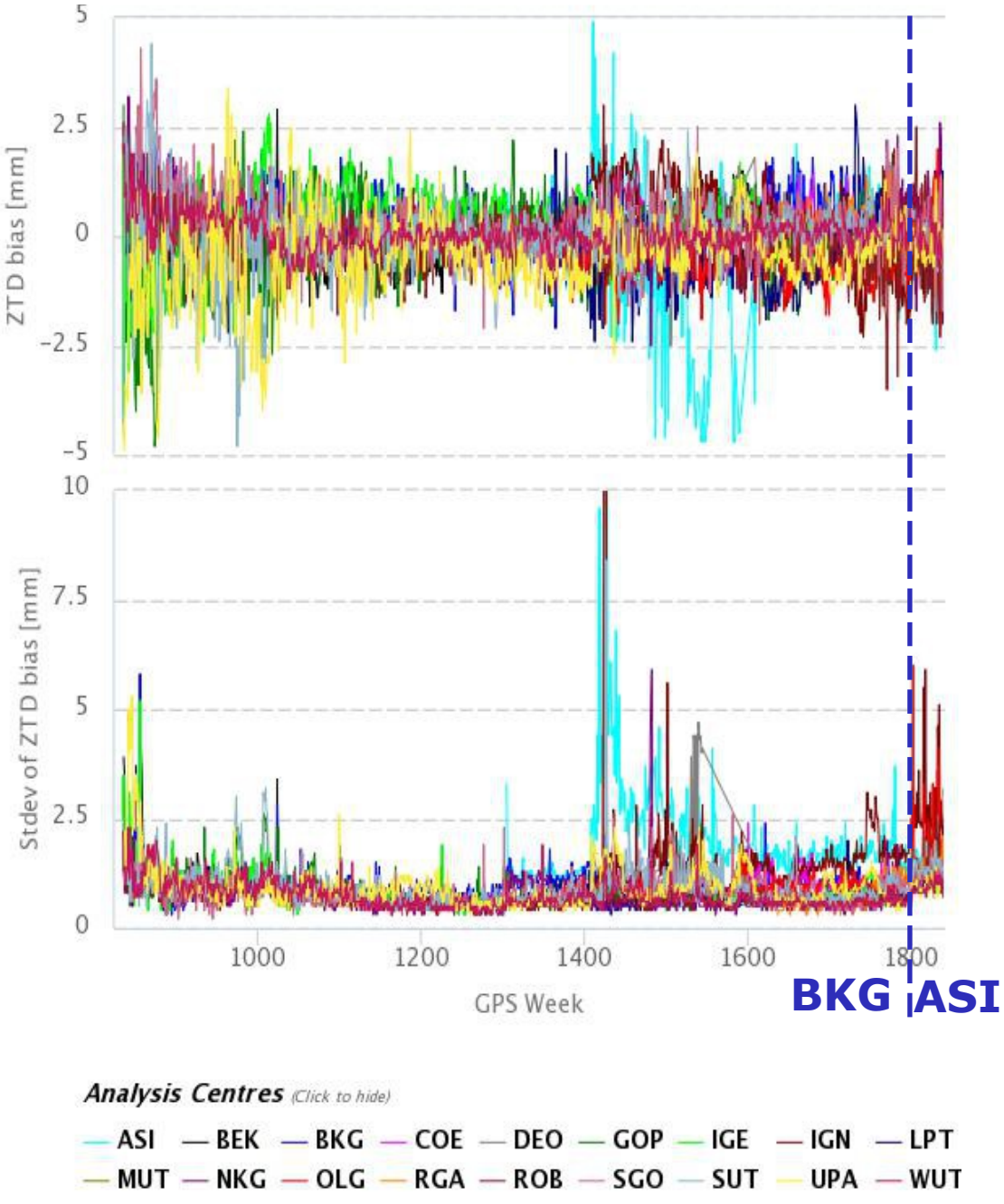
EPN Troposphere Report

Rosa Pacione, e-geos ASI/CGS Matera, Italy

Routine Combination GPS week 1800-1841

- No news from IVS



Repro2: Uploaded Contribution to BKG

	AS0	GO0	GO1	GO4	IG0	LP0	LP1	MU0	MU4
SW	GIPSY 6.2	BSW 5.2			BSW 5.2	BSW 5.2		GAMIT 10.5	
GNSS	G	G			G + R (since 1147)	G + R (since 1222)		G	
SOLUTION TYPE	PPP	NET			NET	NET		NET	
STATIONS	ALL EPN+ IGS CORE	ALL EPN			PART EPN	PART EPN + IGS(8)		ALL EPN	
ORBITS	JPL R2 (prelim.)	CODE R2			CODE R2	CODE R2		CODE R2	
ANTENNAS	IGS08	IGS08 + IND.			IGS08 + IND.	IGS08	IGS08 + IND.	IGS08	
IERS	2010	2010			2010	2010		2010	
GRAVITY	EGM08	EGM08			EGM08	EGM08		EGM08	
TROPOSPHERE Estimated Param	ZTD (5min) GRAD (5min)	ZTD (1h) GRAD (6h)			ZTD (1h) GRAD (6h)	ZTD (1h) GRAD (24h)		ZTD (1h) GRAD at 10° (24h)	ZTD (1h) GRAD in zenith (24h)
MAPPING FUNCTION	VMF1	GMF	VMF1	VMF1	GMF	GMF	VMF1	VMF1	
