

EPN-related Activities and Research at ASI/CGS Local Analysis Center



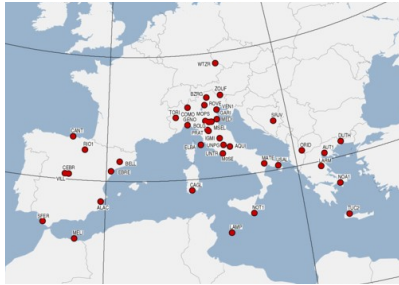
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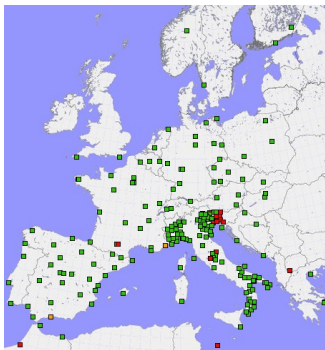
EPN Activities



EUREF-IP Activities



Reprocessing Activities



Tropospheric Monitoring: E-GVAP and GNSS4SWEC

Using IGS FINAL products (September 1996)

ASI weekly products: **ASIweek7.SNX**
ASIweek7.SUM

latency 1 week from IGS product publication

ASI daily products: **ASIweekd.SNX**
ASIweekd.TRO

latency 1 week from IGS product publication

Using IGS RAPID products (March 2007)

ASI daily products: **ASIweekd.SNX**

latency 6 hours from IGS product publication

Using IGS ULTRA RAPID products (September 2007)

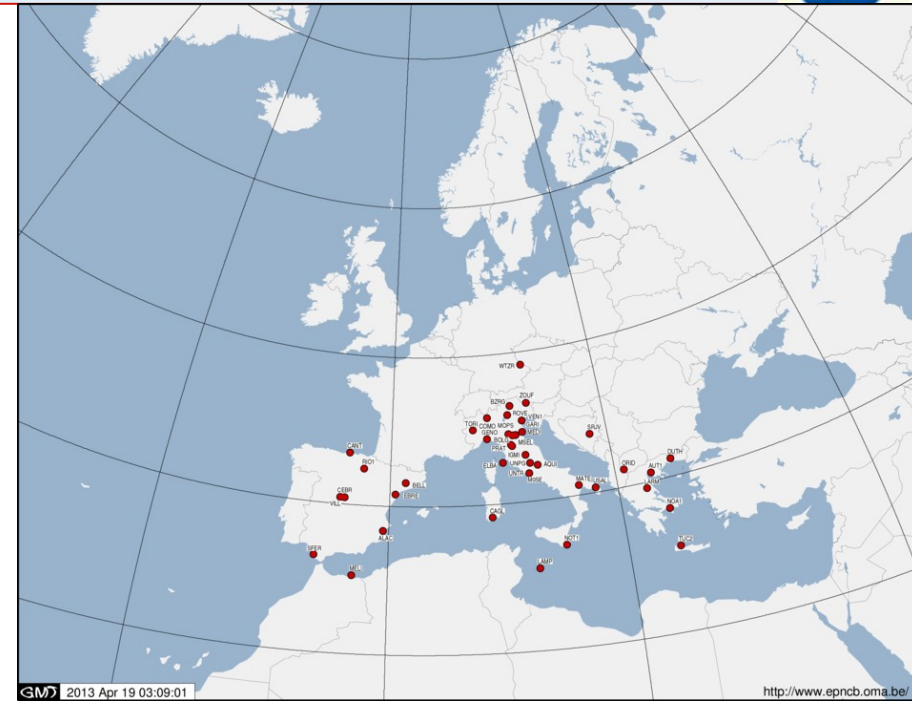
ASI hourly products: **ASIweekd_hh.SNX**

