Bundesamt für
Kartographie und Geodäsie

BKG LAC Report

Frankfurt am Main

Leipzig

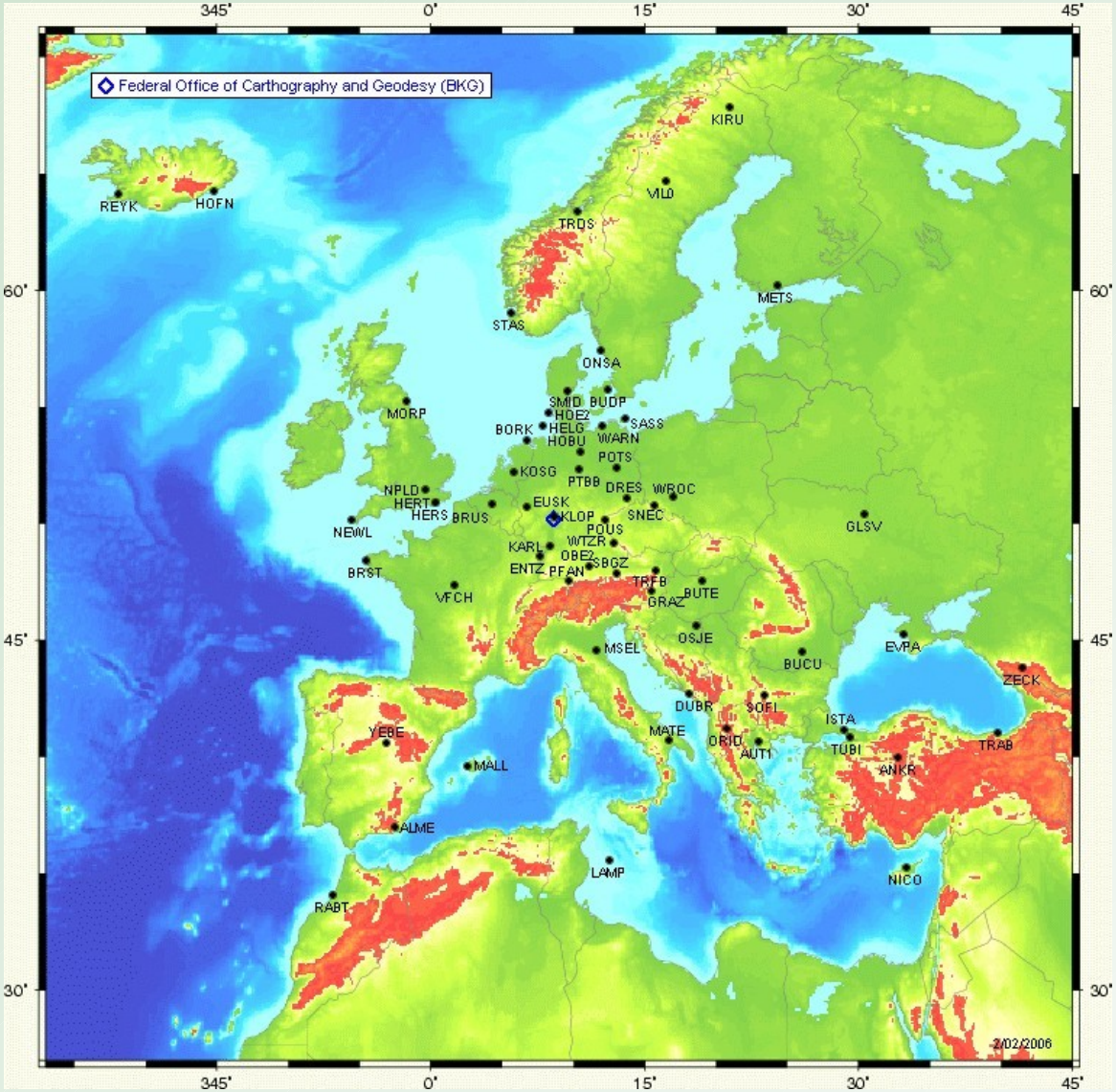
Wettzell

Peter Franke
Heinz Habrich
Wolfgang Söhne

Federal Agency for
Cartography and Geodesy
Frankfurt/Main

Bundesamt für
Kartographie und Geodäsie

BKG LAC Report



BKG LAC Report

Changes since LAC Workshop 2003 in Graz

Status BKG LAC:

September 2003: 49 Stations March 2006: 63 Stations

New EPN Stations in Germany:

- WARN 14277M002 (Warnemünde) (10/03)
- HOER 14284M001 (Hörnum/Sylt) (10/03)
- HOE2 14284M002 (Hörnum/Sylt) (08/05)

Hardware-Change:

- HELG (now tracking GPS+GLONASS by Javad Receiver)
- KARL (now tracking GPS+GLONASS by Javad Receiver)
- WTZR (now tracking GPS+GLONASS by Javad Receiver)

BKG LAC Report

Change of the Analysis Software
Bernese 4.2 => Bernese 5.0

- Change to Bernese 5.0 January 2005
- Submission of Bernese 5.0 results to EPN since GPS week 1319
- Using bpe (bernese processing engine) plus RNX2SNX procedure of Bernese 5.0, modified due to the guidelines of EPN analysis
- Products:
  - weekly SINEX files (Minimum constrained solution)
  - weekly SUM file
  - daily SINEX files and daily SINEX TRO files
- Hardware: Dell Intel Pentium 4 PC; OS: Red Hat LINUX 2.6.9

BKG LAC Report

Status of the GNSS reference stations of BKG in Germany

March 2006:

Real-time dataflow: 20 Stations

GPS + GLONASS: 21 Stations

Combined Analysis of the 63 EPN Stations (BKG) and about 25 sites in Germany

This extension of the “official network” is processed each day and additional stations are removed in the weekly combination.

BKG LAC Report

Status of the GNSS reference stations of BKG in Germany

Characterized as an

“Integrated Geodetic Reference Network”

GREF :

- absolute gravity measurements
  marked with ▭ or ▭ (SG)

- connection to Tide gauges, e.g. (KIEL)

- real-time dataflow to BKG (raw-data)

- generation of RINEX data (1 sec.)

- raw-data in real-time (Ntrip) to public

BKG LAC Report

Status of the GNSS reference stations of BKG in Germany

What will be new in future:

Change of the real-time dataflow:

- Now most of the real-time stations are managed by the central PC Server in Frankfurt. Raw-data flow only via Internet or DSL technique to BKG, then from BKG via Ntrip to public.

- New: Mini PCs will be installed at our real-time stations, they will send raw-data streams via Ntrip to public.

BKG LAC Report

BKG / GREF analysis:

Some aspects of the analysis for EPN:

- BKG solution is going in three steps: Daily – Weekly – Troposphere

  - Daily solutions of all stations include the national extension using modif. RNX2SNX
  - Weekly solution of all stations (ADDNEQ2, minimum constrained);
    weekly solution by removing the additional stations in Germany
  - Estimation of tropospheric parameters by using the estimated coordinates
    from the weekly solution

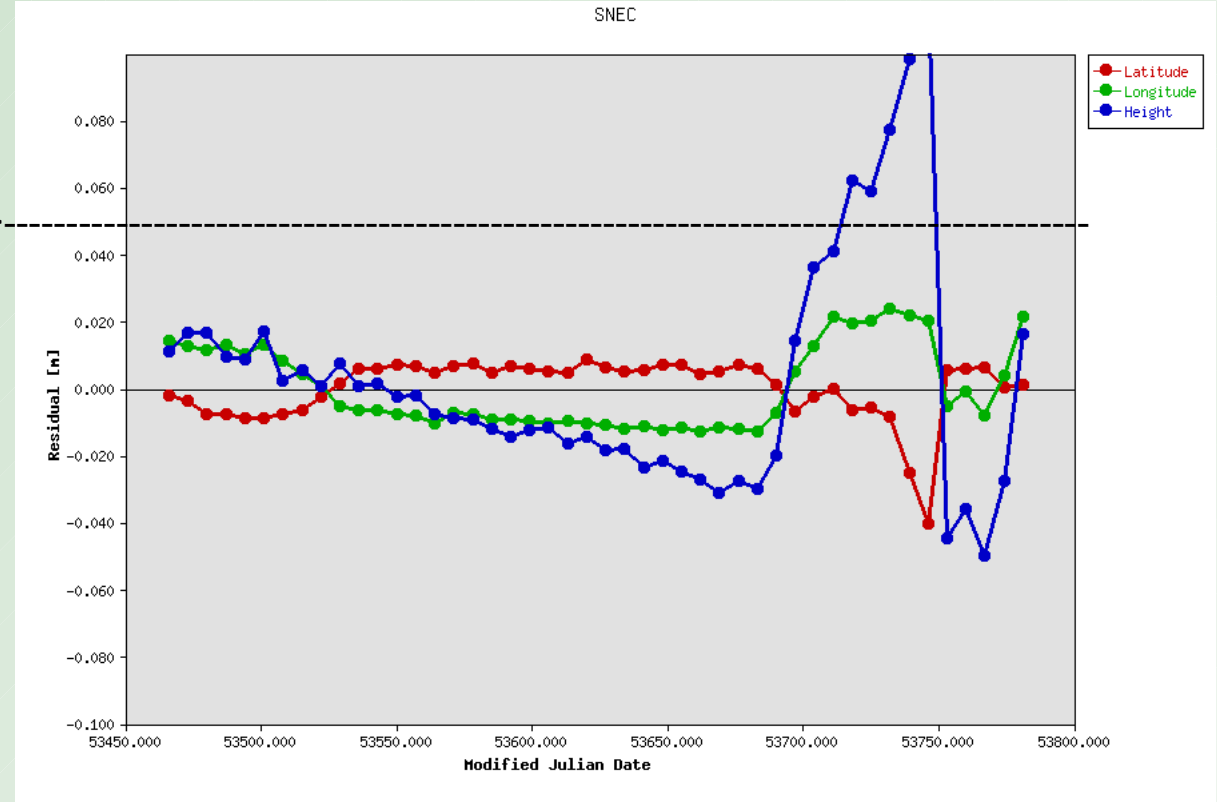
- Parameters: Final IGS Orbits, ITRF2000 Coordinates + Velocities