ZTD/GRAD time stamp	hh:30 24 estimates/day	hh:00 and hh:30 (hh:30 interpolated) 48 estimates/day			hh:30 24 estimates/day	hh:00 and hh:30 (hh:30 interpolated) 48 estimates/day		hh:30 24 estimates/day	
IONOSPHERE	(HOI included)	CODE (HOI included)			CODE (HOI included)	CODE (HOI included)		CODE IONEX + IGRF11 (HOI included)	
REF. FRAME	IGb08	IGb08			IGb08	IGb08		IGb08	
OCEAN TIDES	FES2004	FES2004			FES2004	FES2004		FES2004	
ATM. TID. LOAD.	NO	NO			YES	YES	YES	YES	
ATM. NONTID. LOAD.	NO	NO	NO	YES	NO	NO	YES	YES	YES (removed)
ELEV. CUTOFF	3	3			3	3		5	
Delivered SNX/TRO Files[from week to week]	0835-1772	0836-1771			0835-1816	0835-1772		0835-1771	

EPN Repro2: how to continue

Plans
combine the available contributions for:

- inspecting AC specific bias/std;
- inspecting Site & AC specific bias/std;

in order to identify 'climate quality' EPN stations.

First results:

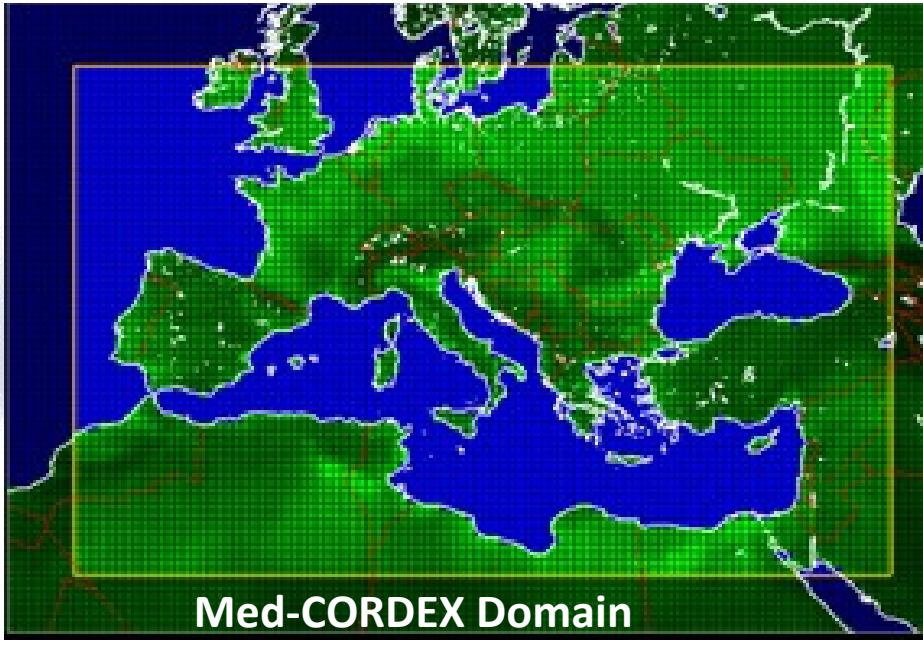
- COST WG Meeting (Wroclaw, September 29-October 1 2015)
- LAC Workshop (Bern, 14-15. October 2015)