latency 1 hour from IGS product publication

ASI sub-network for EUREF

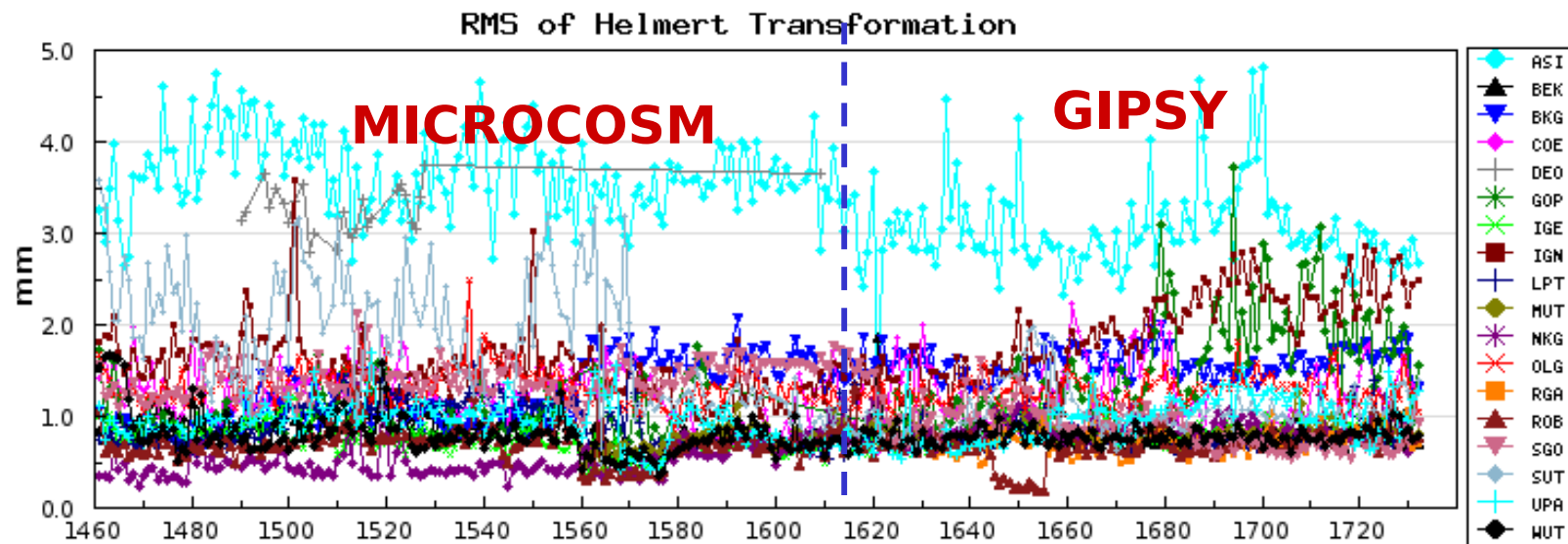


- 41 stations
- 3 stations added in the last 3 years: LARM (Greece), MELI, RIO1(Spain)
- 7 proposed stations: CAKO, DUB2, PORE, POZE, ZADA (Croatia), DYNG (Greece), ILDX (Corsica, France)
- 2 inactive stations: DUBR (Croatia), MILO (Italy)