- Transfer of the daily and weekly SINEX / SUM files to BKG data centre

BKG LAC Report

BKG / GREF analysis: Problematic stations

5 cm ->

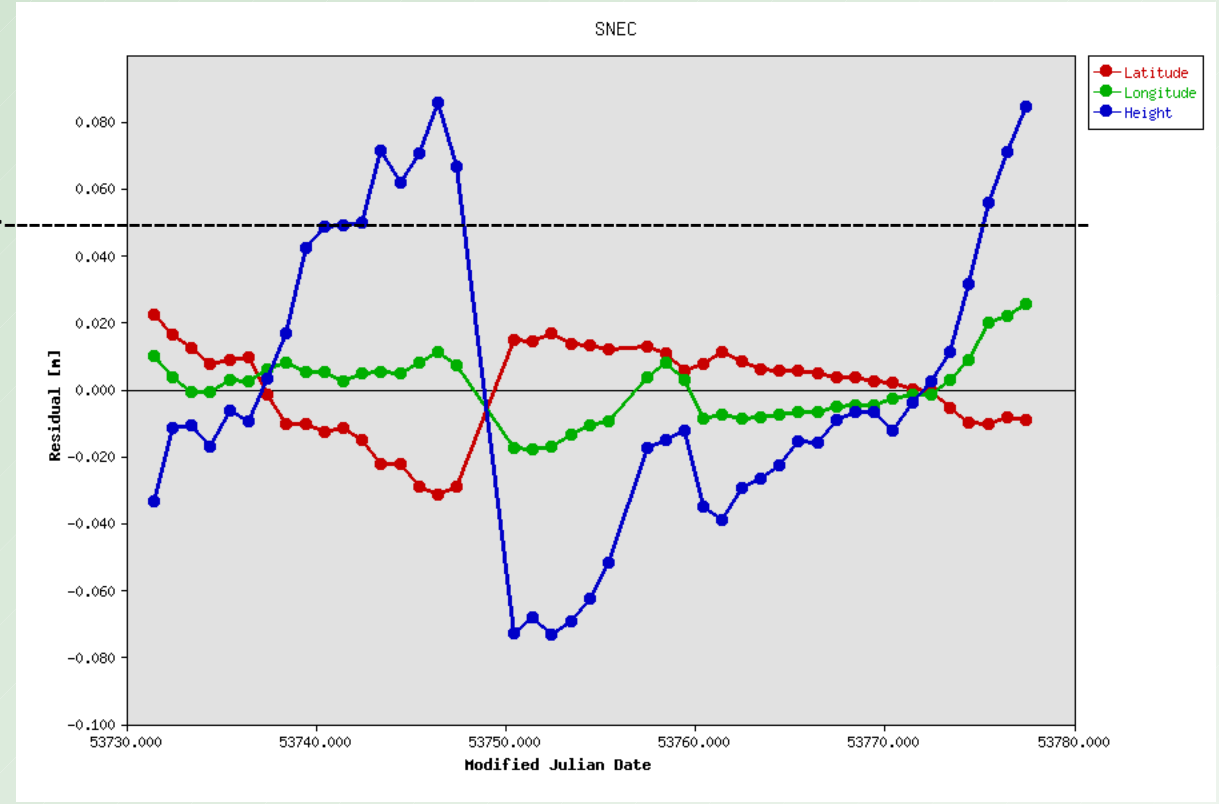


Residuals of a (ADDNEQ2) combination of weekly solutions
(GPS weeks 1317 – 1362)