Data Policy TBD

EPN Repro2: reference ZTD data set over EUROPE

- Assessment of Med-CORDEX, Euro-CORDEX climate model simulation using GNSS IWV long time series to investigate IWV trends (linear and non-linear) and and variability (broad range of time scales, from diurnal to seasonal/inter-annual, and spatial scales from regional to global) from GNSS and Climate Model.

- IGS Repro1 (1996-2010) used as reference reprocessed GPS solution.



Data after 2010 are required!

- The climate groups expressed the need for more spatially dense GPS ZTD/IWV data over Europe.
- **EPN repro2 is expected**. Studies using and assessing the EPN repro2 (individual solutions and the final combined solution) are stimulated.

TROPO SINEX Standardization

- Compatible with SINEX 2.02

Products:

- 1) Individual analysis centre product;
- 2) Product from the combination centres;
- 3) Station-specific product (e.g. long-term data time-series).

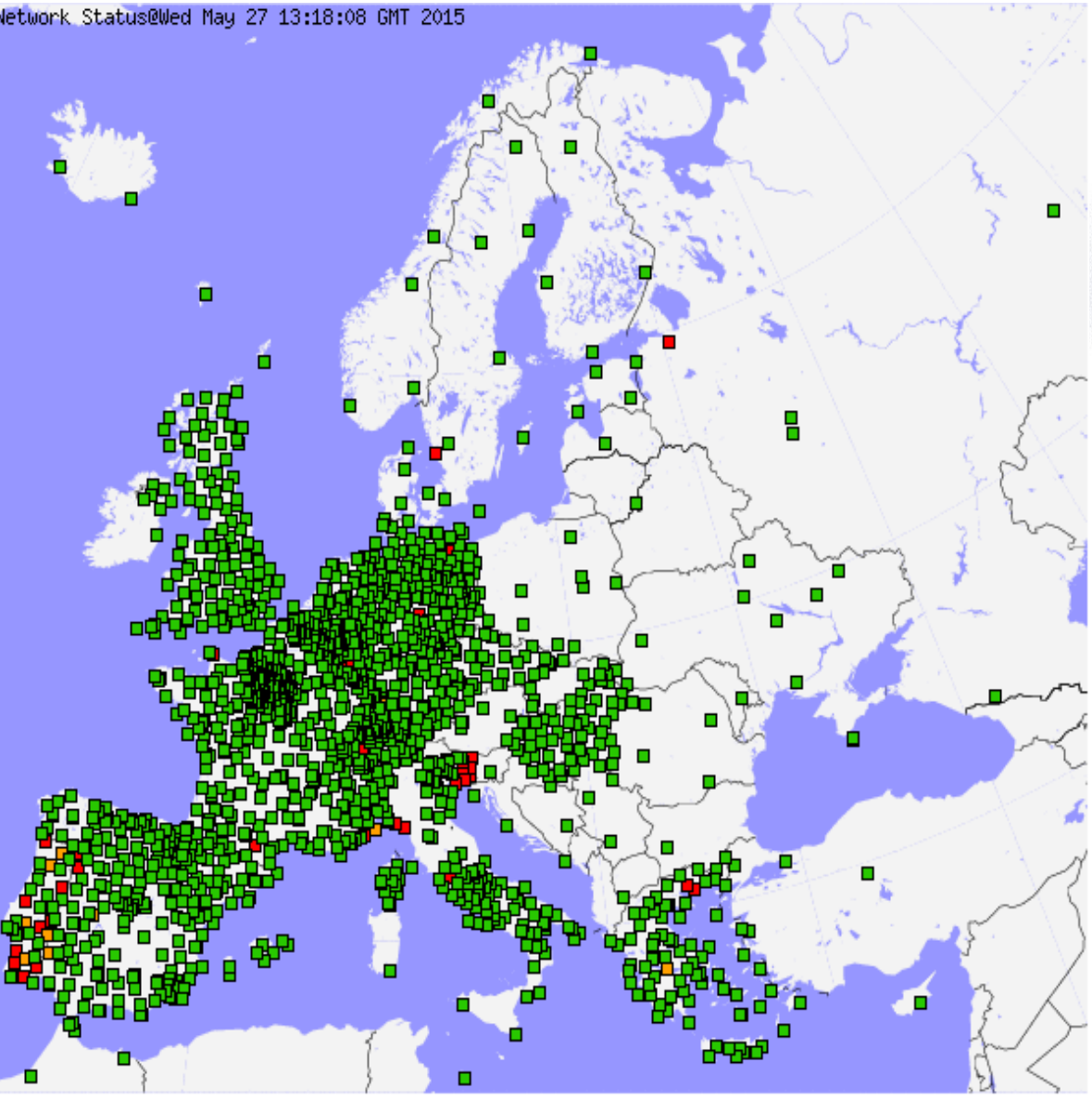
Outcome of the Thessaloniki discussion

Philosophy – no major objection, i.e. direction accepted
File naming – to be simplified → extended filenames preferred
Site naming – to follow RINEX 3 conventions
Data blocks – TROP/SOLUTION + SLANTS/SOLUTIONS (added)
Parameters – minor revision, agreed to keep an optional params
Slant data – detail to be defined (starting from GFZ format)
Meta data blocks – generally OK (merging SINEX + TroSINEX)
Meta data – details in next step (starting from the existing)
