

# OLG LAC 2006–2008 EPN Related Activities

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(1) Federal Office of Metrology and Surveying (BEV)

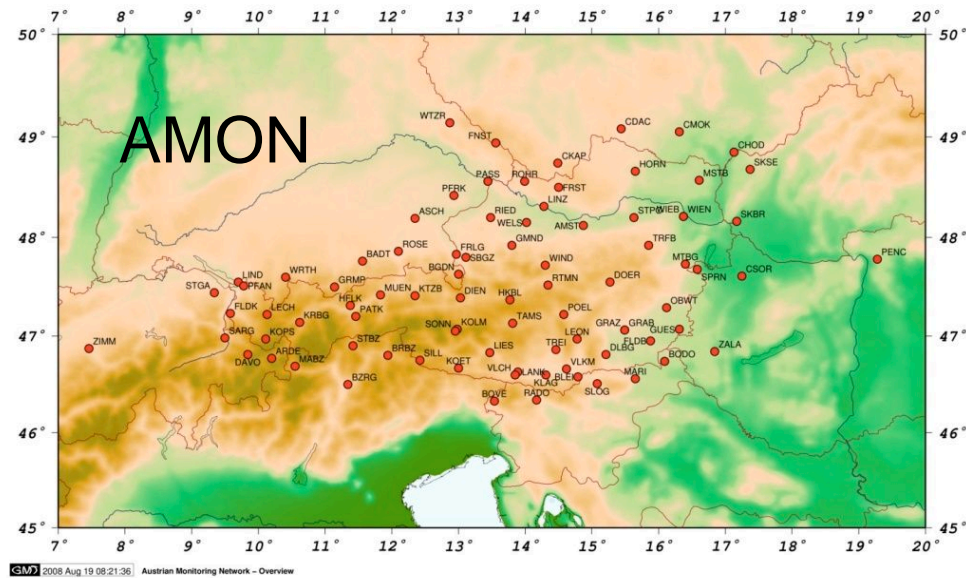
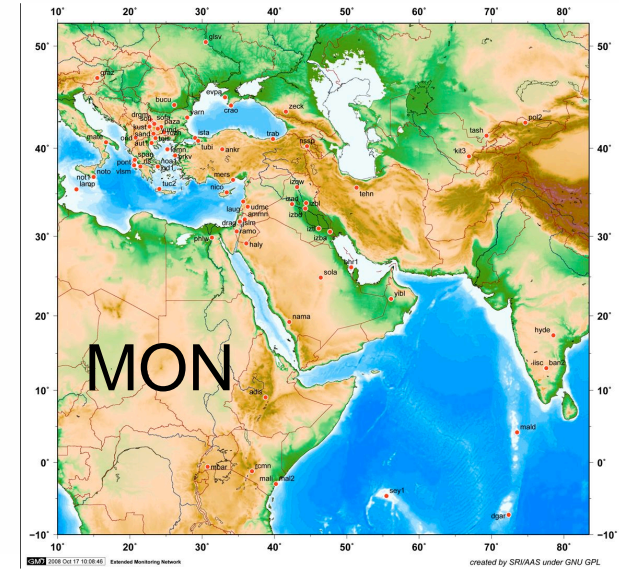
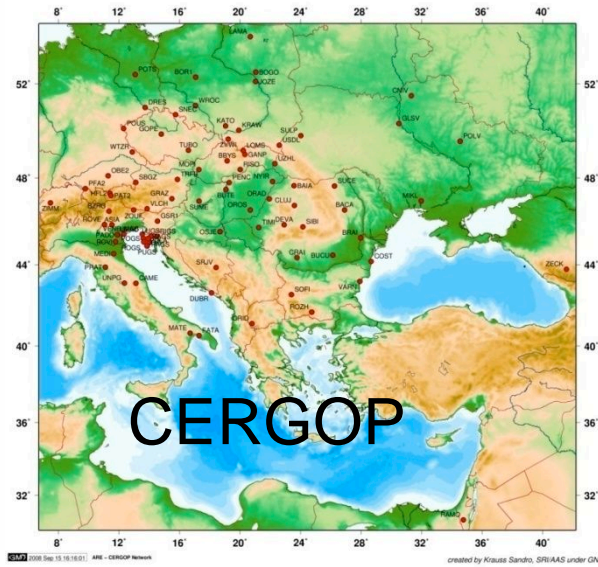
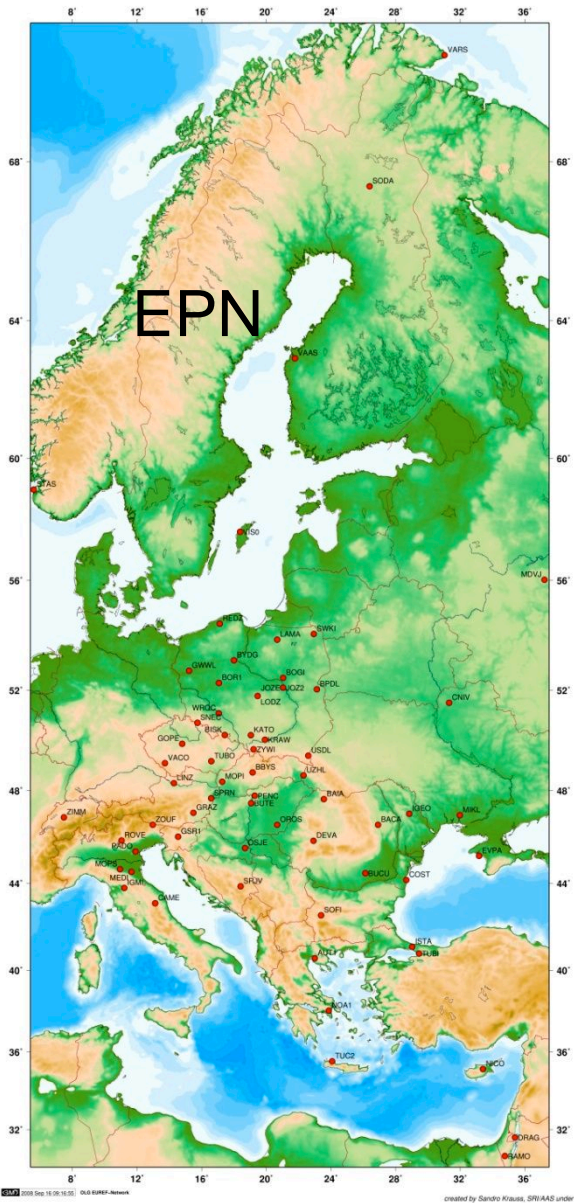
(2) Space Research Institute, Austrian Academy of Science

