



Welcome...

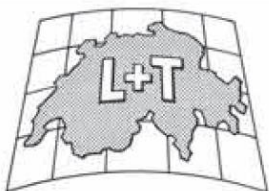
219	Session I	MUT	finished	
220	Lunch	MUT	finished	
221	Session II	MUT	started	<
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224	WUT Report	MUT	waiting	
225	MUT Report	MUT	waiting	



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armasuisse
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...to the LPT report swisstopo



L+T -> **LPT** logo “Landestopographie” 1968 -
1979,
[swisstopo since 2002]

E. Brockmann, D. Ineichen, S. Schaer



Content

- swisstopo analysis center LPT
 - contributions to the EPN
 - connection to the national processing
 - specialities in the processing
- GNSS-meteorology

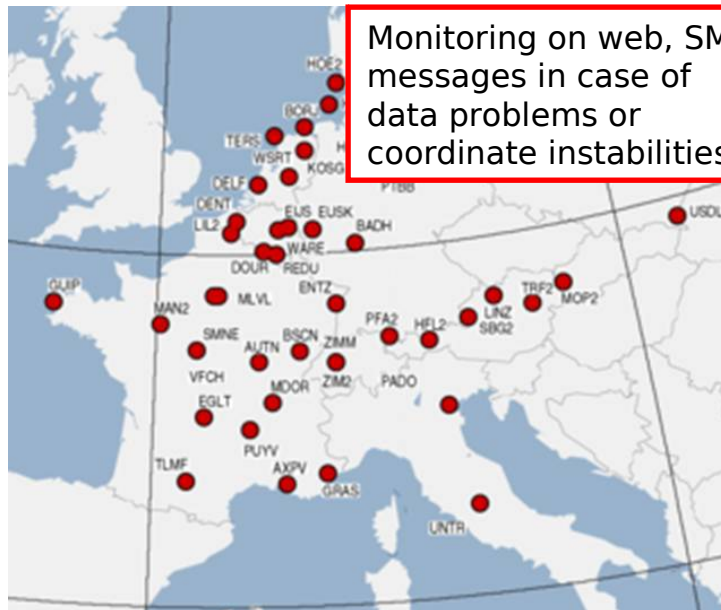


GNSS analyses using Bernese GPS Software: network + product

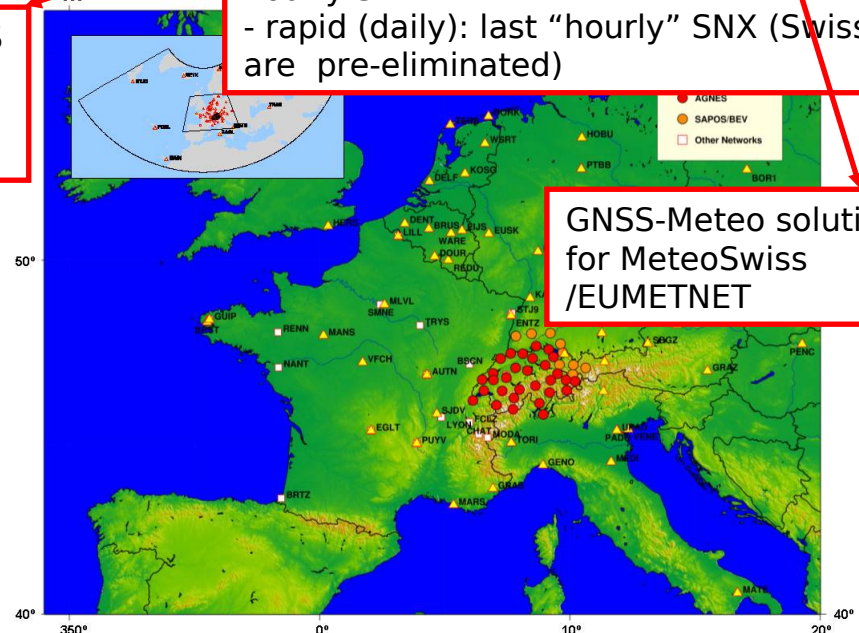
Final (weekly): SNX, TRO

network (#stations)	availability	comments	
EUREF sub-network (50)	100 % daily	reference frame Europe	↑ euraf
AGNES + sub-network EUREF (110)	100 % daily	reference frame Switzerland	euraf + + + swisstopo
AGNES + sub-network EUREF (110)	98 % hourly	monitoring + numerical weather prediction	swisstopo + + + euraf

