8th Czech-Polish workshop on Recent Geodynamics of the Sudeten and Adjacent Areas
Boguszyn, 29.-31. March 2007

State-of-the-Art of the GEONAS

the GEOdynamic Network of the Academy of Sciences of the Czech Republic

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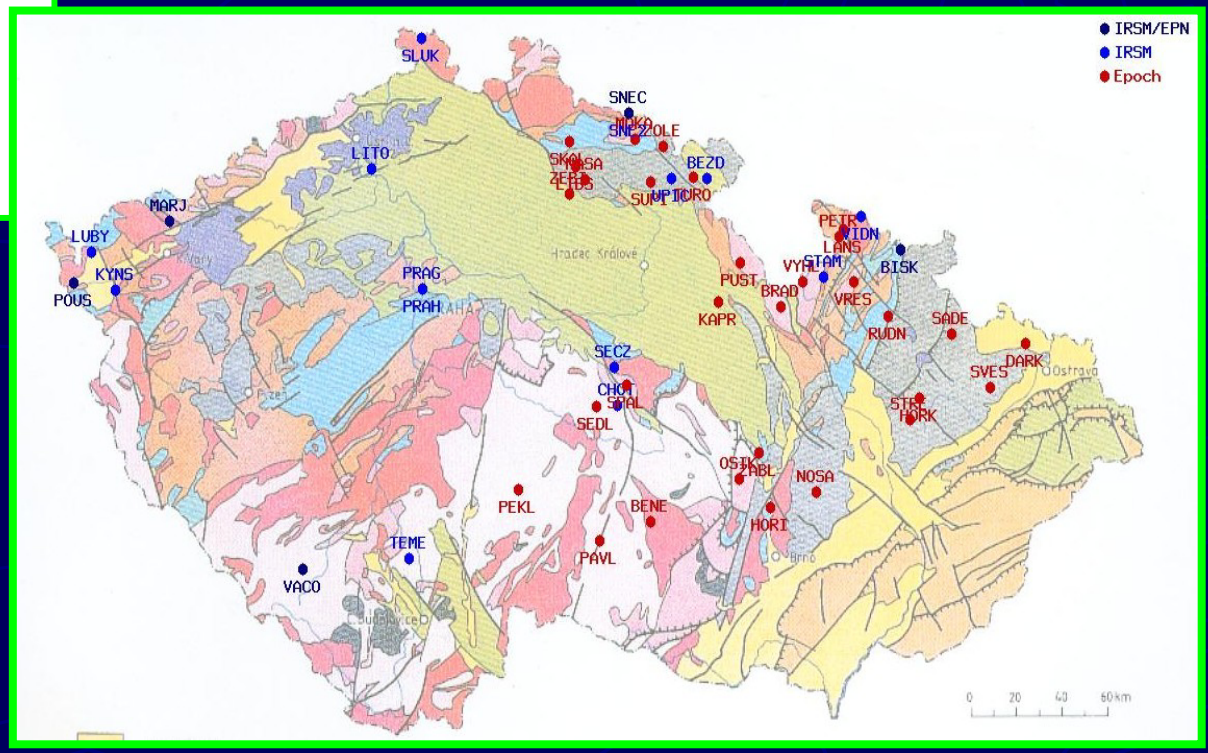
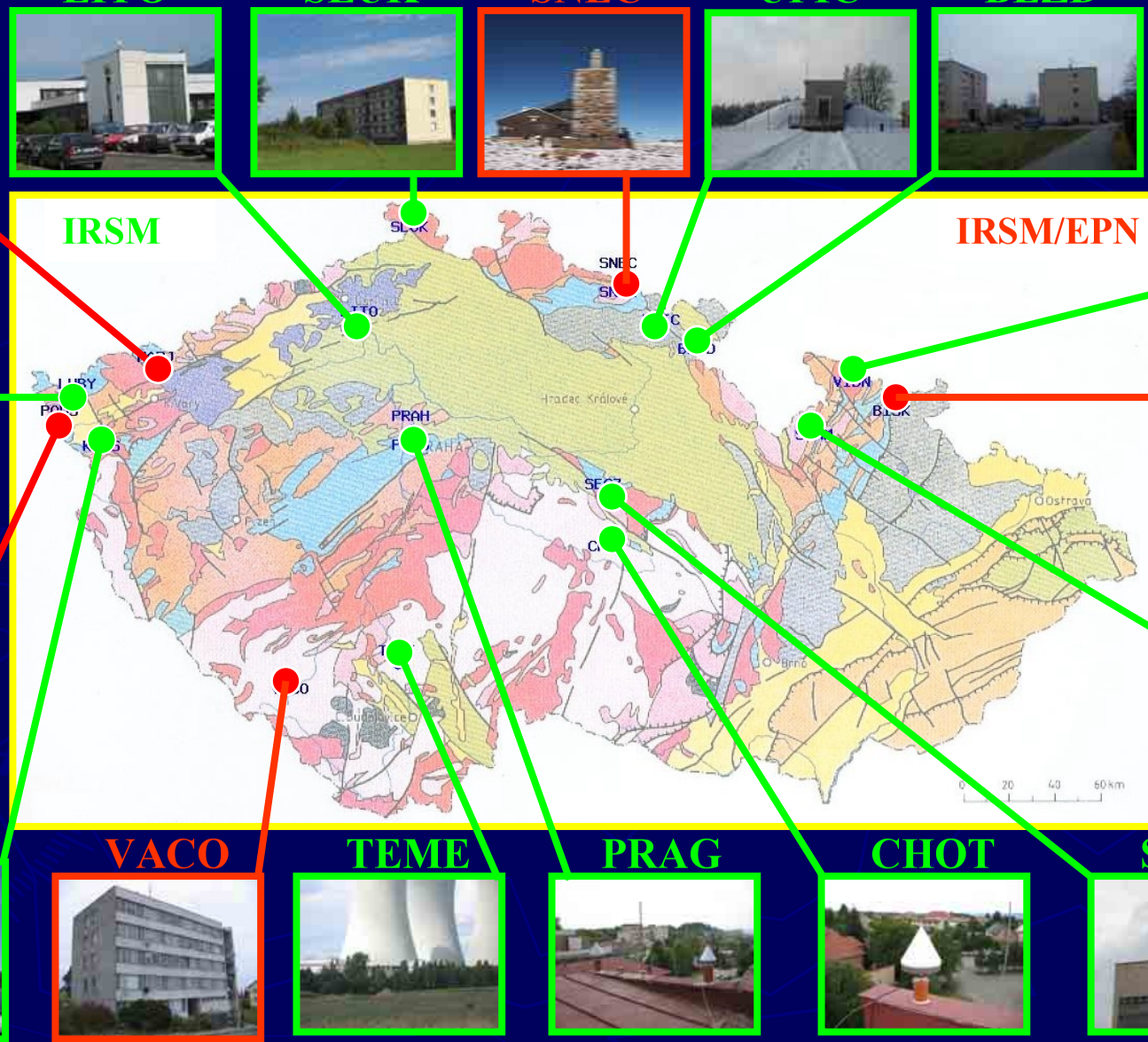
GPS network GEONAS