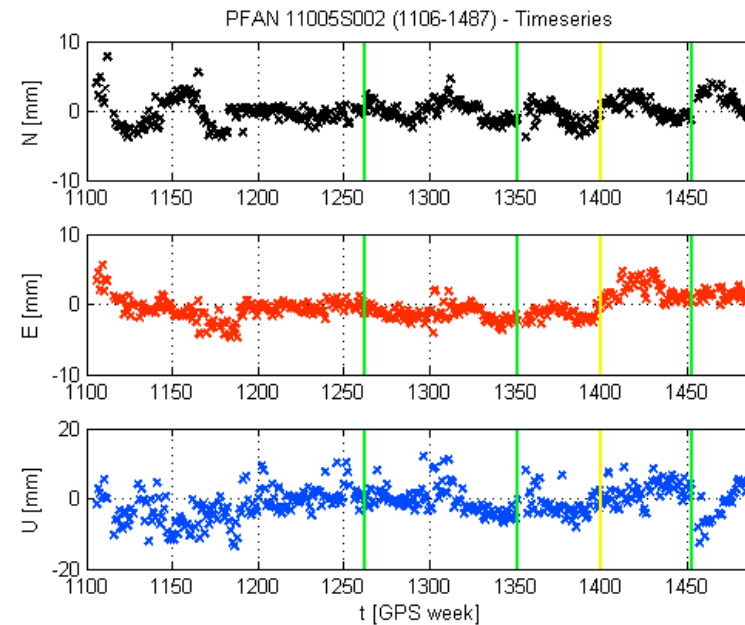
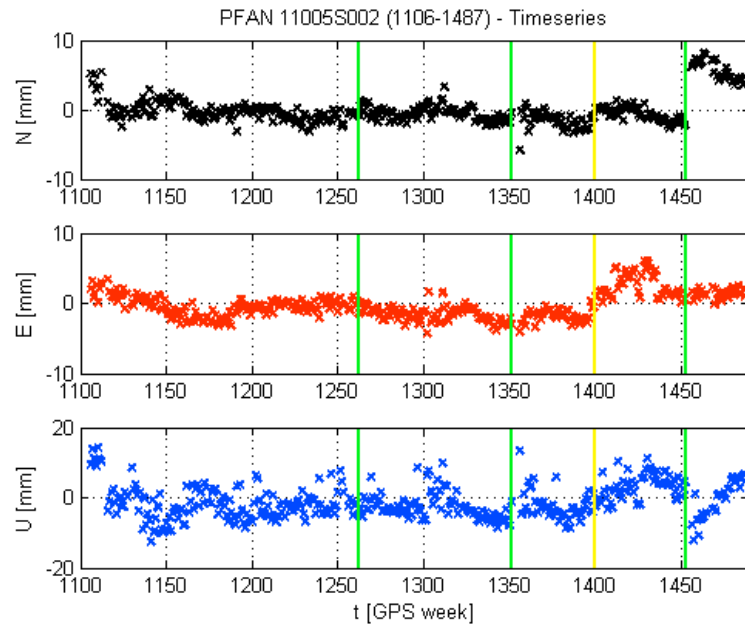
## ▪ Structure

- 3 Persons (50,75,20%)
- 3 Linux – Workstations
- 2 Bernese Software 5.0 release May 08
- Own unix shell and perl scripts for automatic data preparation
- Generic Mapping Tool 4.2 (map design)
- Matlab R2008a (signal analysis)
- Web page