BKG LAC Report

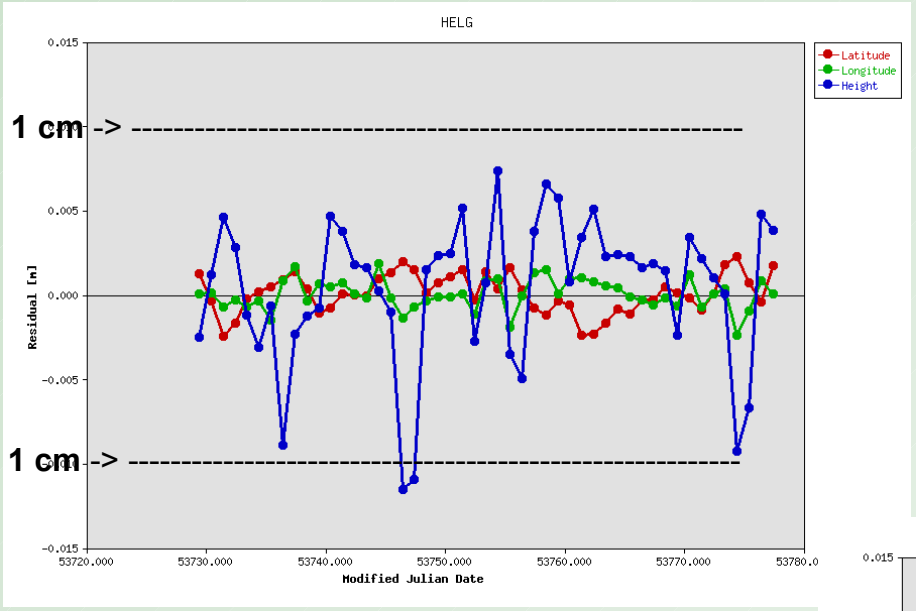
BKG / GREF analysis: Problematic stations

5 cm ->



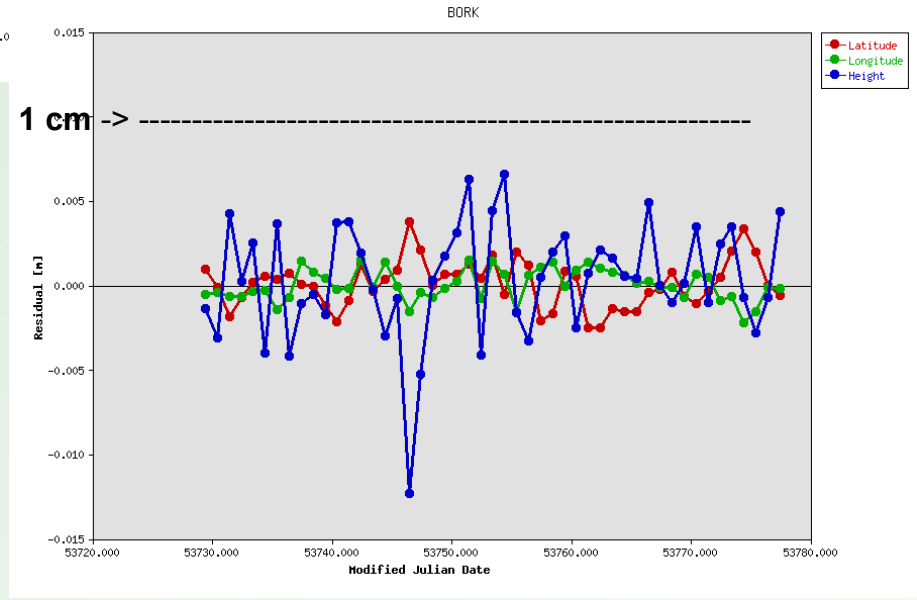
Residuals of a (ADDNEQ2) combination of 7x7 daily solutions
25.12.2005 – 11.02.2006 (week 1355 – 1361)

BKG LAC Report



BKG / GREF analysis:

Residuals of a (ADDNEQ2) combination of 7x7 daily solutions 25.12.2005 – 11.02.2006
(week 1355 – 1361)



BKG LAC Report

Special Investigations of BKG LAC:

- Experience with analysis of GPS + GLONASS observations
- Integration of individual Antenna PhaseCentreVariations
- Preparation of BKG analysis for introduce of absolute PCV

BKG LAC Report

Thank you!