- 5 permanent observatories IRSM/EPN
- 12 permanent observatories IRSM
- 30 epoch points



GEONAS permanent observatories



GPS Receivers

Ashtech Z-18

4 observatories:

BISK, LITO, MARJ, VACO

Topcon GB-1000

14 observatories:

BEZD, CHOT, KYNS, LUBY, POUS, PRAG, SECZ, SLUK, SNE2, SNEC, STAM, TEME, UPIC, VIDN

Topcon NET-G3

1 observatory:

PRAH

Permanent observatories instrumentation

- GPS Antenna
- GPS Receiver
- Embedded system computer
- Ethernet switch
- GPRS modem (wifi…)
- Power-on switch for modem
- Power supply
- Undervoltage protection
- Cooling system
- Pb. accumulator
- Accumulator charger

Optionaly:

- Meteorological station
- Webcamera

Meteorological station

Combined temperature and relative humidity sensor

-ANEMO
-Interval:
-Temperature:-30°C to +70°C
-Humidity 0- 100% R.H.

Sensor Atm. pressure

-ANEMO
-Interval: 800- 1200 hPa

A/D converter

- 8 channels

Monitoring at 5 observatories: SNEC, BISK, MARJ, STAM, PRAH

Webcameras

Camera

BISK

MARJ

PRAG

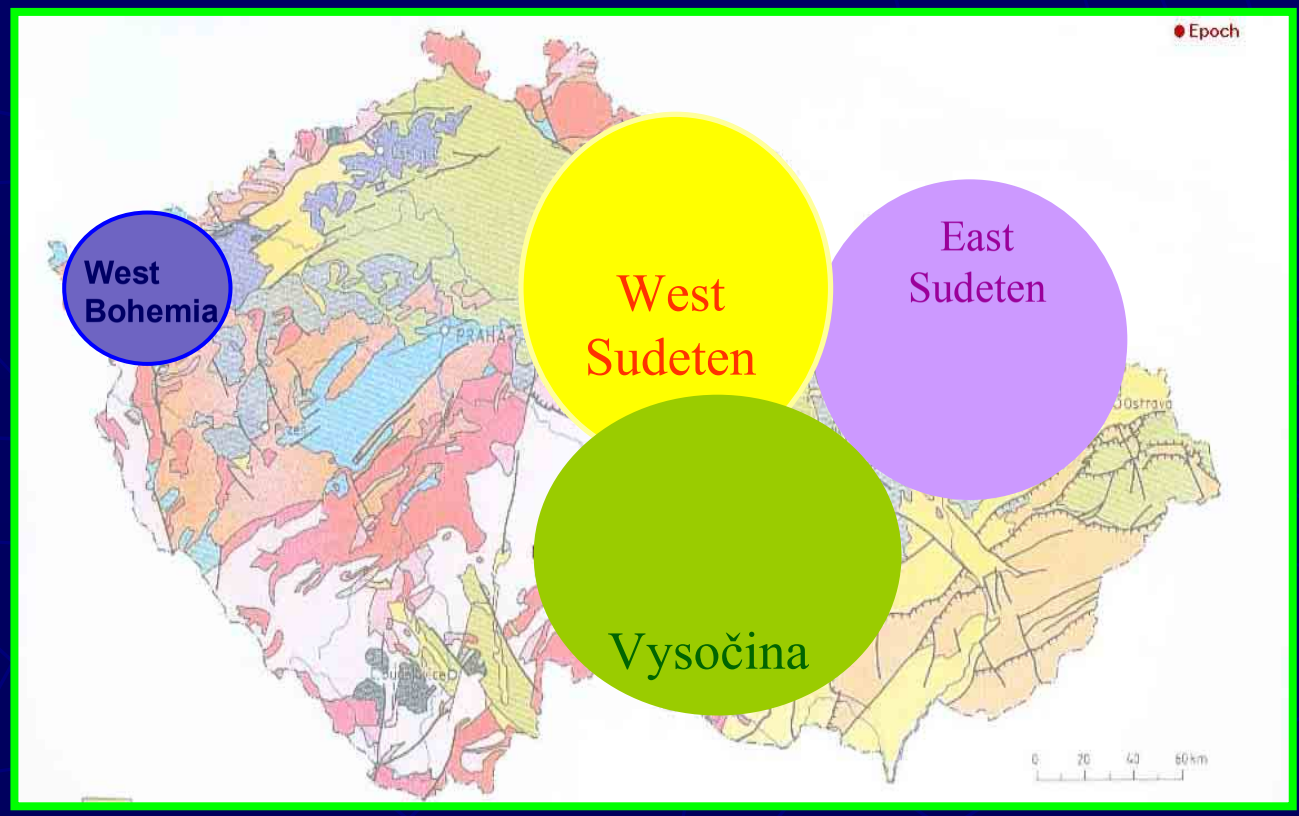
SNEC

STAM

Monitoring at 5 observatories: BISK, MARJ, PRAG, SNEC, STAM

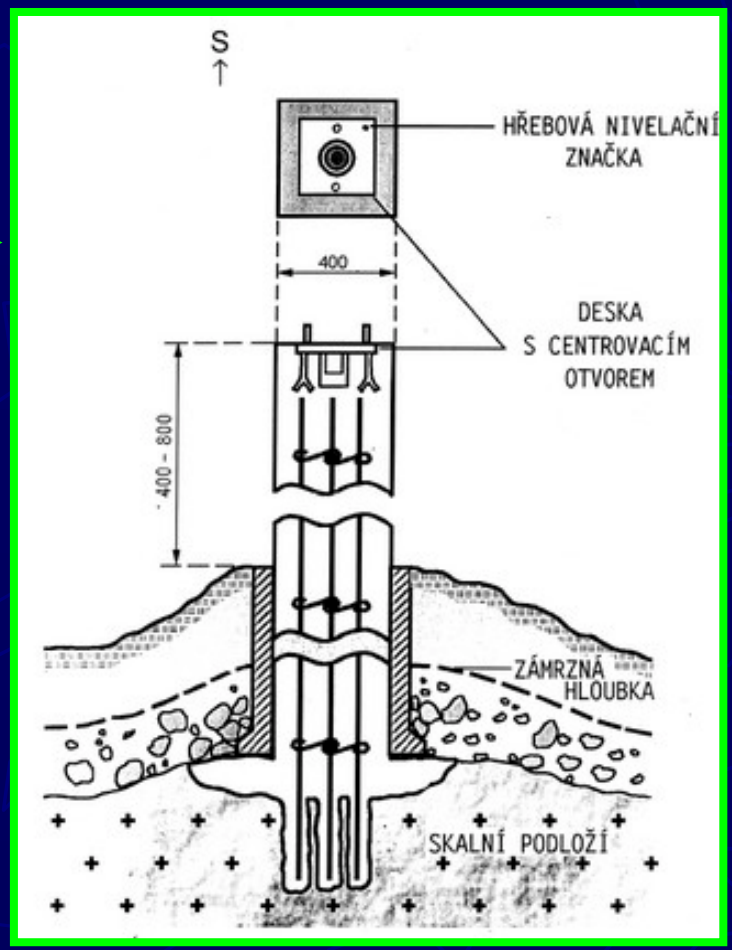
Epoch GPS networks

- East Sudeten
  8 epoch since 1997
- West Sudeten
  6 epoch since 2001
- Vysočina
  2 epoch since 2005
- West Bohemia
  Under construction



Epoch stationss

Building of a new pillar



Pillar during a measurement

Epoch Campaings

48 hours registration (2 GPS days).
The same antenna/receiver pair at the same pillar.

Calibration base

Permanent observatory: PRAG

Calibration pillar: PRAH

Distance of the pillars: 3,7 m

Easy manipulation and antenna height measurement

Fixed antenna: Topcon CR3_GGD

In operation since July 2006.