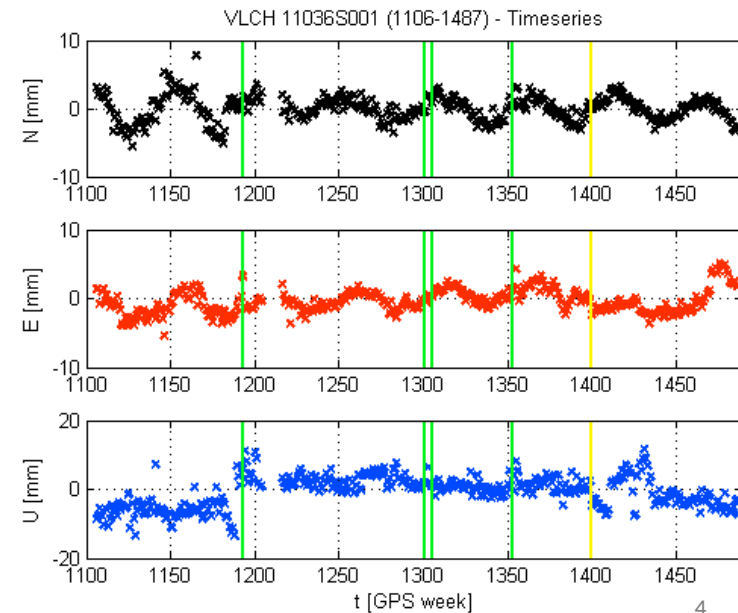
## ▪ Main Topics

- Network analysis (4 networks, 200 stations)
- Time series analysis and velocity determination
- Regional TEC maps from postprocessing
- Research testbeds (NRT monitoring, earthquakes, landslides)

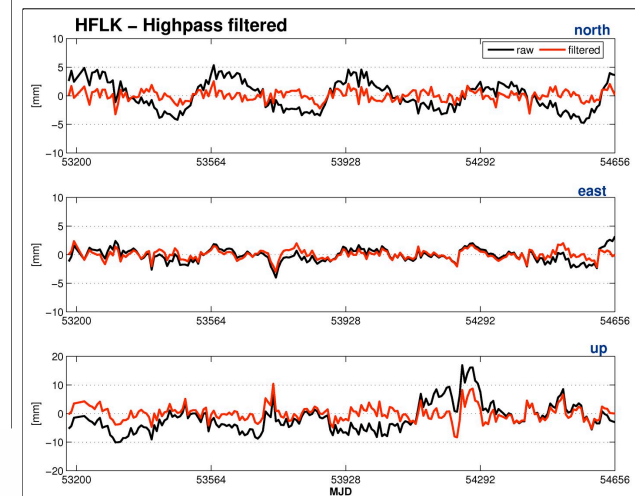
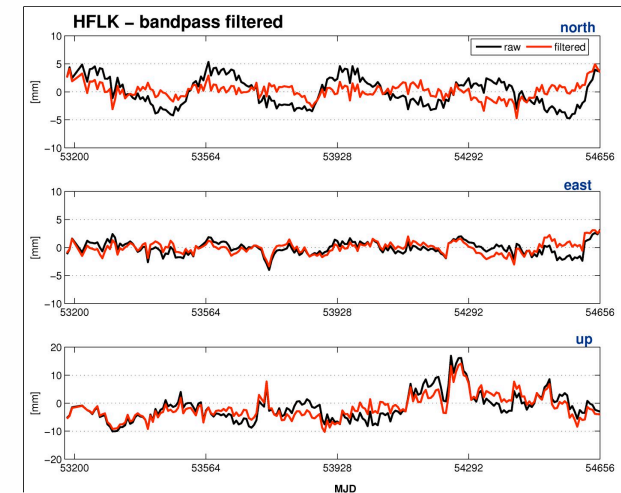
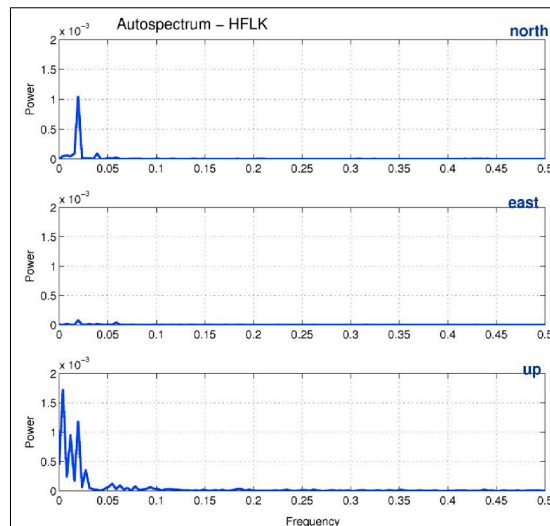
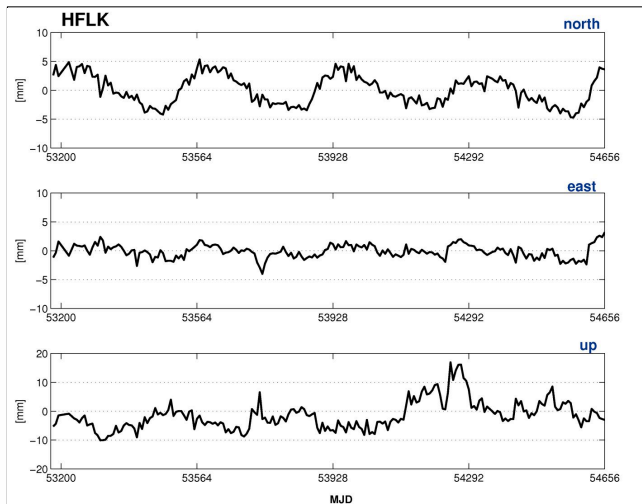




