Slovak University of Technology, Department of Theoretical Geodesy

SUT LAC Report

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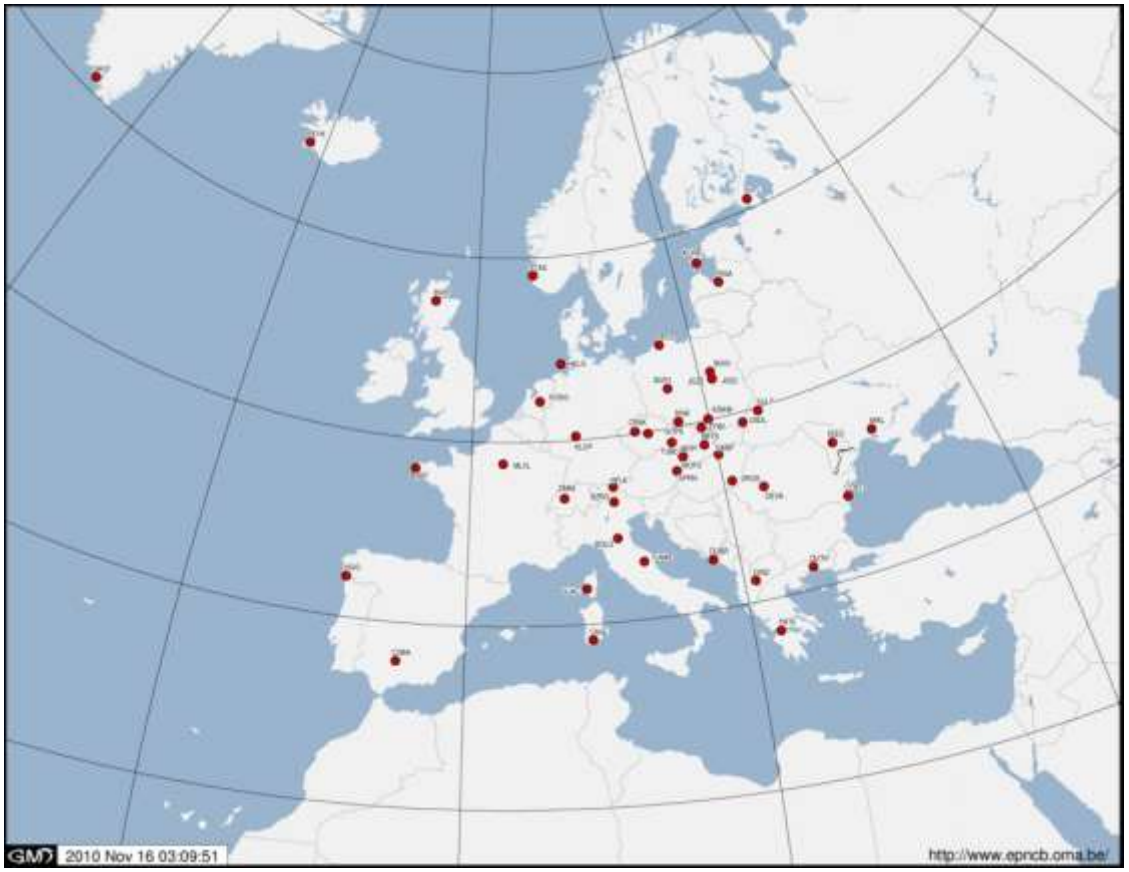
SUT LAC

- Slovak University of Technology
  Faculty of Civil Engineering
  Department of Theoretical Geodesy
  Observatory of Geodesy and Astronomy

- staff: Miroslava Igondová, Ján Hefty

Network configuration



48 stations
(5 former stations)

Situated mostly in central Europe and near sea areas.

Processing strategy

- Software : Bernese GPS Software, version 5.0
- Orbits and EOPs : IGS final
- Observations : GPS
- Elevation Cutoff : 3°
- Antenna PCV Model : absolute
- Ambiguity Resolution: QIF
- Troposphere : dry Niell (a priori), wet Niell (estim.), gradients
- Ocean Loading : FES2004
- Reference Frame : IGS05
- Reference Point : BOR1
- Products generated :
  - SUTWWWW7.SNX weekly snx file
  - SUTWWWWN.SNX daily snx file
  - SUTWWWWN.TRO daily troposphere solution

Products

- **daily** solution: CRD, COV, SNX_COV, ION, INX, TRO, TRP
- **weekly** combination: CRD, COV, SNX_COV, OUT, SUM
- **4-hour** solution: CRD, COV

- from **1605** … + SNX_NEQ

Hardware change and software update

- **old** computer … 1GB RAM, 1 core (Intel Pentium 4 3GHz)
- BV50, last applied update: 27-Jun-2006
- up to 1604 week

- **new** computer … 24GB RAM, 16 cores (AMD Opteron Processor 6128)
- BV50, all available updates applied
- since 1605 week (first final EPN solution available)

