14.2., Qt4
- updating the BPE related files (PCF, PAN, OPT)
- incorporation of the new features

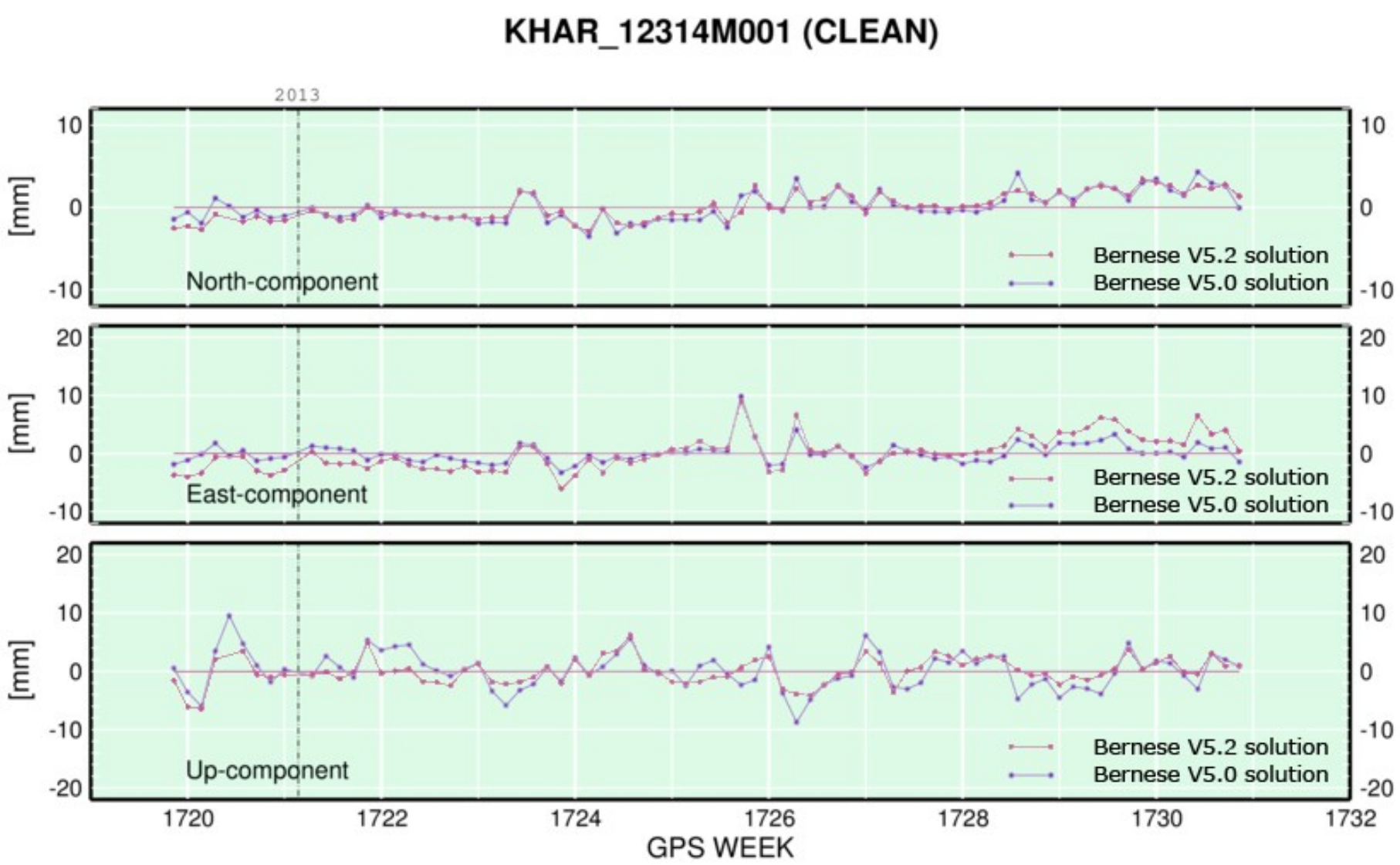
Now the modified processing engine is able to:

- process hourly, daily data and data for several days in one session,
- add new station fully automatically,
- select several files like .STA, .ABB etc...,
- select the datum, epoch for it, and
- set the baseline lengths for different AR algorithm