BSW residuals → Matlab  
scripts → offset estimation  
→ cleaned time series

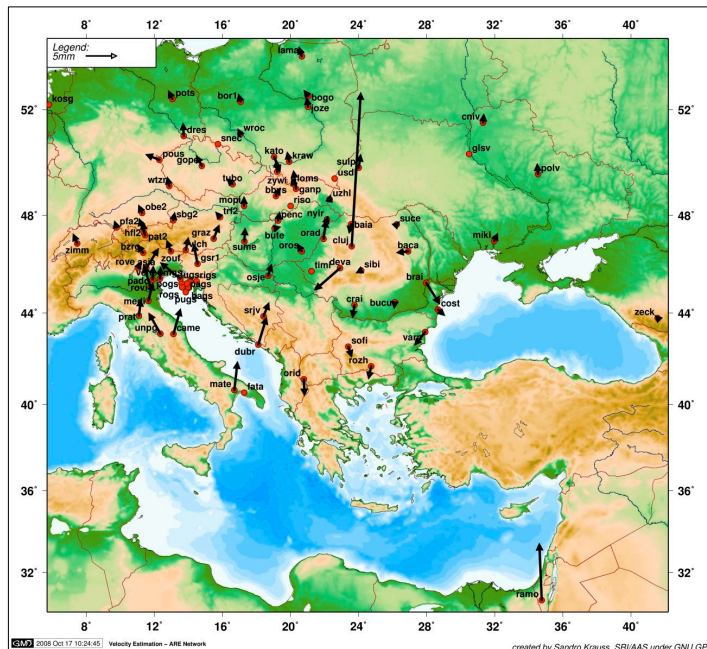
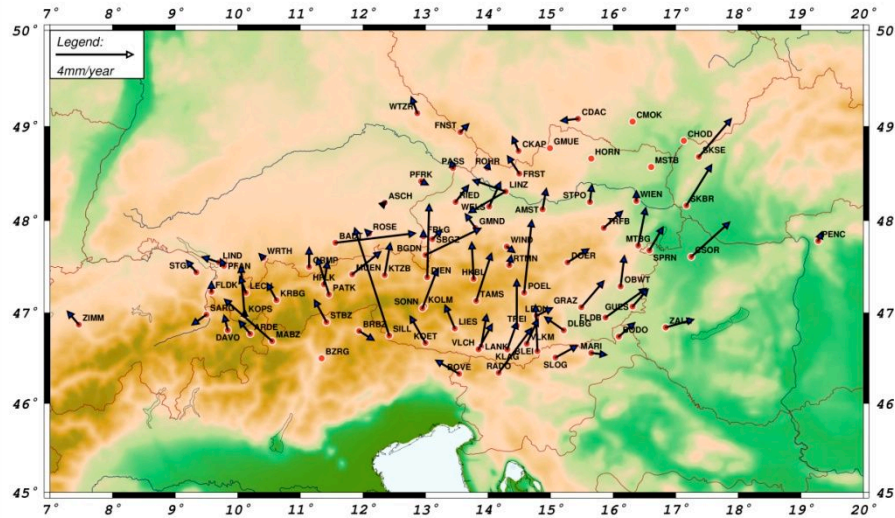


- Matlab R2008a (Start September 2008)
- Input: Bernese .PLT - File
- Output:
  - Time series
  - Power Density Spectrum
  - Highpass or Bandpass filtered signal
  - annual amplitude