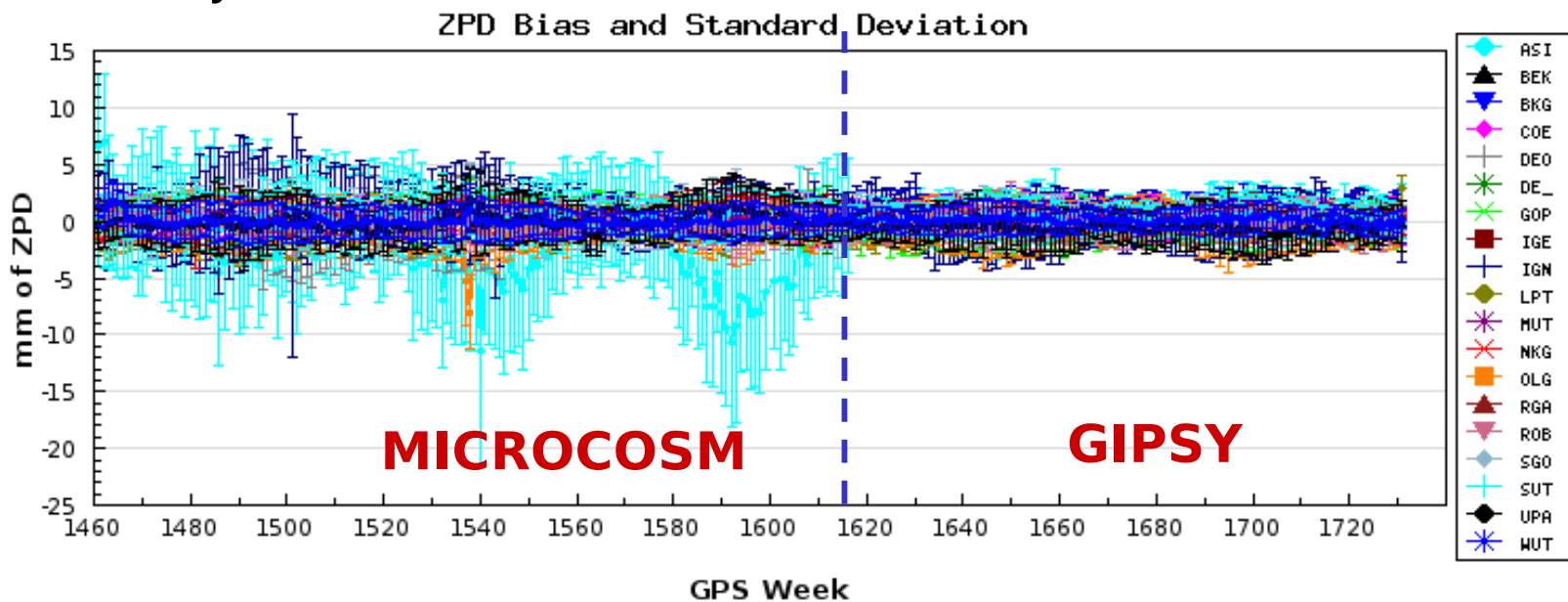


ASI FINAL products for EUREF - SSC & ZTD

Weekly RMS of each LACs' solution w.r.t. the combined one



Weekly BIAS/STD of each LACs' solution w.r.t. the combined one

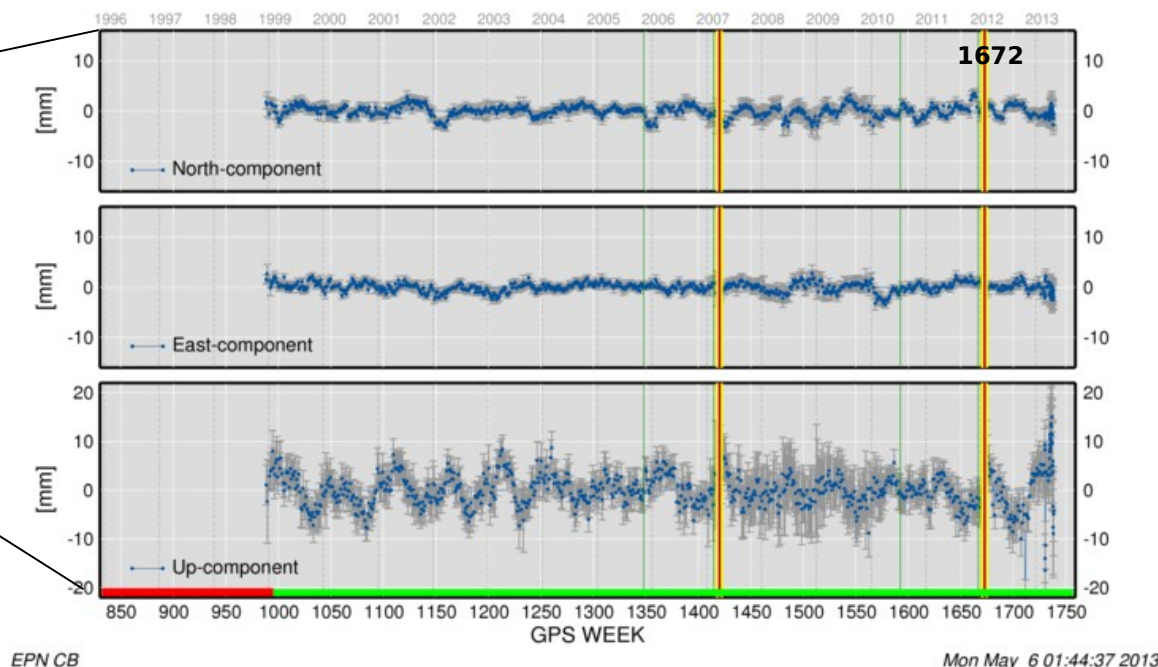


Bellmunt de Segarra, Spain (1/2)



solutions included up to May 04, 2013 (GPS wk 1738 dow 6)

BELL_13431M001 (Quick Update of Official EPN Solution)



BELL is analyzed by: ASI, BEK, DEO, IGN, MUT.

2011-12-15T14:36Z from TRIMBLE NETRS (GPS-only) to TRIMBLE NETR8 (GPS+GLO)

2012-01-26T13:13Z from TRM29659.00 NONE (h=0,0540m) to TRM55971.00 NONE (h=0,0570m)

No individual calibration.