Multi-annual solutions -> IAG dense velocity project



Monitoring on web, SMS messages in case of data problems or coordinate instabilities









- Ultra-rapid (hourly): 24 accumulated hourly SNX
- rapid (daily): last "hourly" SNX (Swiss sites are pre-eliminated)

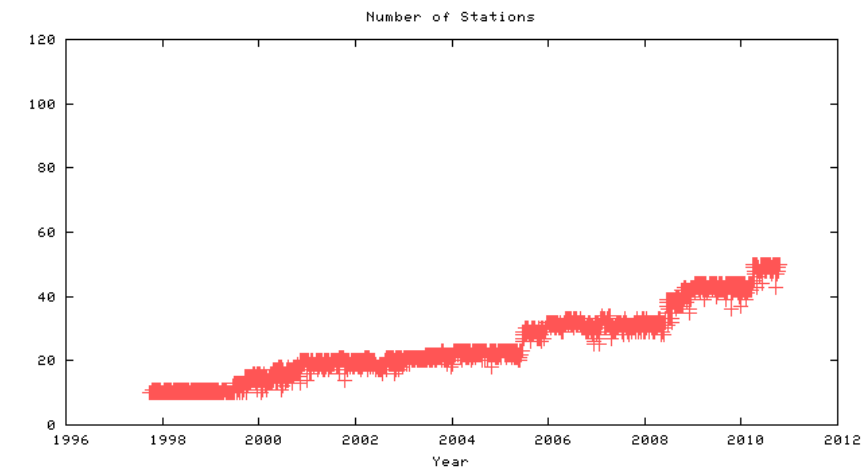
GNSS-Meteo solutions for MeteoSwiss /EUMETNET



GNSS analyses using Bernese GPS Software: # stations

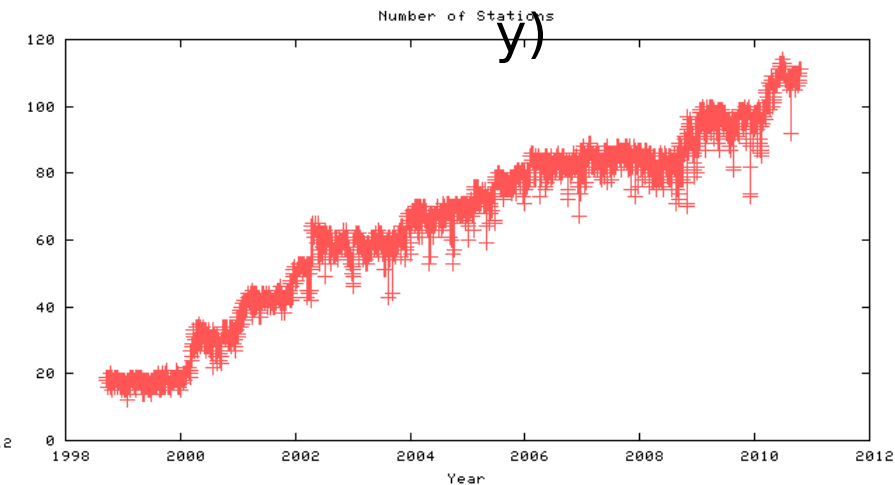
network (#stations)	availability	comments
EUREF sub-network (50)	100 % daily	reference frame Europe 
AGNES + sub-network EUREF (110)	100 % daily	reference frame Switzerland  + + + 
AGNES + sub-network EUREF (110)	98 % hourly	monitoring + numerical weather prediction  + + +  

EUREF
(daily)



31/10/10 02:33

AGNES
(daily+hourly)