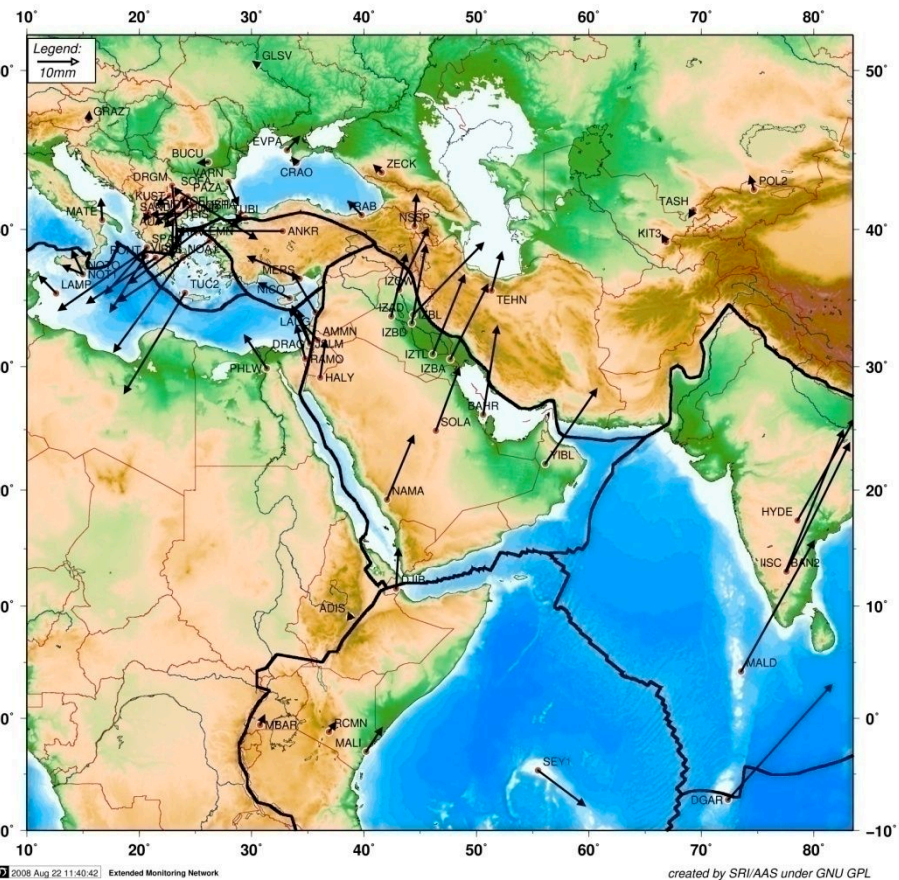


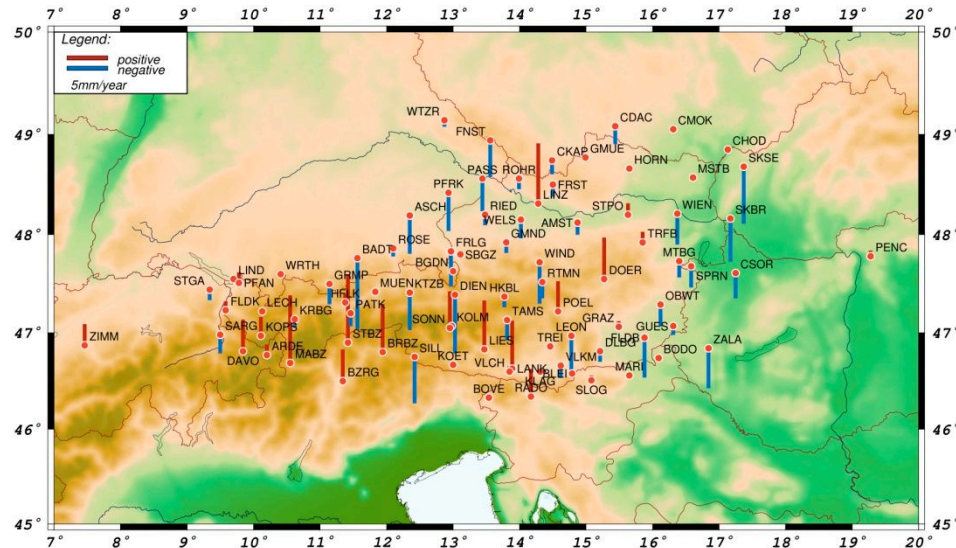
Annual Term:

N-E-U: 4.3 | 1.1 | 4.6 mm

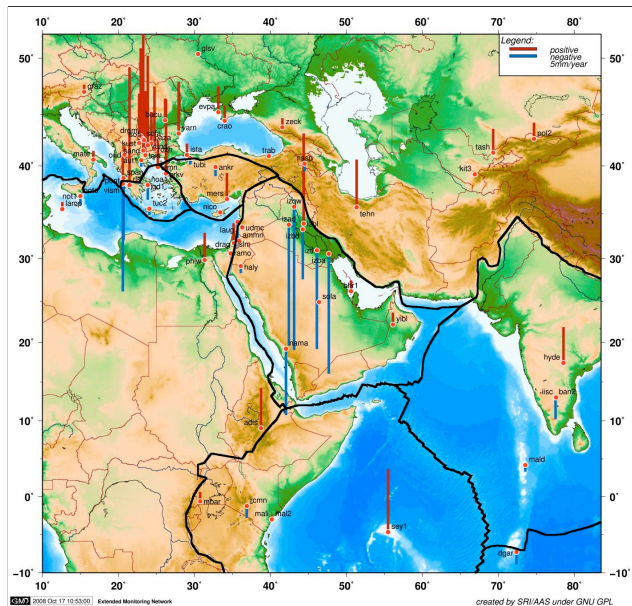


Present status: Discern between local and tectonic movements at 1-2 mm/year + fit into geophysical background