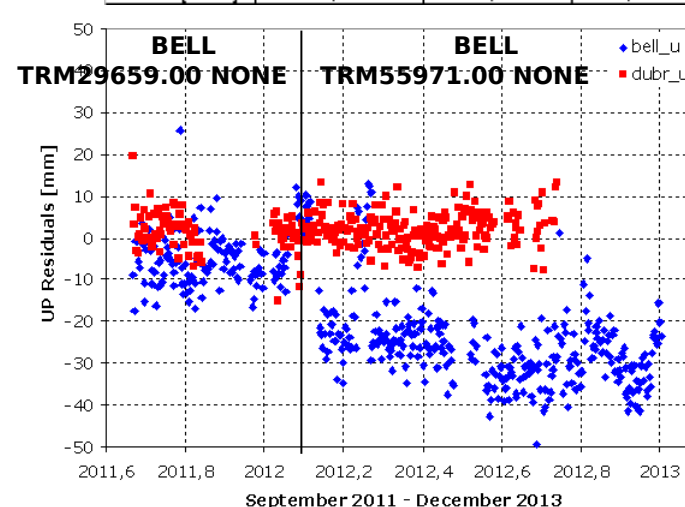
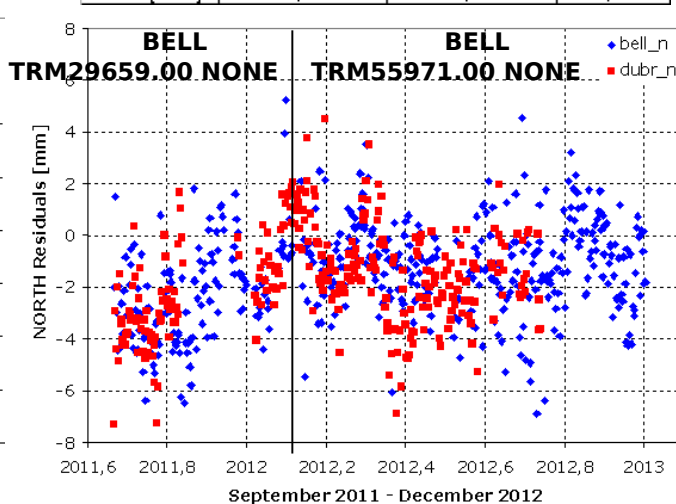
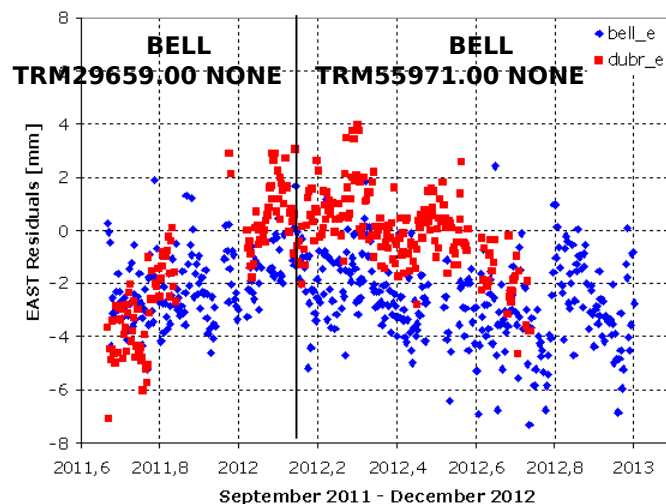
Bellmunt de Segarra, Spain (2/2)

From ASI17347.SUM BELL repeatability
LAT: 0.34mm, LON: 1.73mm, RAD: 1.27mm

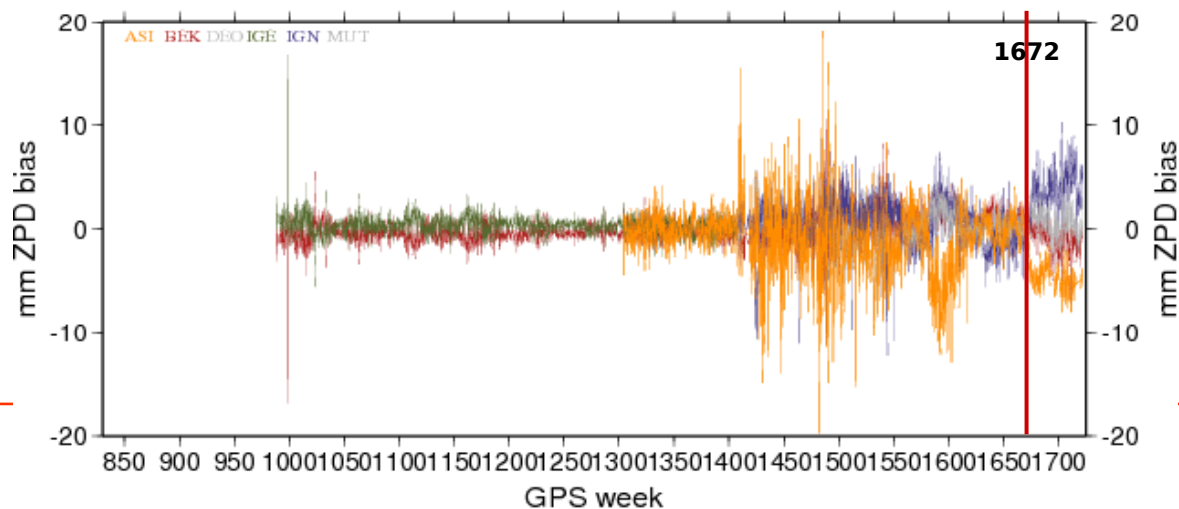
	BELL 09/11-01/12	BELL 01/12-12/12	DUBR
MEAN [mm]	-2,16	-2,68	-0,46
STD [mm]	1,23	1,70	2,90