Example – to be prepared for next WG3 meeting

Major question in WG3:

→ initial motivation was to support time–series data
→ strong complexity identified (meta data, expandability+sync):
→ question: should we consider TS with for fixed period only?
→ impact on meta data, synchronization etc.

Coverage of tropospheric products in Europe



New Acs:

Hungary , Turkey, Greece, ….

•*+ others coming.*

New networks for E-GVAP:

•Greece, Hungary, Austria (soon), Italy(+)

•*+ others coming*

Supported by:

•GOP - TropNET processing package (Bernese)

•Uni Luxembourg – troposphere example campaign

Real Time PPP Campaign

- Set up to evaluate if RT estimates can be valuable in meteorology. If so, the achieved results can contribute to E-GVAP in the future.

Mandatory Stations

- 17 IGS Stations
- 10 EPN Stations
- 5 E-GVAP Super-Sites

Mandatory orbits/clocks products: IGS03

Mandatory GNSS: GPS

Current Contributors

AC	Software	First upload	Processing	Solutions
GOP	G-Nut/Tefnut	9.4. 2015	Real-time	GOXR – IGS03(GPS) GOXQ – IGS03(GPS+GLO) GOXK – CNS91(GPS) GOXL – CNS91(GPS+GLO)
TUW	TUW software	15.4. 2015	Real-time	TUW_ – IGS03
ROB	G-Nut/Tefnut	23.4. 2015	Real-time	ROBA – IGS02(GPS) ROBB – IGS03(GPS) ROBC – IGS03(GPS+GLO) ROBD – CNS91(GPS+GLO)
ASI	GIPSY	5.5. 2015	Hourly	ASIR – IGS03 converted into SP3/RINEXC

Monitoring and Evaluation

http://www.pecny.cz/COST/RT-TROPO/.

The results will be evaluated using the GOP-TropDB compared to the EUREF and IGS final tropospheric products.