



Report of the BEK EUREF Local Analysis Centre

Christof Völksen

*Bayerische Kommission für die
Internationale Erdmessung (BEK)*

Bavarian Academy of Sciences and
Humanities



Changes at the BEK

- W. Ehrnsperger retired in Sept. 2000
- BEK LAC has been operated until June 2001 by W. Wende
- Is now operated by Christof Völksen since June 2001



Changes since June 2001

- Number of official „*BEK LAC*“ stations processed increased from 33 in June 2001 to 39 today
- Processing runs on a new computer since a hard disk crash in summer 2001
 - OS:Linux (now SuSE 8.0)
 - BPE with extensions by Jan Dousa
 - most recent Bernese



Processing at BEK for the EPN

- Follows the guidelines for EPN Analysis Centres
- Accumulate the data a week before the release of the final IGS orbits
- Use the CODE final orbits to process the data and detect problems
- Prepare data for processing and automatically retrieve final IGS products on Sunday afternoon – start processing
- Send data on Monday after final check to the EPN combination centre



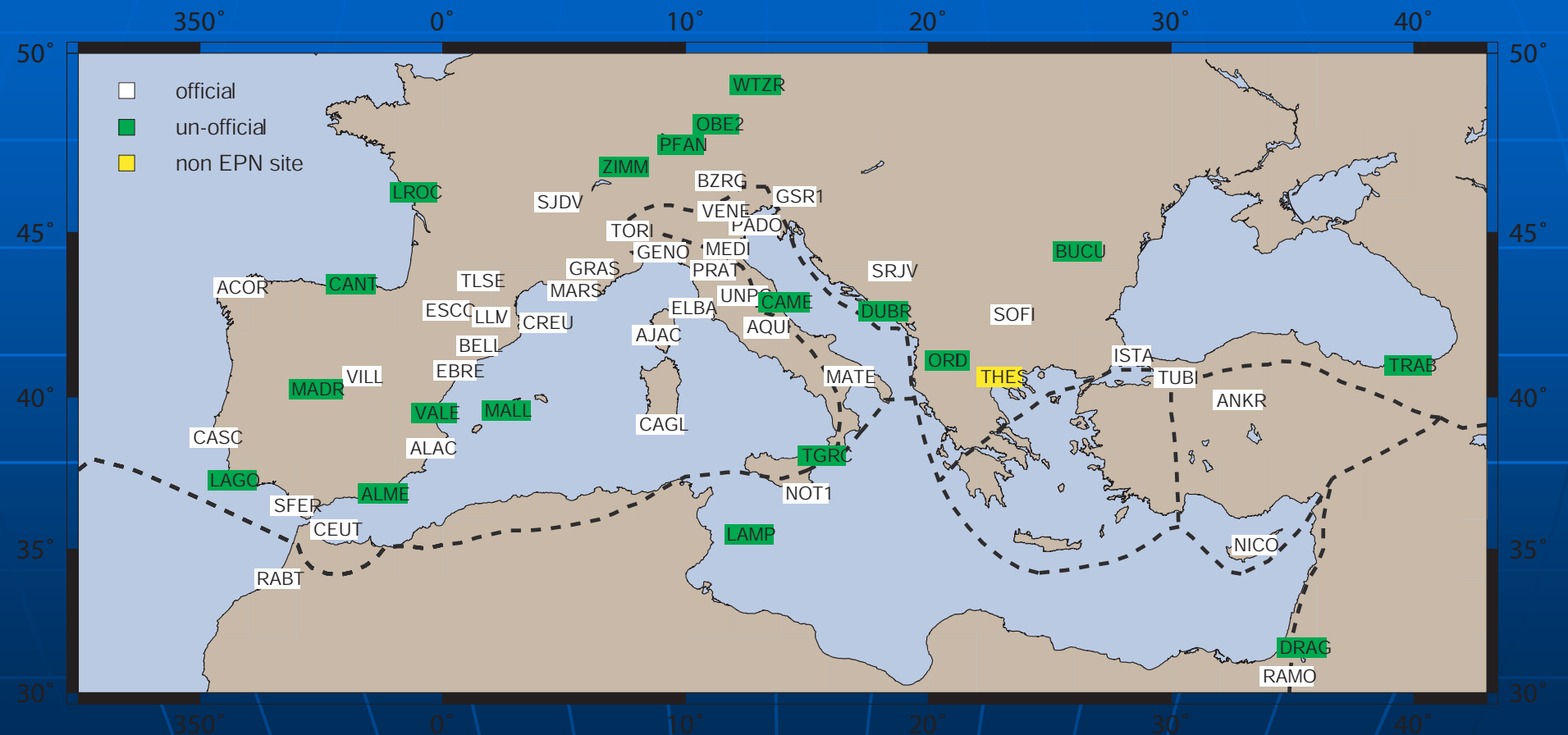
Aim of the BEK processing

- Observe the Mediterranean and its tectonics
- Observe and study the dynamics of the Alps

Therefore an extension of the „official network“ is processed for each day and additional stations are removed in the weekly combination. (EPN+unofficial sites~60)



Current BEK network



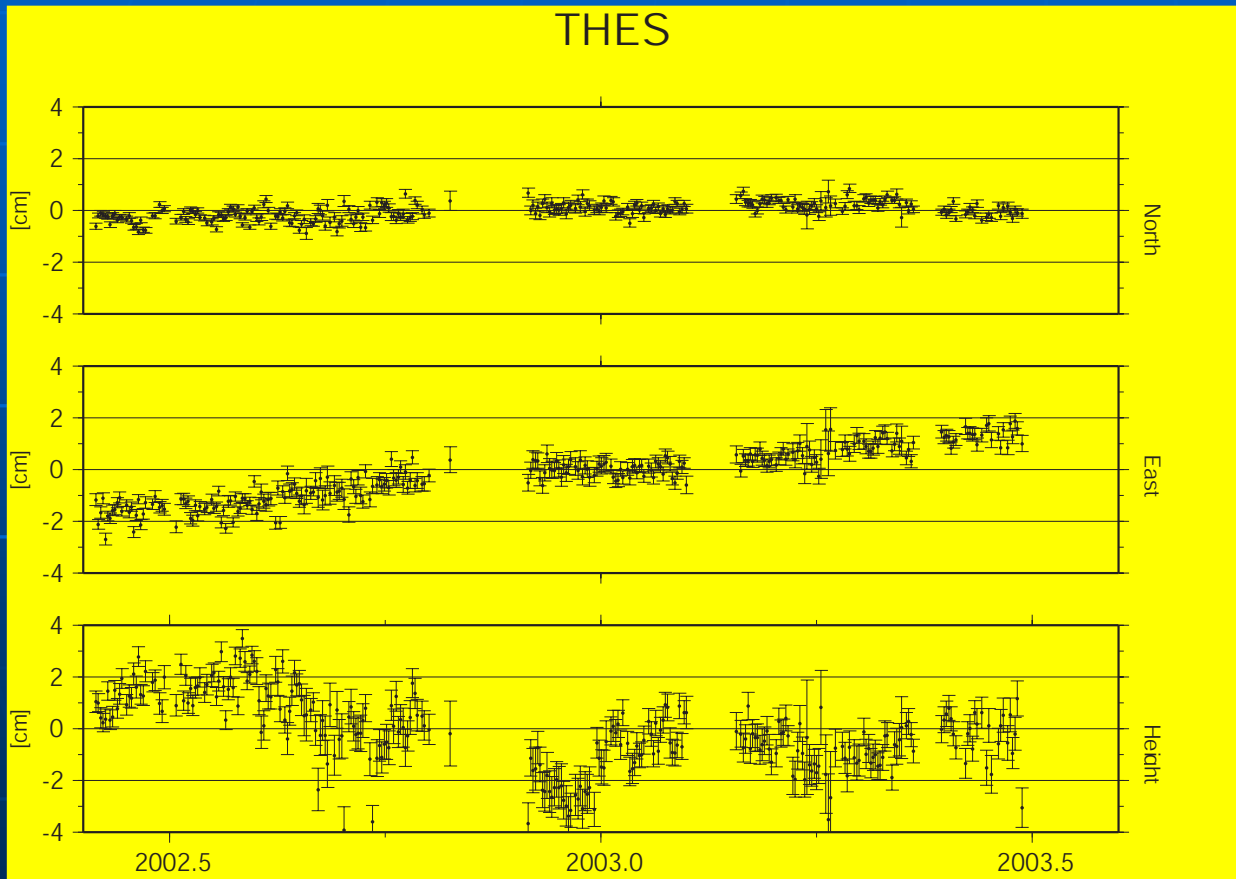


Future Projects based on EPN

Increase the number of permanent GPS-stations in the Mediterranean (with focus on Greece and the North African Coast)