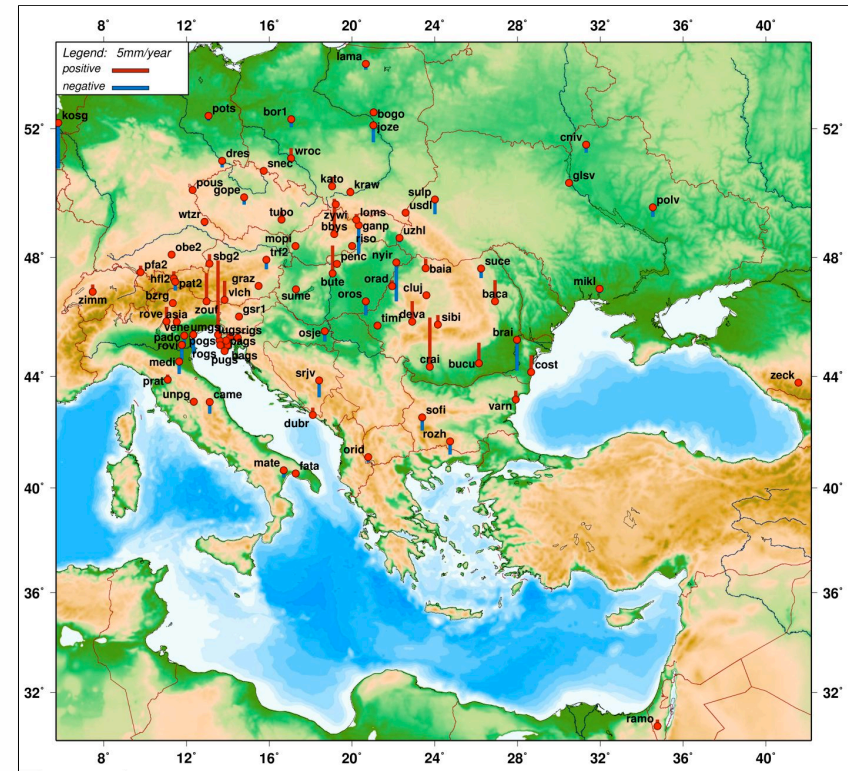


SM 2008 Aug 29 10:50:46 Austria Monitoring Network – Velocities

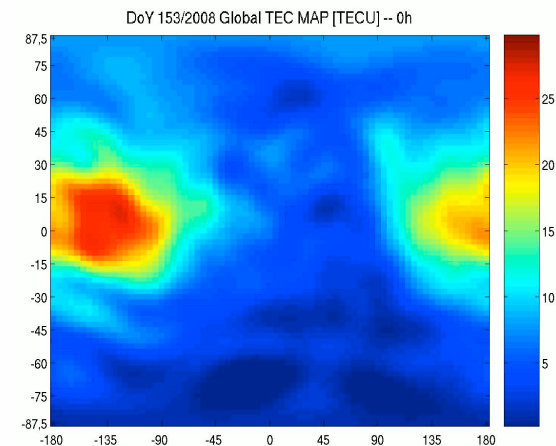
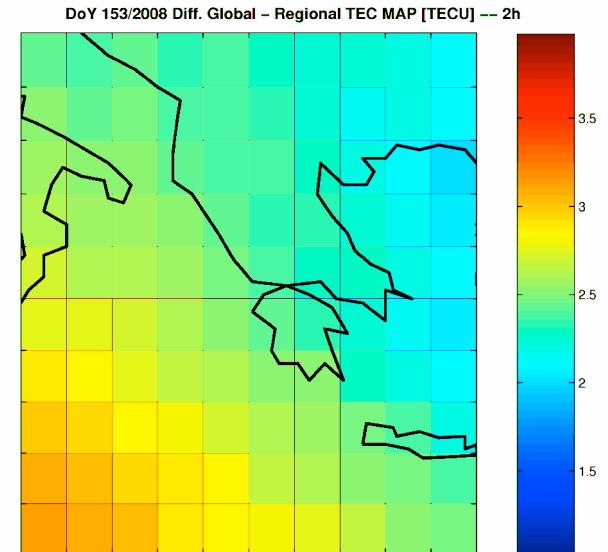


SM 2008 Oct 17 10:53:50 Extended Monitoring Network

Present status: Major offsets applied, annual term not yet removed, considerable effects of different analysis strategies, no interpretation recommended



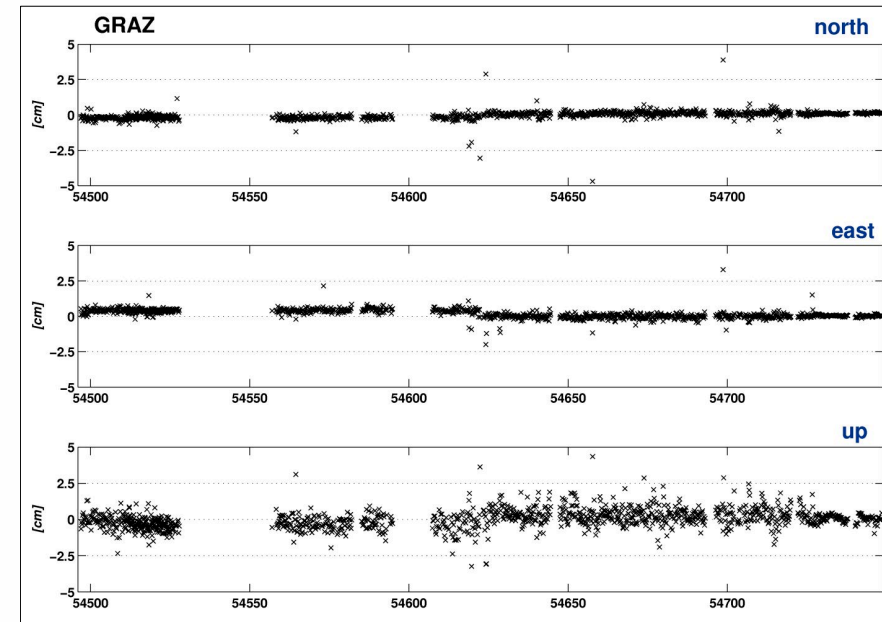
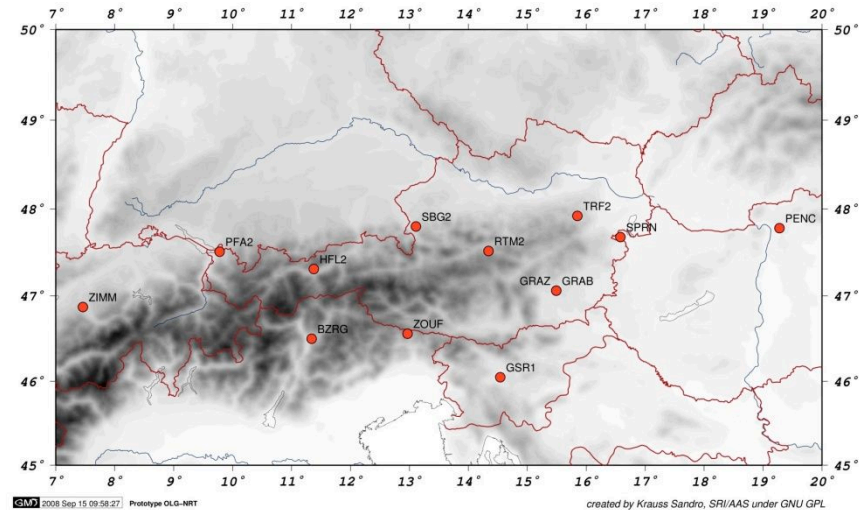
- Generated from GPS stations
- Phase + double differences
- IONEX files
- Bias to global maps
- Presently in testbeds for earthquake hazard zones
- Contribution to the EEP (Electronic Earthquake Precursors) and Solar Activity research groups