01/11/10 18:07









-



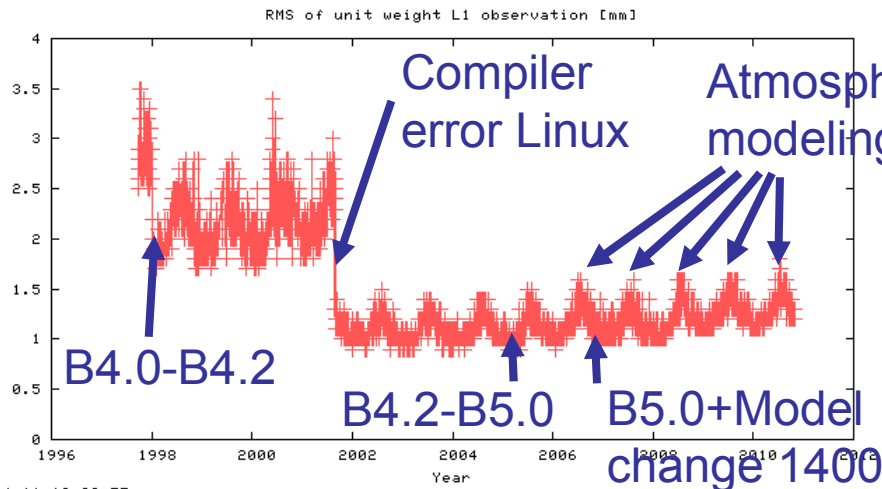
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GNSS analyses using Bernese GPS Software: rms unit weight

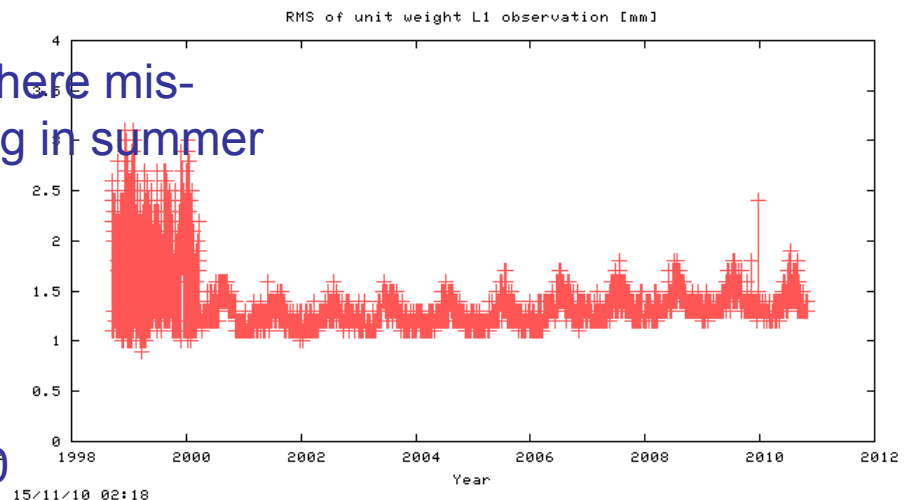
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AGNES + sub-network EUREF (110)	98 % hourly	monitoring + numerical weather prediction   

EUREF
(daily)



14/11/10 03:55

AGNES
(daily)



15/11/10 02:18



Processing remarks

- swisstopo's official contribution based on GLONASS data (amb. float) since GPS week 1400 (Nov. 2006)
- Bernese Software **BSW5.0⁺** (GNSS ambiguity resolution since Aug. 2007; further optimization concerning baseline selection, etc.)
- Orbit information used from CODE (no combined product available from IGS)



Further processing remarks

- GNSS ambiguity resolution (no ambiguities GPS-GLO)
 - QIF < 2000 km: 60 – 90 % (only for same frequencies)
 - L5/L3 < 200 km: 90 – 100%
 - L1/L2 < 20 km: 95 – 100%
- Special “distance-weighting” in SNGDIF (double-station baselines are always formed)
- Combining GPS and GLONASS: a) GPS-only + GLONASS-only + NEQ stacking or b) directly processed together
- On the national level: continuation of solutions based on relative antenna models (national coordinates based on rel. antenna models; as long as reprocessing is not done)