- A GPS-station in Thessaloniki is already included (Laboratory of Geodesy/ Aristotle University Thessaloniki), GPS-station TUC1 from Crete is expected to join the IGS network (date ?)
- BEK could possibly support a suitable partner in a North African country to establish a permanent GPS station

Laboratory of Geodesy/ Aristotle University Thessaloniki



GIPSY/OASIS II

Precise Point
Positioning

$$V_{\text{lat}} = 5.3 \text{ mm/year}$$

$$V_{\text{lon}} = 28.7 \text{ mm/year}$$

$$V_{\text{height}} = -25.2 \text{ mm/year}$$



Future Projects based EPN

- BEK and DGFI aims at participating in the project ALPS-GPSQUAKENET (Funds from the EU INTERREG IIIB program)
- If funding is supplied by the EU DGFI will install 5 new permanent GPS stations in the German Alps and processing will be carried out by BEK



Future Projects based on EPN

Create a *fail safe system* for the operation as a EPN Local Analysis centre (second computer)

Start reprocessing of the GPS data covering the area of interest starting in 1996 using the same processing options like:

- modelling of the troposphere
- orbits
- datum realisation
- antenna calibration models
- etc.



Problems with the re-processing

- Expecting a new standard for receiver antenna calibration models
- possible introduction of PCV Maps for the GPS satellites
- possibly new processing options with a new release of BERNESSE



Remarks on Antenna Calibration Models

Availability of calibration models

- Geo++/IFE : absolute and relative models
- NGS: absolute (based on Geo++/IFE AOAD/M_T abs.) and relative Models
- IGS: relative (based on NGS and others)
- others: e.g. TU Dresden, GIUB

Problem using relative or absolute models:
Difference in scale is about 14 ppb



Test on the homogeneity of different calibration sets

- Using an arbitrary selection of EPN-sites
- Estimate coordinates using GIPSY/OASIS II (PPP-Strategy)
 - relative/absolute NGS
 - relative/absolute Geo++/IFE
- Compare relative individually
- Compare absolute individually





Differences between NGS and GEO++/IFE calibration models

Station	Antenne	Relative PCV [mm]			Absolute PCV [mm]		
		North	East	Height	North	East	Height
ANKR	AOAD/M_T	1.9	-1.9	0.1	-0.4	-0.8	-0.4
BZRG	LEIAT303____LEIC	0.8	3.6	-0.2	-2.0	4.3	-1.4
CASC	LEIAT504	0.1	-0.7	-2.1	-2.1	0.6	-2.3
CREU	TRM41249.00	3.2	2.9	-1.2	0.1	3.8	-3.4
INVE	ASH700936E_SNOW	0.7	-0.1	1.2	-0.9	1.1	0.9
MATE	TRM29659.00	4.8	1.8	-0.4	2.3	3.6	-0.5
MORP	AOAD/M_T	1.9	-1.9	0.0	0.0	-0.9	0.2
POTS	AOAD/M_T	1.9	-1.9	0.1	0.2	-1.2	-0.7
REYK	AOAD/M_T	1.9	-1.9	0.1	0.3	-0.3	0.7
RIGA	ASH700936D_M	-2.0	3.5	-5.2	-4.1	3.7	-2.2
WTZR	AOAD/M_T	1.8	-1.9	0.0	0.1	-1.1	-0.7



Finally

- BEK is waiting for a decision/solution on *new processing options* to start a reprocessing
- We would like to see more EPN sites in North Africa and Greece (Possibly we could help to install a new site)
- Continue our work for EPN on the regular basis