Calibrated antennas

ASH700718

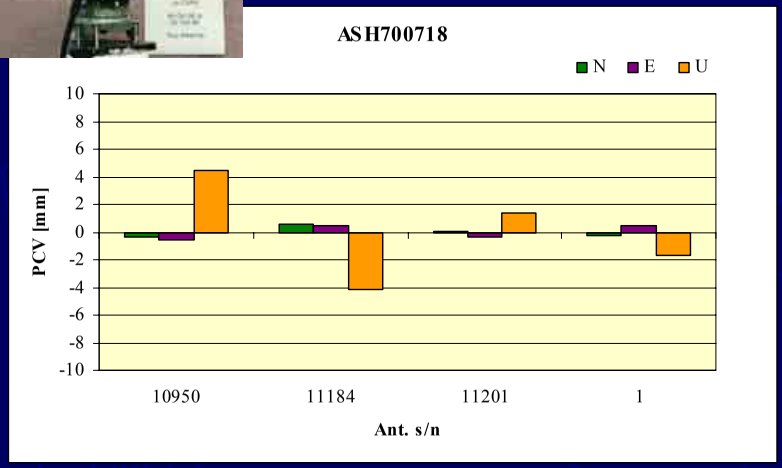
ASH700700.B

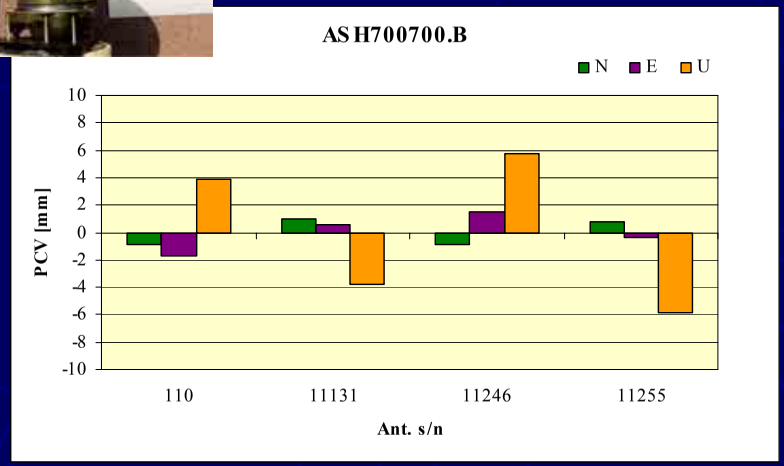
ASH701946.3

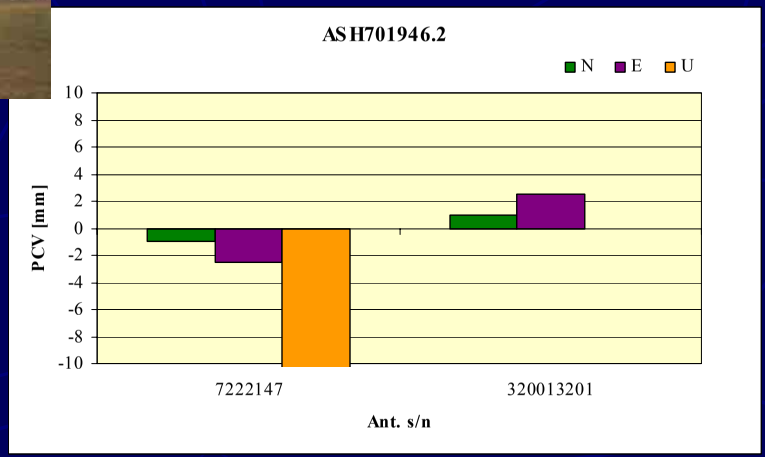
Calibration campaing:

- 3-4 days per antenna
- Registration interval 1 s
- ant. height precision +/- 0,2 mm
- Receiver Ashtech ZXII-3
- elevation angle 5˚

Calibration results comparison







Gravity measurements

SCINTREX CG-5 Gravity meter

(available at the IRSM since November 2006)