GNSS-meteorology within EUREF

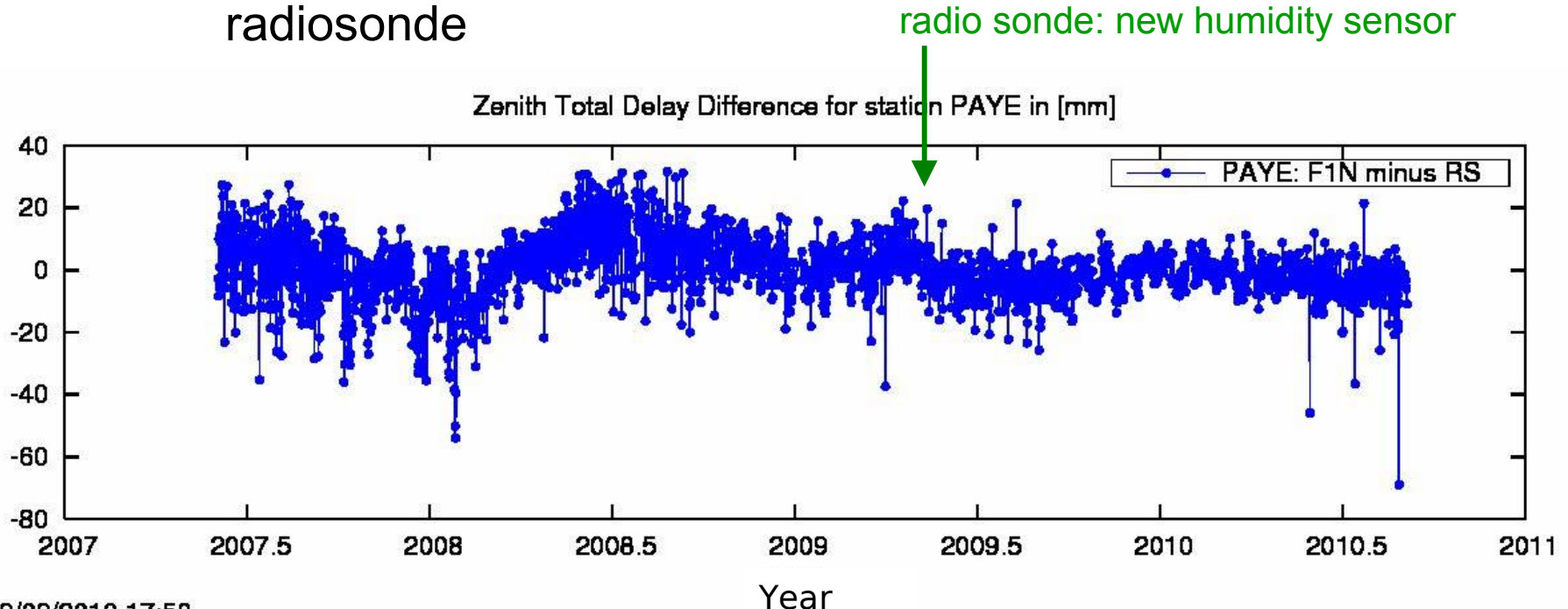
- Collaboration EUREF with EUMETNET
 - MoU signed in London, June 2007
 - data exchange between the two communities
 - GNSS data or ZTD parameters
-> EUMETNET (> 1000 sites)
 - usage of radio sonde (since April 2008) and synoptic observations (since June 2008) -> Geodesy
- swisstopo: Long-term, weekly and short-term comparisons implemented also for coordinates





Validation with radiosonde data: PAYE long-term

- reference: GNSS postprocessing
- Absolute antenna phase center related since Mid 2007
Trimble Cephyr antenna GNSS (time series is longer...)
- Seasonal variations smaller since new humidity sensor at
radiosonde