The modifications

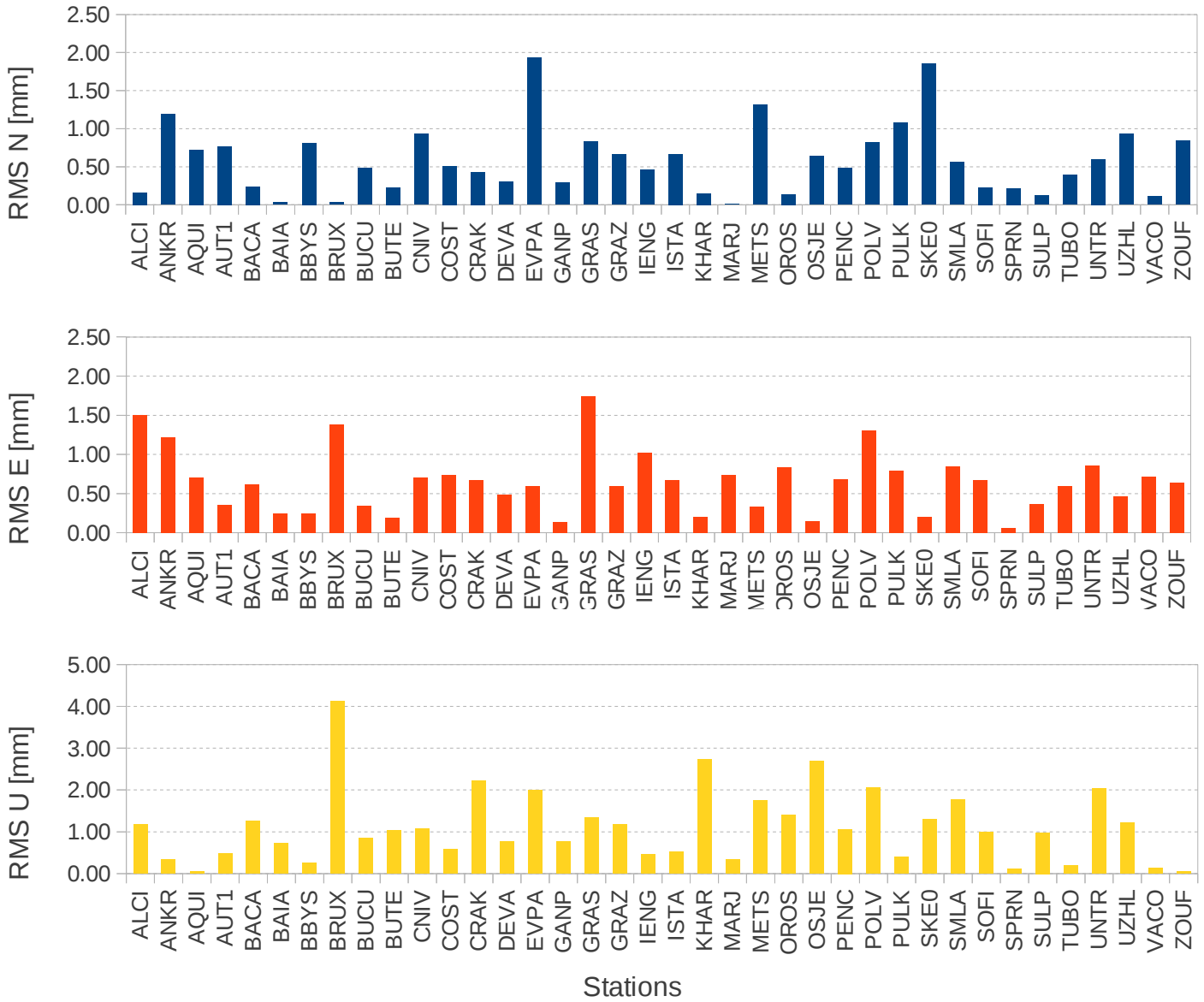
- using GPS + GLO observations
- beside .BLQ, the .ATL file is also taken into account
- new nutation and sub-daily models are introduced
- DE405 + EGM2008_SMALL + stochastic pulses during orbit integration
- code measurements cleaning before doing the receiver clock synchronization
- BOTH and COMBINE method are used in program MAUPRP according to the baseline length for phase preprocessing
- GMF troposphere modeling is selected for the float and VMF for the fix solution
- ambiguity resolution: SIGMA and QIF depending on the baseline length

Residuals position time series



Sun May 12 23:42:49 2013

Coordinate residuals after comparison



Max: 1.93 - EVPA
Min: 0.01 – MARJ
Avg: 0.58 mm

Max: 1.74 - GRAS
Min: 0.06 – SPRN
Avg: 0.65 mm

Max: 4.13 - BRUX
Min: 0.05 – ZOUF
Avg: 1.12 mm

Future plans

- switch to the new BPE and Bernese GNSS software within a few weeks
- if there is a chance then adding new stations to our subnetwork
- involve new software products – GIPSY-OASIS II. 6.2
- ...

Thank you for your attention!

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