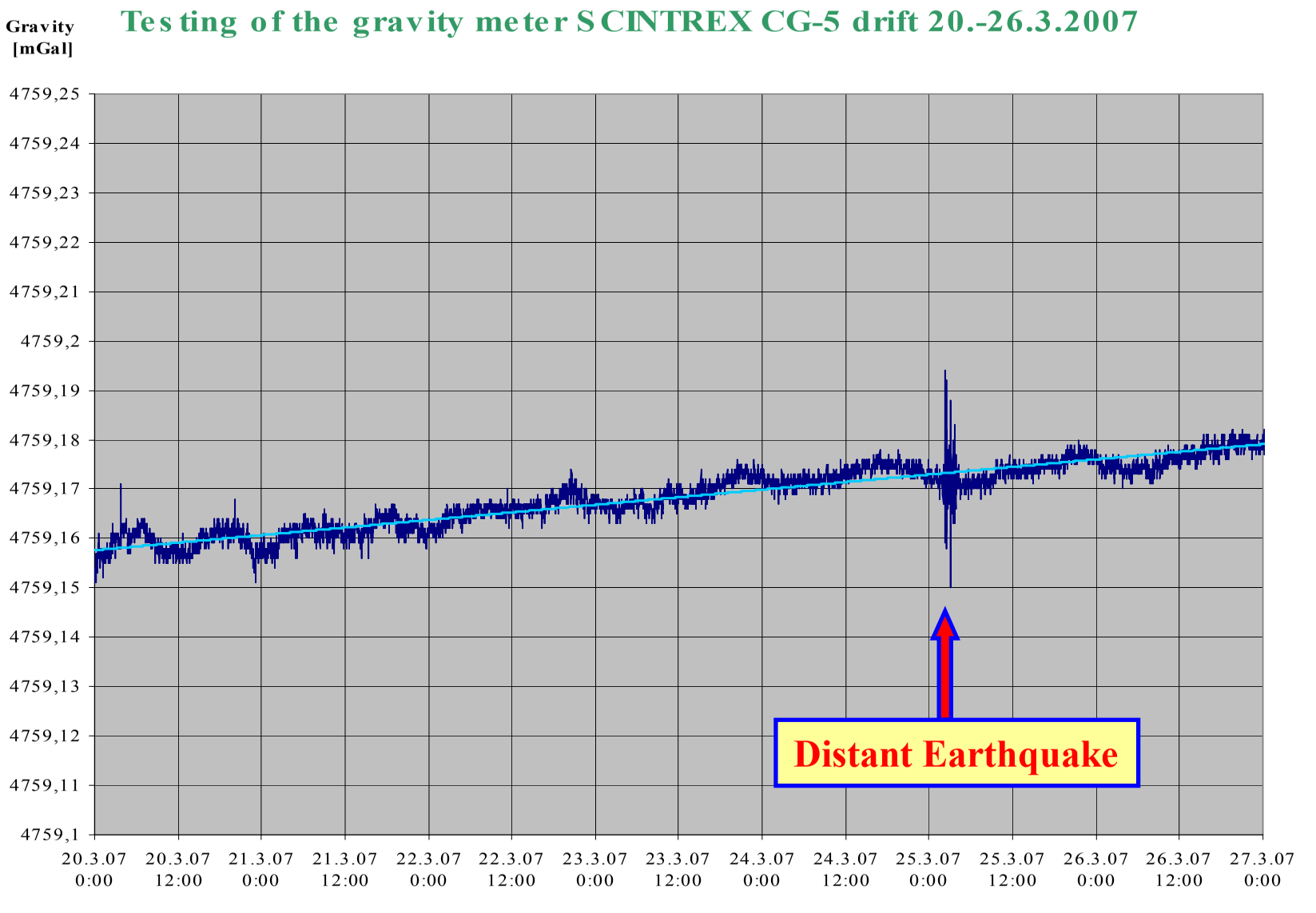
- **relative gravity meter**
- **automated operation**
- **precision better than 5 μGal**

Field testing is scheduled to the April 2007.