	BELL 09/11-01/12	BELL 01/12-12/12	DUBR
MEAN [mm]	-2,40	-1,13	-1,73
STD [mm]	2,29	1,83	1,91

	BELL 09/11-01/12	BELL 01/12-12/12	DUBR
MEAN [mm]	-4,80	-26,06	1,72
STD [mm]	6,71	9,74	4,28



ZPD bias time series for BELL



Link: euref-ip.asi.it

Number of mountpoints: 123

Registration Link:

http://geodaf.mt.asi.it/gps_caster_access.php

GeDAF Data&Products

Home Techniques Data&Products Educational About us Staff only Search

ASI Broadcaster access

ASI Broadcaster

ASI-CGS has been operating as EUREF NTRIP Broadcaster since 2009, supporting the distribution of Real Time GNSS data stream in the European region. Please complete this form in order to apply for free real-time access to GNSS data streams from the ASI Caster (euref-ip.asi.it:2101).

Max number of simultaneous connections: 5.

Providing access is a service supporting the Calls for Participation of the [EUREF-IP Project](#) and the [Real-time IGS Pilot Project](#).

Note that data is made available primarily for demonstration and evaluation purposes. The ASI aims to provide an uninterrupted service. In spite of all efforts downtimes cannot be totally avoided. It is important to understand that streams may be interrupted or become unavailable at any time without prior notice.

ASI Caster user registration

Family Name * First Name *

Organization/Agency *

Street * City *

Country *

Phone Fax

E-Mail *

username (max 15 chars.) * password (max 15 chars.) *

Application (keywords only) *

The user ID and password you will receive by email in response to your request is only valid for personal use. Keep it confidential.

By submitting this form I give my personal information and accept to include me in the online users list on the website of ASI NTRIP Caster

Submit

External Link:

IGS (International GNSS Service)

EUREF

EUREF IP Project

EGVAP

RINEX Specification

HATANAKA Compression SW

SINEX tropo format

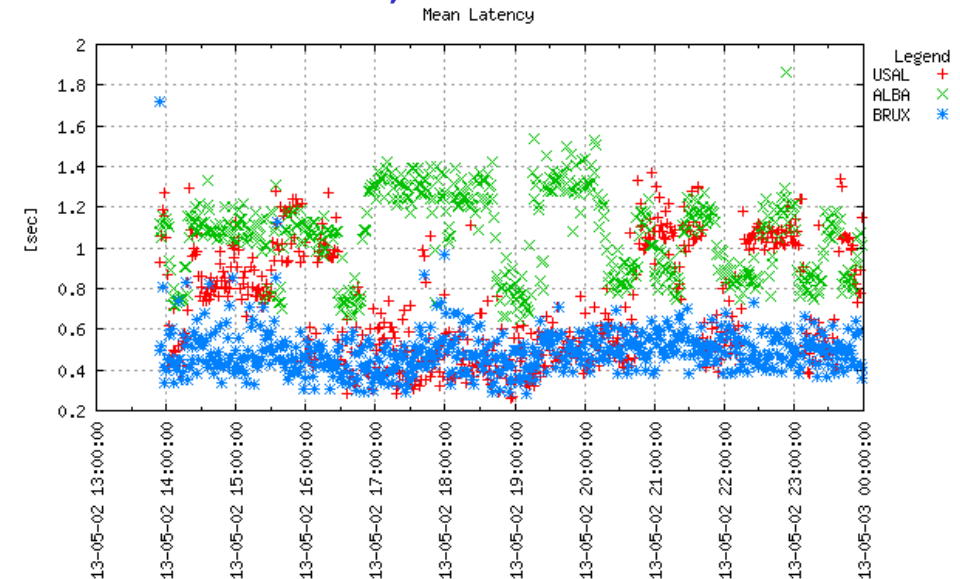
COST format

Number of users: 23

7	Italy
3	Germany
2	Poland
1	Austria
1	Bulgaria
1	Czech Republic
1	Finland
1	France
1	Greece
1	Niger
1	Portugal
1	Romania
1	Slovenia
1	Thailand

Application	
education	1
farming	1
forest	1
geodesy	3
gnss	3
road	1
rtk	2
swaci	1
survey	3
test	3
unknown	4