19/09/2010 17:58

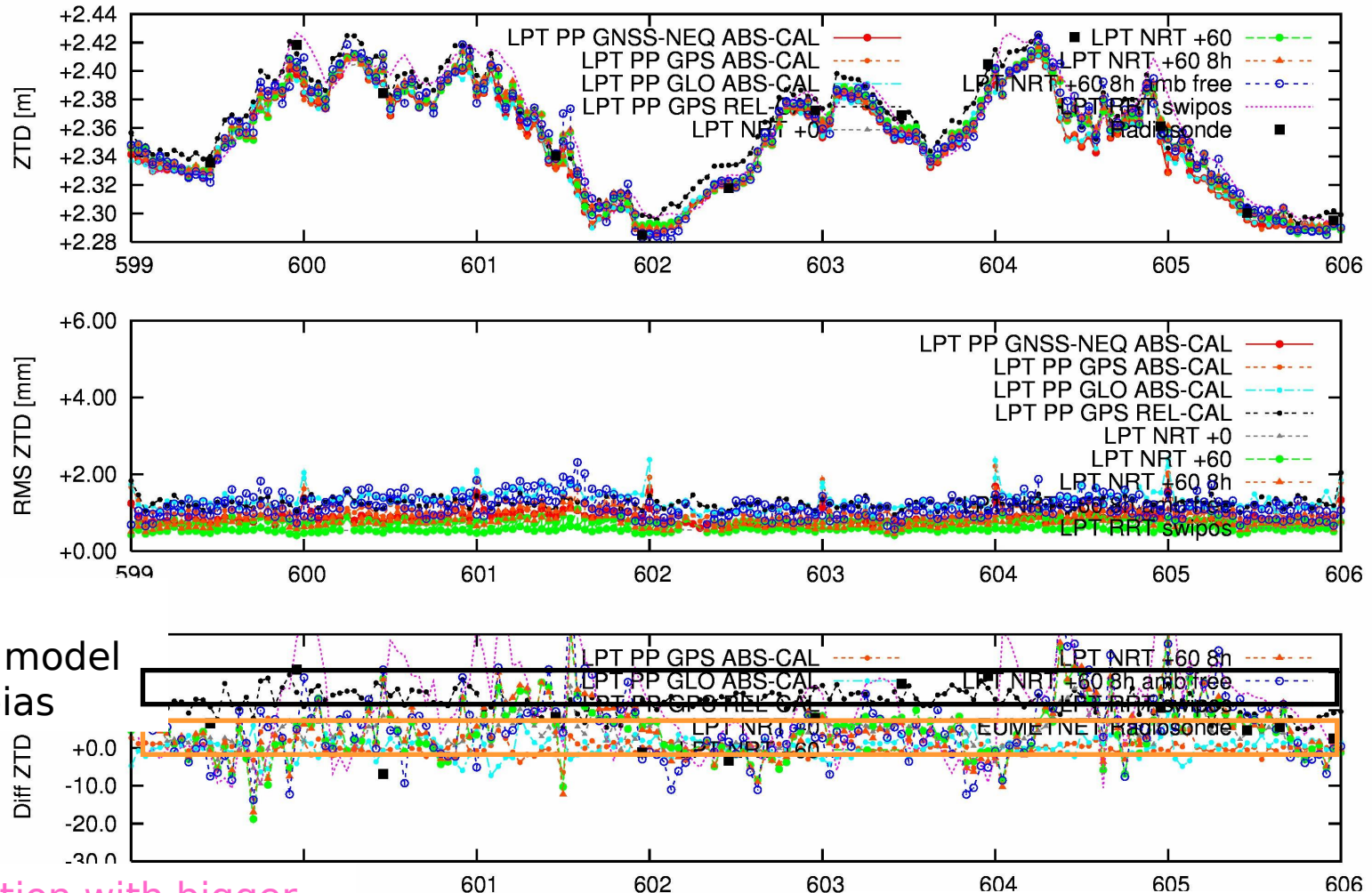


PAYE weekly monitoring

Example week 1598

Reference: PP, GNSS, absolute antenna PCV

PAYE zenith total delays, rms and differences to LPT PP week 1598



Relative
antenna model
causes bias

RRT solution with bigger
variations (small network)