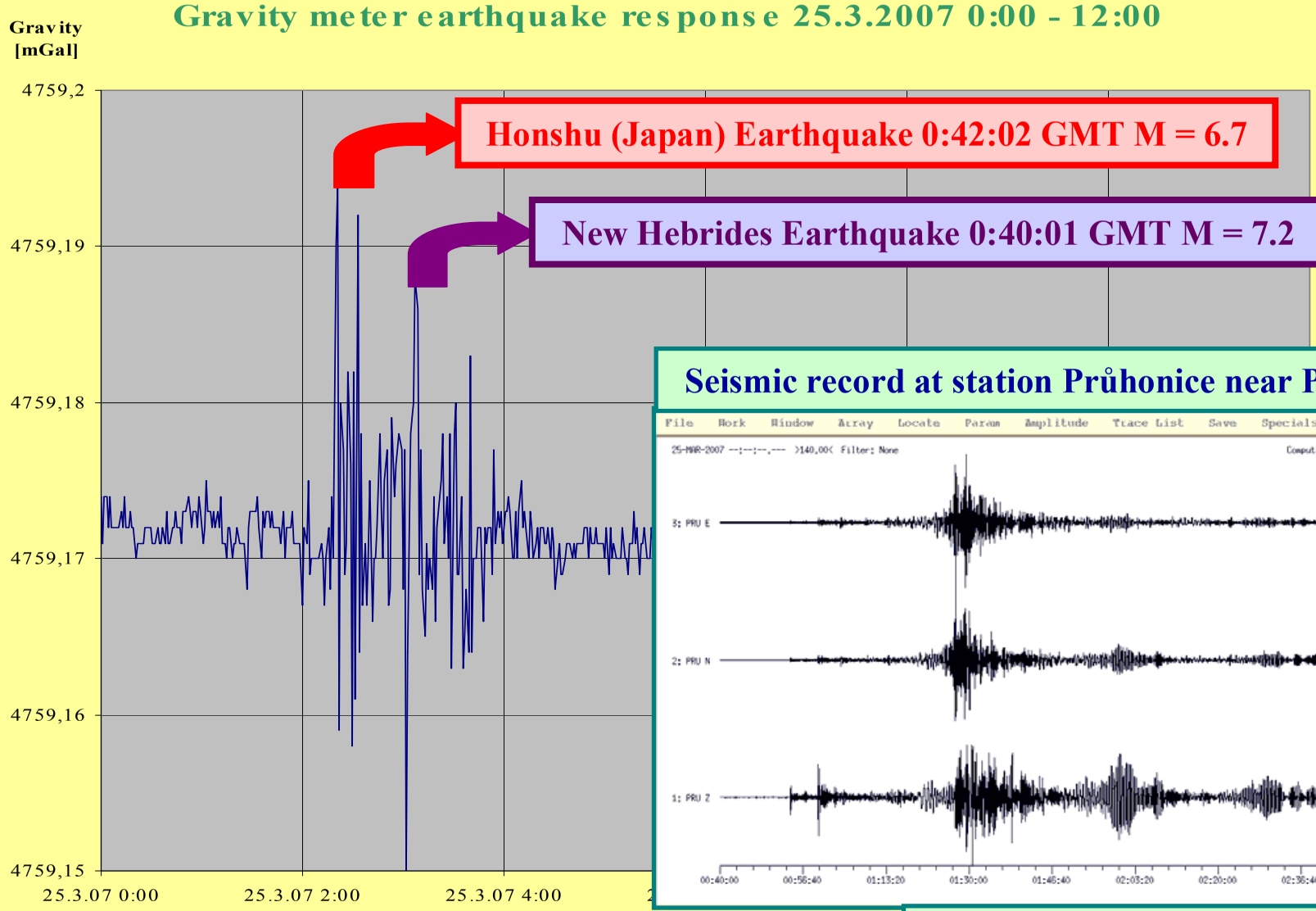
Applications:

- **repeated determination of individual pillars gravity differences – all epoch networks**
- **long-term observations at the selected active zones accompanied with drift-eliminating calibration epochs**

Gravity meter drift testing



Honshu (Japan) and New Hebrides Earthquakes



Seismic record at station Průhonice near Prague

Geophysical Institute AS CR, v.v.i.

Výzkumné Centrum Dynamiky Země
Center for Earth Dynamics Research

The end.
Thank you for your attention.