3 stations pulled by ASI: ALBA from BKG, BRUX from ROB, USAL from ASI



EPN Repro1 years 2005-2006 GIPSY PPP solutions all EPN stations

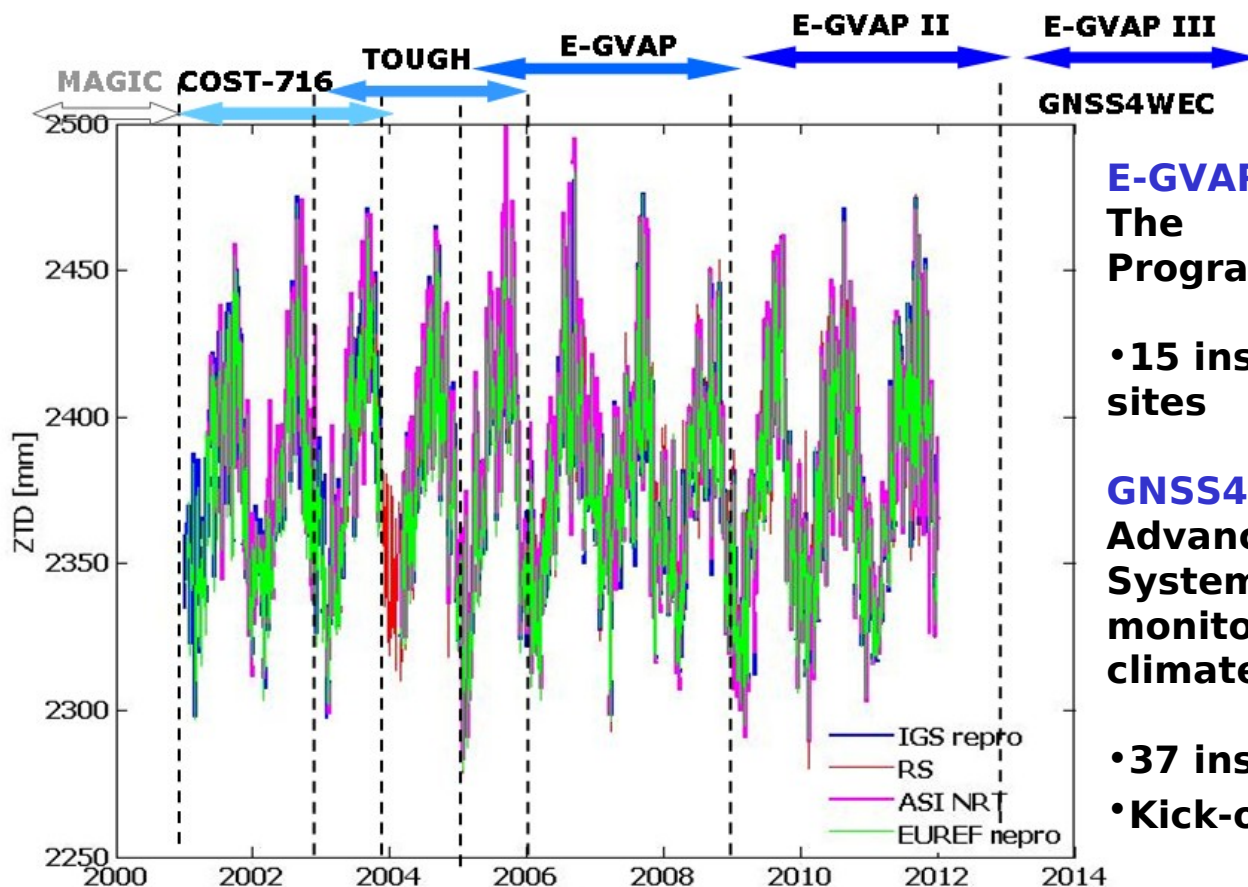
EPN Repro2 years 1996-2012 GIPSY PPP solutions all EPN stations

Repro2 Reprocessing Strategy

Software / Mode	GIPSY/ PPP
Network Coverage	EPN Network
Period	1996-2012
Orbits, clocks and EOPs	JPL Repro2 Final
Sat. & Ric. Antenna Model	IGS08.ATX
Tropo. Model	GPT/GMF
Estimated trop. param.	ZTD+Grad
Oceal Tide Loading	FES2004
Elev. Angle Cutoff	7deg
RINEX Type	daily
Ambiguity Resolution	Resolved
Products	daily/weekly sinex
	daily station tro sinex (ZTD+grad)
	5min sampling rate
	daily tro sinex (ZTD+grad) 1h sampling rate



Cagliari July 2001 - July 2012 Time Series



E-GVAP I, II, III (2006-2016)

The EUMETNET GPS Water Vapor Programme

- 15 institutions, 15 ACs, > 1800 GNSS sites

GNSS4SWEC - COST Action (2013-2016)

Advanced Global Navigation Satellite Systems tropospheric products for monitoring severe weather events and climate