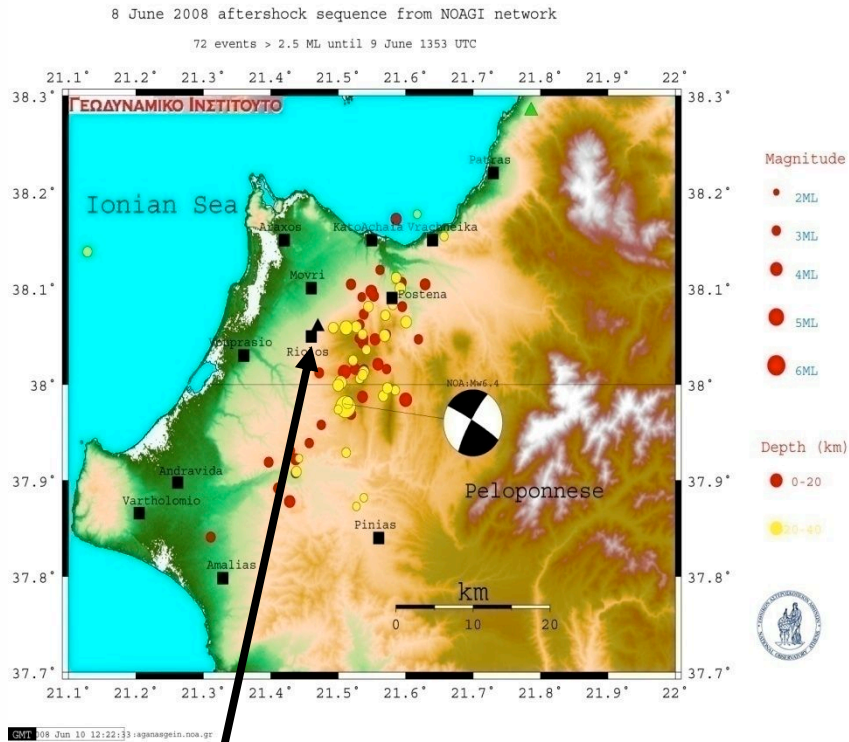




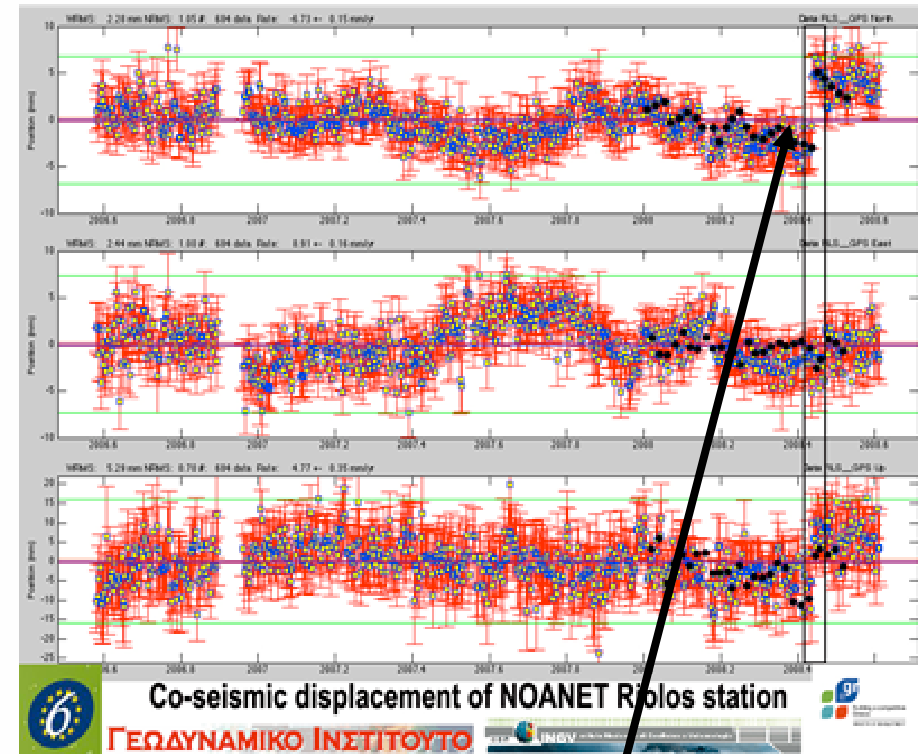
## Prototype Near Real Time Analysis

- Started in April 2008
  - 13 Stations included
  - fully automated computation (4 hours)
  - Processing time ~5min
  - Included email notification in case of an error
- 
- IGS – ultra rapid orbits
  - OLG – hourly data
  - CODE – 2 Day Predicted
- Ionosphere-Maps
- Outliers/gaps mainly due to power outage
    - less than 4h data
  - Orbits/ionosphere models n.a.
  - or experimental work