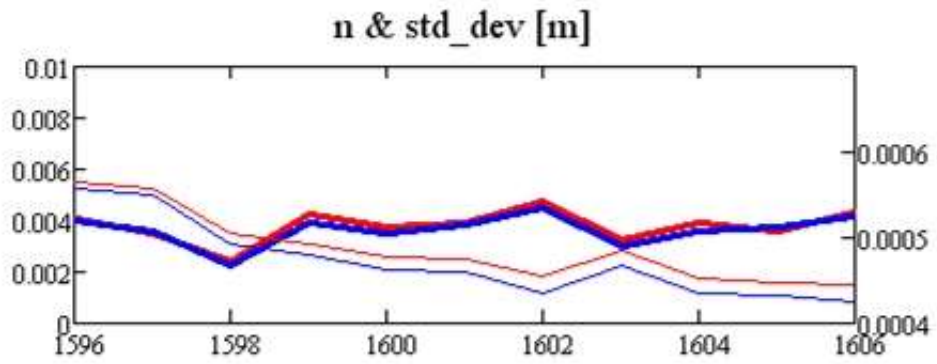
Limitations of the old computer

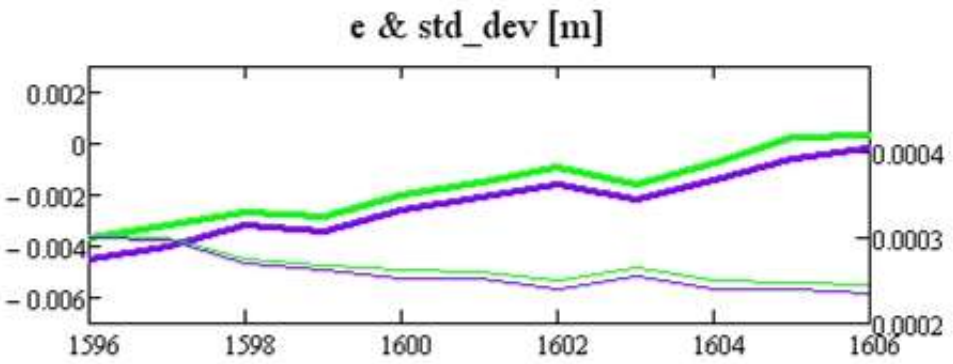
- 1750 parameters (MAXPAR) in ADDNEQ2 → 54 stations (new computer 40000+ parameters)
- some updates of BV50 were not possible … after update the MAXPAR decreases (ADDNEQ himself requires more computer capacity than before?)
- last applied update: 27-Jun-2006

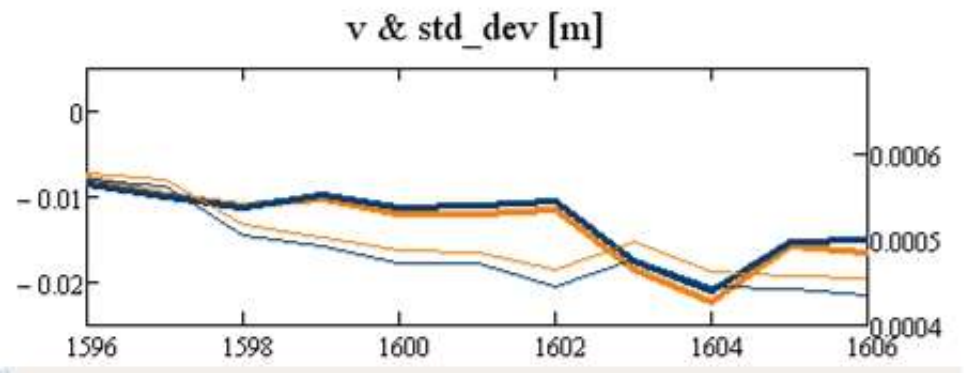
New / old solution

- 11 weeks of parallel processing (1596 – 1606)
- combined weekly solutions
- referenced to 1 station only! (BOR1)
- n, e, up component