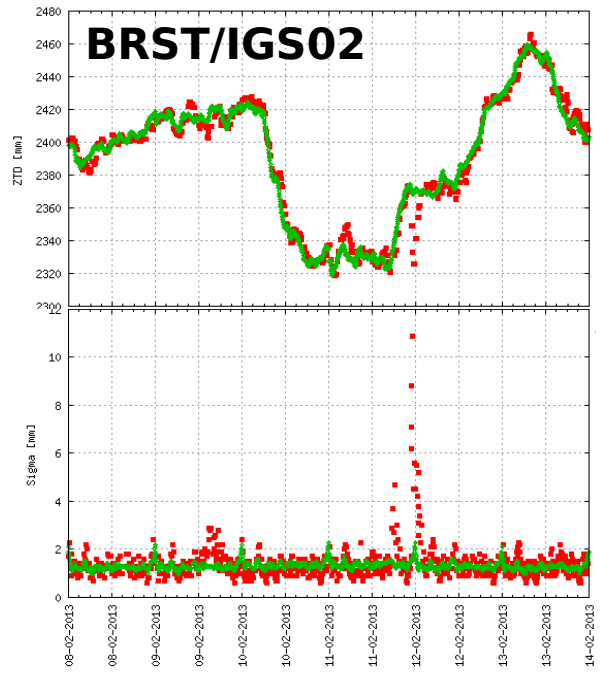
- 37 institutions (25 EU countries)
- Kick-off meeting in May 17, Brussels

