National report of Slovakia

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EUREF 2011 Symposium
24 -28 May 2011, Chisinau, Moldova
National spatial network - ETRS89

- Active part (permanent stations) – **A** class (**SKPOS**)
- Passive part (passive points)
  - **B** class – points for geodynamical research (Hz 5-6mm, V 12-15mm)
  - **C** class – reference passive points (Hz 1cm, V 2cm)
  - **D** class – other points with ETRS89 coordinates (Hz 3cm, V 5.5cm)

<table>
<thead>
<tr>
<th>class</th>
<th>amount</th>
</tr>
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<tbody>
<tr>
<td>A</td>
<td>27</td>
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<tr>
<td>B</td>
<td>71</td>
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<tr>
<td>C</td>
<td>1650</td>
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<tr>
<td>D</td>
<td>2900</td>
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**SKPOS status in May 2011 infrastructure**

- **26 permanent stations** (3 new stations)
  - All stations equipped with the same brand of receivers and antennas
  - All stations observe GPS+GLONASS signals
  - 13/26 antennas have individual antenna APCV calibration (50%)
**SKPOS** control software

- **Trimble GPSNet** software
  - still running
  - will be replaced

- **Trimble VRS3Net** software
  - purchased in April 2010
  - actually tested
  - some problems
    - NMEA storage
    - foreign station introduction (proxy)
  - plan for introduction: July 2011
SKPOS users, charges

- Number of users (registrations)
  - April 2011
    - around 500 registrations;
    - 710 accounts

- Field of applications
  - 99% - surveying, GIS

- SKPOS is charged by flat rate per technical year
  - technical year means 365 days from date of registration
  - price 90 EUR (last year it was 365 EUR)
SKPOS permanent stations
time series analysis

- period 2007-2011
- Coordinates determination
  - Bernese software 5.0
- Timeseries analysis
  - MathCAD 14 software
  - Every 3 months
- Analysis for
  - Trend
  - Seasonal variation
  - Anomalous behavior
National gravimetric network

2010 – 157 - gravity differences
Local geodynamic network TATRY
Precise levelling of 2nd order levelling lines

Totaly measured in 2010 – 350 km

It is 50% from the 2nd order levelling lines

Aim:

plan of new 1st and 2nd order levelling lines

Adjustment in 2015 = new national vertical datum Bpv
Introduction of the new realization of national CRS - JTSK03

- valid from 1st April 2011
- new realization = new set of coordinates
- realization introduced by the regulation of UGKK SR
- JTSK03 based on GNSS (also SKPOS) measurement

Topographical database is stored in ETRS89
Refinement of the velocity field in Central Europe based on reprocessed permanent and epoch-wise GPS observations

Network of selected permanent stations in Central Europe

- Reprocessed at LAC SUT Bratislava
- 45 EPN and 9 non-EPN permanent stations (from 18 in 1996 to 56 in 2011)
- Observation interval 1996 – 2010
Refinement of the velocity field in Central Europe based on reprocessed permanent and epoch-wise GPS observations

Central European Geodynamic Reference Network

- Epoch observations from 1994 to 2009 (in one or two year intervals)
- Processing strategy: similar as in network of permanent stations in Central Europe
Refinement of the velocity field in Central Europe based on reprocessed permanent and epoch-wise GPS observations

Final refined CE velocity field pattern

- Interpolated horizontal velocity field estimated by using least square collocation
- Based on data from 110 permanent and epoch sites (7 sites excluded)
- Maximum difference between interpolated and observed velocity $\sim 1.5$ mm/year.
- This velocity pattern is characteristic for the Central Europe region and can be used as limitation for intraplate velocities in regional scale
Thank you for your attention