Example … MOP2

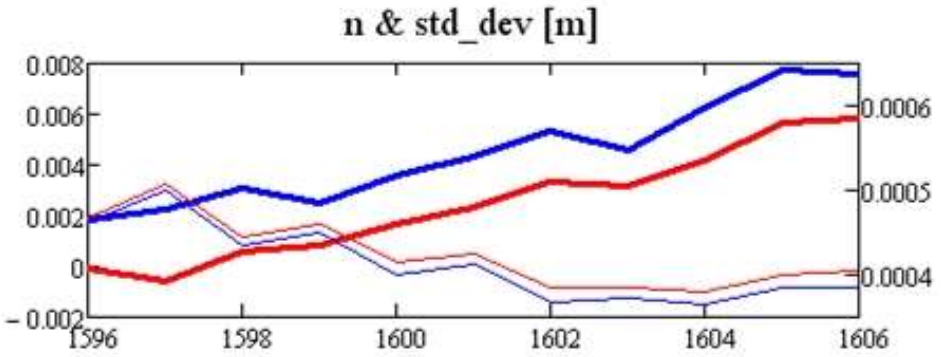


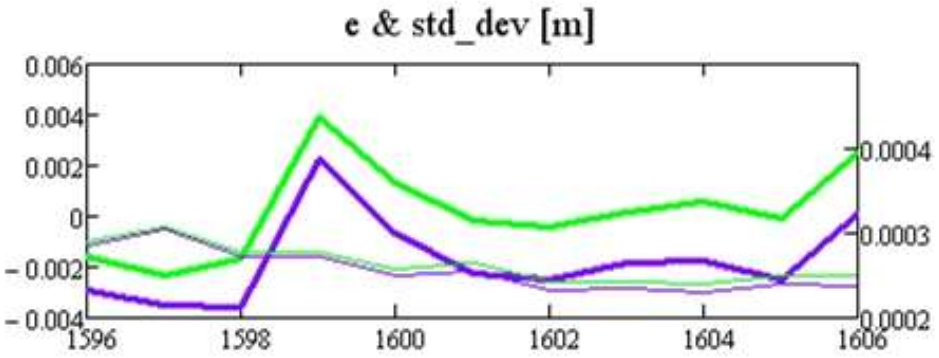


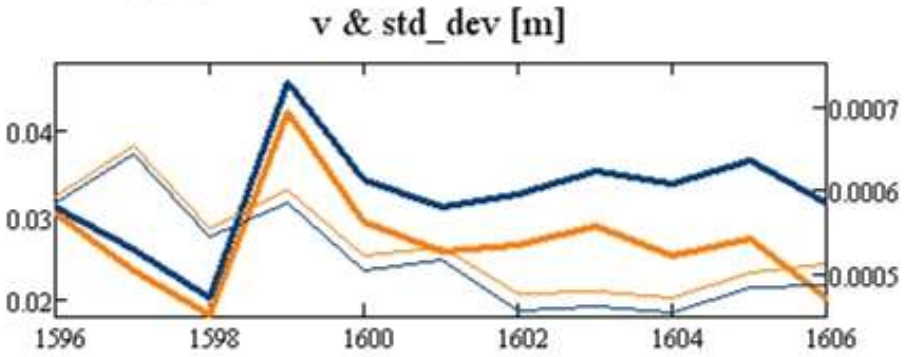


new - old	[mm]	
n	-0.146	-0.014
e	-0.641	-0.008
up	0.554	-0.015

Example … REYK







new - old	[mm]	
n	2.016	-0.013
e	-1.939	-0.008
up	5.463	-0.016

Comparison of selected stations

	distance to BOR1	n		e [mm]		up	
JOZ2	271	-0.071	-0.012	-0.689	-0.007	0.538	-0.013
GOPE	307	-0.106	-0.013	-0.630	-0.007	1.145	-0.013
TUBO	343	-0.108	-0.013	-0.600	-0.007	0.593	-0.013
MOP2	434	-0.146	-0.014	-0.641	-0.008	0.554	-0.015
MLVL	1091	-0.026	-0.013	-0.692	-0.006	2.342	-0.013
MIKL	1222	-0.425	-0.014	-0.564	-0.010	0.054	-0.014
DUTH	1371	-0.690	-0.014	-0.496	-0.009	0.204	-0.014
COBA	2313	-1.022	-0.016	-0.681	-0.007	5.776	-0.016
REYK	2570	2.016	-0.013	-1.939	-0.008	5.463	-0.016
Average		**-0.064**	**-0.014**	**-0.770**	**-0.008**	**1.852**	**-0.014**

Conclusions from comparison

- BV50 - 5 missing updates vs. updated BV50
  - Systematic shift mostly in e (minus) and up (plus) component (comparison from 11 weeks only!)
  - Decreasing RMS after applying updates

- Reprocessing should continue after 2006 year … first results from BV50 should be biased

Reprocessing activities

- 2006 pilot reprocessing … done (updated BV50 – old computer – limit: 39 stations)

- continuing reprocessing (new computer) – we can significantly enlarge our network (Balkan peninsula, near sea stations)

SUT reprocessing network

Reprocessing strategy

- Software : Bernese GPS Software, version 5.0
- Orbits and EOPs : IGS 'repro1'
- Observations : GPS
- Elevation Cutoff : 3°
- Antenna PCV Model : absolute
- Ambiguity Resolution: QIF
- Troposphere : dry Niell (a priori), wet Niell (estim.), gradients
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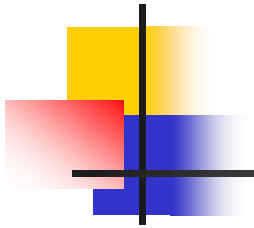

Have a nice day!

Any questions or comments?

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