ASI Contribution to E-GVAP: GNSS-Met 1D PRODUCTS

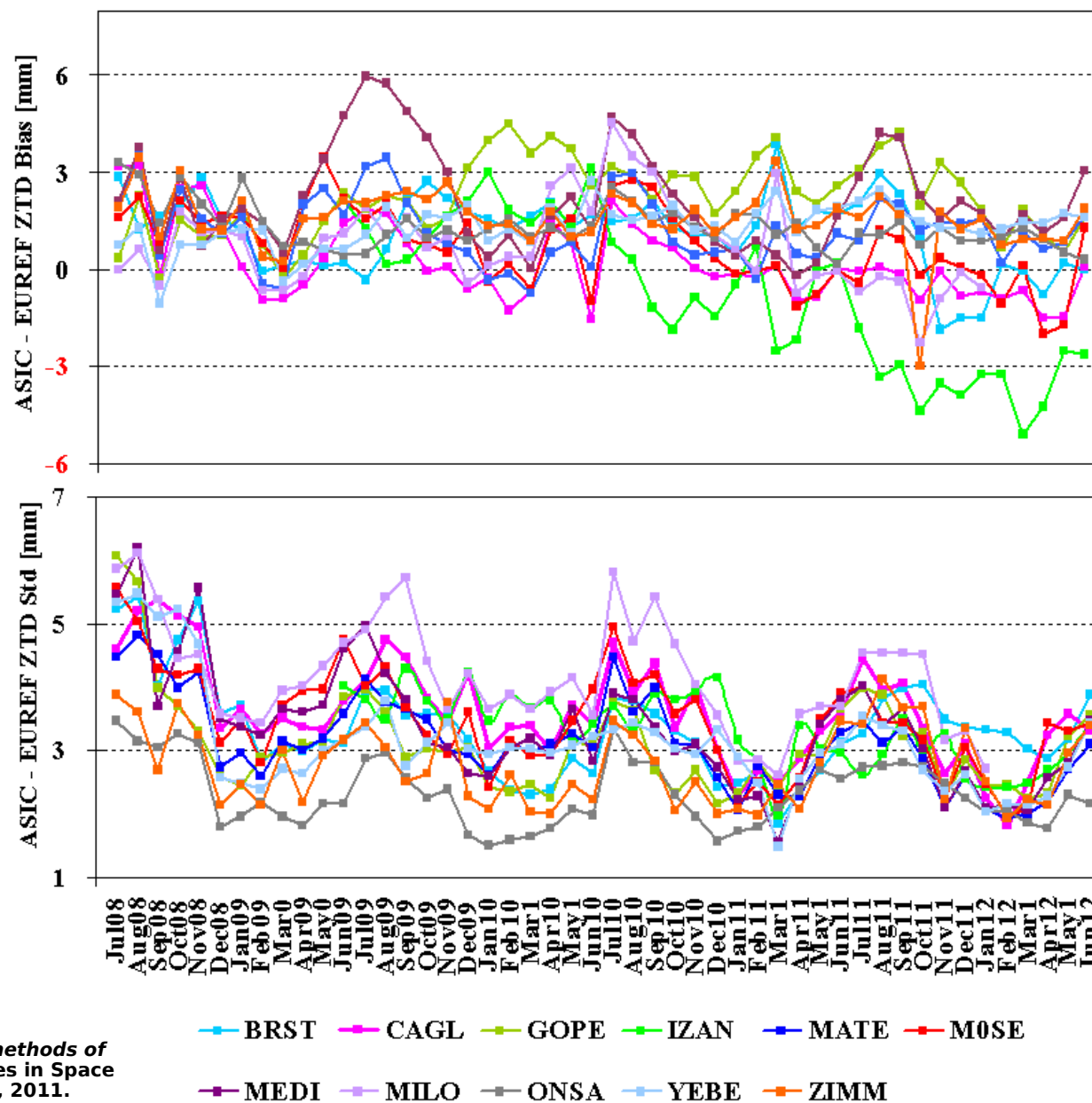


Software / Mode	ASIP GIPSY/ PPP	ASI_ & ASI1 GIPSY/ Net	ASIS GIPSY/ PPP
Network Coverage	Central Mediterranean area	Central Mediterranean area	Europe
# Stations	approx. 250	approx.60 approx.200	E-GVAP Super Sites
Orbits, clocks and EOPs	JPL Final	IGS UR	IGS RT
Sat. & Ric. Antenna Model	IGS08.ATX	IGS08.ATX	IGS08.ATX
Tropo. Model	GPT/GMF	exp/NIELL	GPT/GMF
Ocean Tide Loading	FES2004	FES2004	FES2004
Elev. Angle Cutoff	7deg	7deg	7deg
RINEX Type	daily	hourly	RT converted to RNX via BNC
Sliding window	24h	24h, 1h moving forward 4h, 1h moving forward	24h, 15min moving forward
Estimated tropo. param.	ZTD+Grad	ZTD+Grad	ZTD+Grad
Ambiguity Resolution	Resolved	Not Resolved	Not Resolved

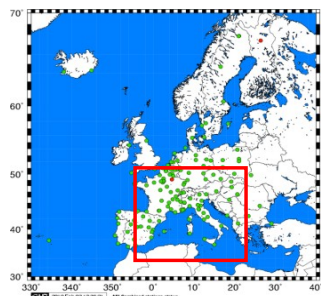
ZTD time series (top)
and related sigmas
(bottom)
of
Sub-hourly solutions (red) and
IGS tropo solution (green).
period February,
08-14, 2013.



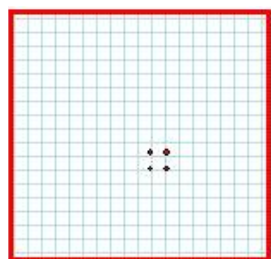
ASIC versus EUREF tropospheric solutions



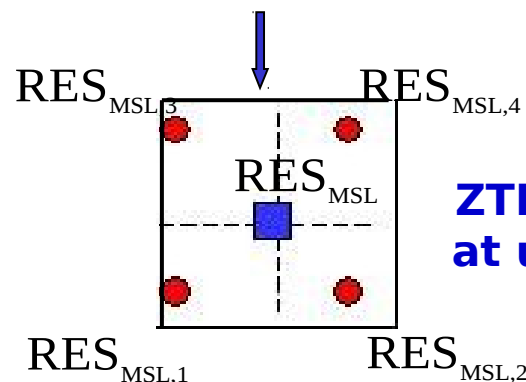
Pacione, R., et al. "Combination methods of tropospheric time series", *Advances in Space Research*, vol. 47, pp 323-335, 2011.



GNSS Data Collection & Processing

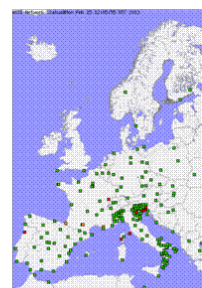


**ZTD residual grids
0.5°x0.5°**

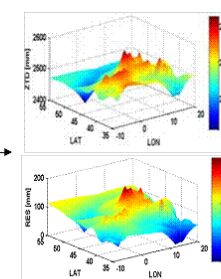


**ZTD correction
at user location**

Number of GNSS sites	>200
GNSS data	<ul style="list-style-type: none"> GPS L1/L2 phase/code pseudorange hourly batches RINEX format 1h latency
Ancillary data	IGS UR products
GPS data analysis SW	NASA/JPL GIPSY/OASIS
E-GVAP ZTD product	<ul style="list-style-type: none"> Hourly batches 15' ZTD estimates for each site COST format 90min nominal latency



GTGC



GTGC Product (Ordinary Kriging)	<ul style="list-style-type: none"> UNB3M reference model ZTD grids at 0-height layer ZTD residual grids [35°,55°] lat, spacing: 0.5° [-10°,20°]lon, spacing: 0.5° IONEX modified format <2h latency
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European IWV Maps