aphy swisstopo

DOY 2009

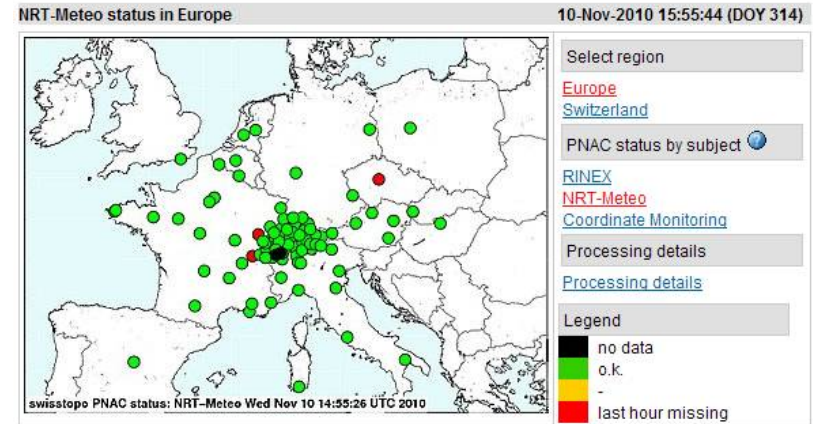
GLONASS influence is
small for daily PP amb-fix



PAYE short-term monitoring

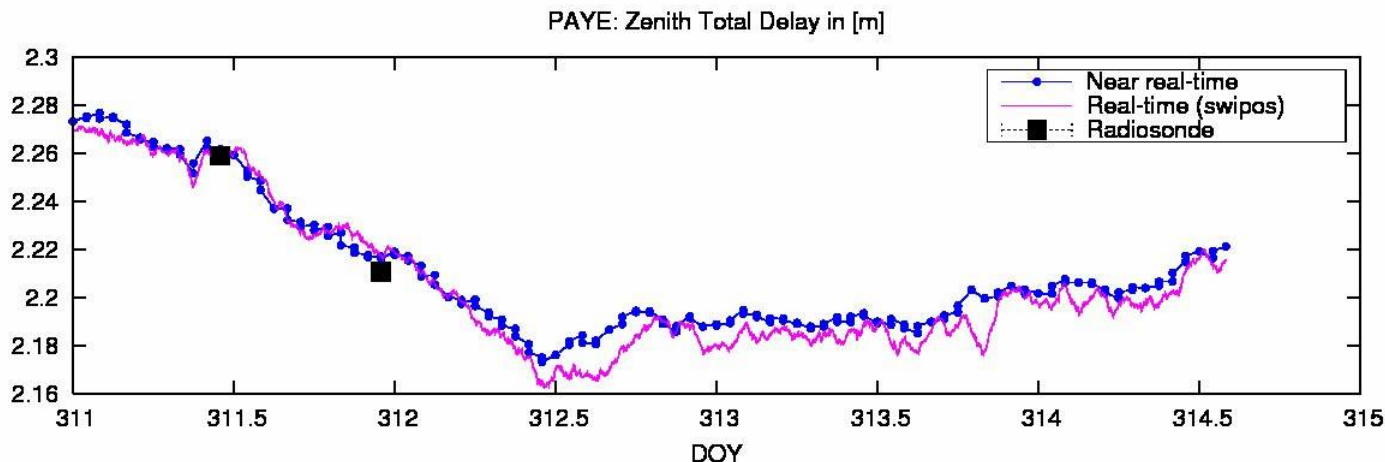
AGNES-Status / Zeitreihen

- Troposphere monitored in an identical way as coordinates
- Comparing with results of positioning service (all AGNES) and radio sonde (only PAYE, 3 days)



NRT-Meteo status by site

AIGE	ANDE	ARW	ARDE	ARD2	AUTN	AXPV	BLFT	BLGN	BOR1
BOUR	BOUP	BRST	BRUS	BRGN	BZRG	CABW	CAGL	COMO	DAVO
DAY2	DOUR	EGLI	EPFL	ENTZ	ERDE	ETHZ	ETH2	FALE	FHBB
FLDK	FREI	FRIC	FRIZ	GENO	GOH	GRAS	GRAZ	GUIP	HABG
HERS	HFL2	HQHT	HQH2	HUIT	JOJO	KALT	KIR0	KLOP	KOPS
							LINZ	LOMO	LUZE
							MAS1	MATE	MDQR
							PADO	PAYE	PDEL
							SAAN	SA42	SAME
							STCX	STGA	STJO
							WTZR	YEBE	ZERM



10/11/2010 15:52

Report swisstopo (LPT)

Swiss Federal Office of Topography swisstopo



Thanks for your attention !

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