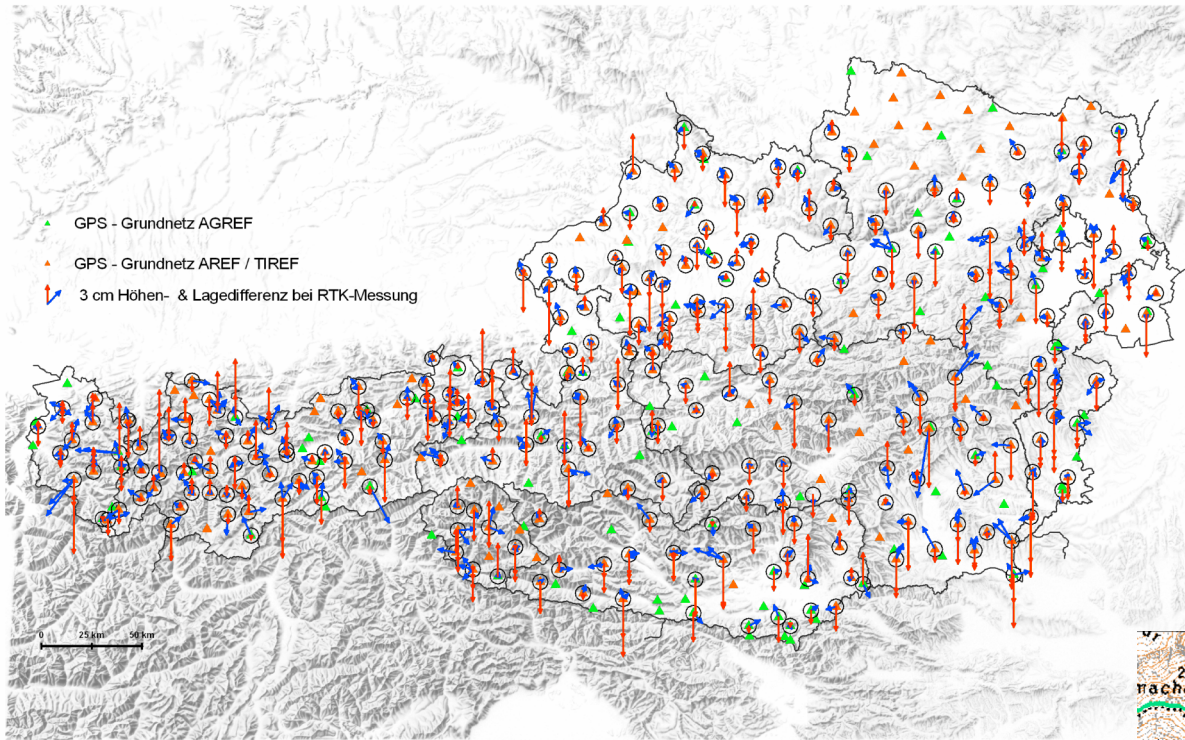




RLS\_ in MON



OLG weekly Time Series



Additionally:

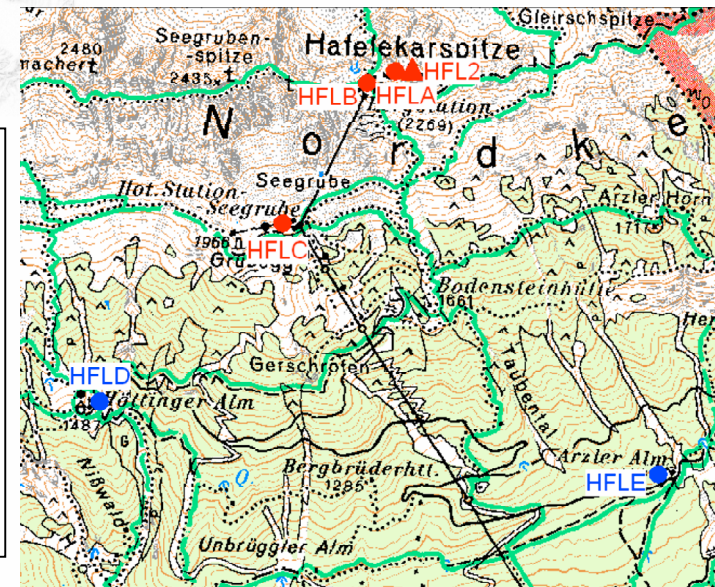
Check of movements of permanent stations HFLK, DIEN, SILL etc.

Check area by campaigns

AREF 1992-2002 Differences checked

Remeasuring + Reprocessing in progress

Horizontal movements → landslides



- Contribution to EPN **reprocessing**
- Reprocessing of campaigns (Eastern Alps, Northern Adria)
- Densified **velocity and strain** field in Central Europe and the Mediterranean
- NRT prototype → **monitoring** the Austrian permanent network
- Local and regional **TEC maps** for search of earthquake signals

Thank you