



EPN Analysis Aspects

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Introduction

- Evaluation to use ITRF2005 and absolute PCVs in EPN, Action Item TWG-43-13
- EPN rapid analysis products
- Status note regarding EUREF/INSPIRE, Action Item TWG-43-06
- Status note regarding ITRF2005 densification“

ITRF2005 and Absolute PCVs in EPN

- Detailed study of use of ITRF2005 distributed per E-Mail (ppt-file) among TWG members
 - *Here:* Summary only
- Note: EPN weekly solutions are affected by both changes,
 - ITRF2005 and Absolute PCVs

Transformation from IGS05 to ITRF2005 ?

- Is this transformation needed?
 - We need ITRF2005 to transform into ETRF2005 realization of ETRS89.
 - IGS05 has been aligned to ITRF2005 on the global level, but are there regional differences present?
 - Station-specific height differences could not be considered in a common set of Helmert transformation parameters. The transformation, as coordinate operation equally applied to all stations, becomes meaningless.

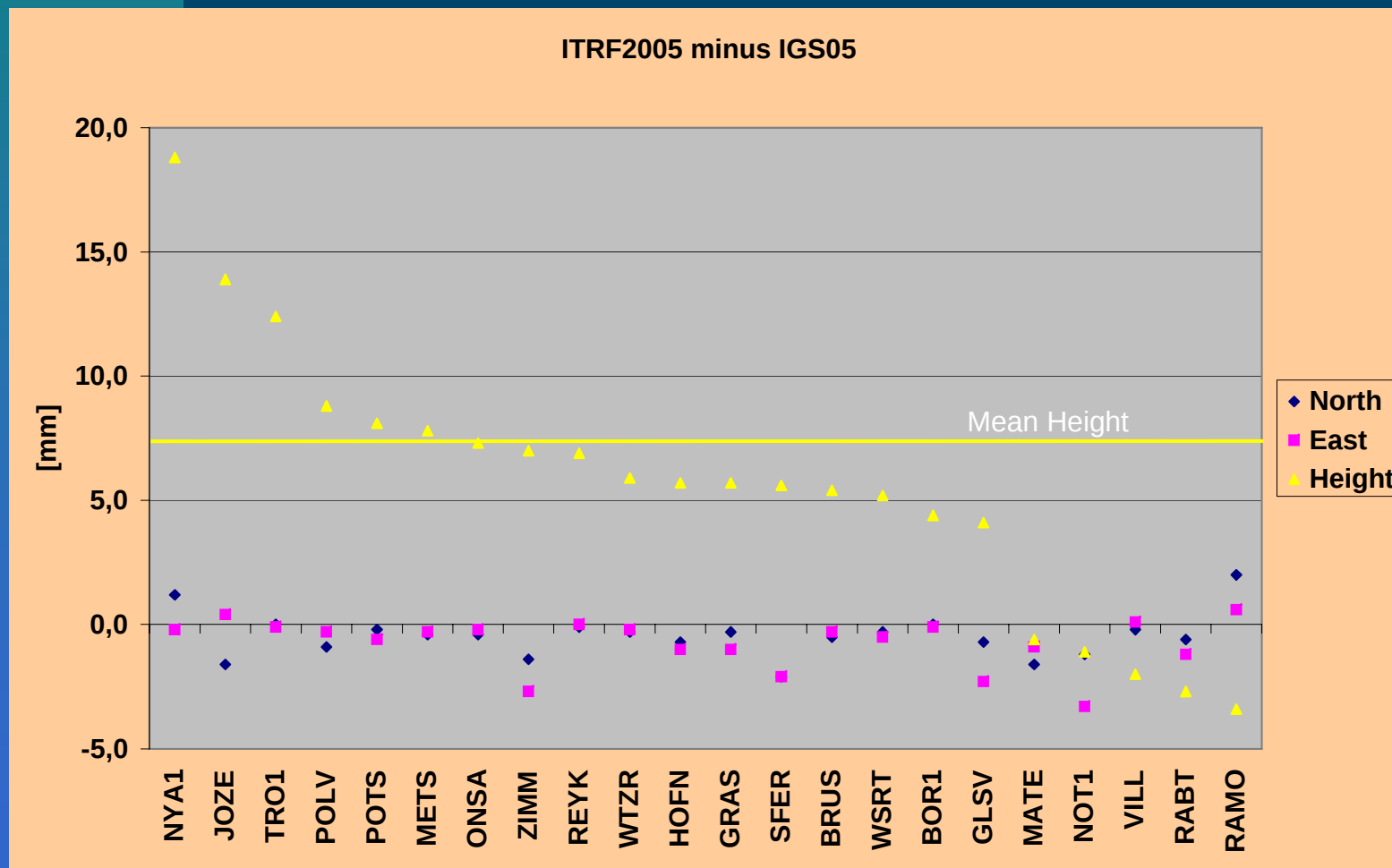
Coordinate Comparison: IGS05 vs. ITRF2005

- Helmert transformation between IGS05 and IGT05 coordinates
 - IGT05 = IGS sites of ITRF2005
 - 3 Translation parameters: Regional 3D discrepancy of 5.7 mm for sub-network of EPN

File 1	File 2	TX [mm]	TY [mm]	TZ [mm]	RMS N [mm]	RMS E [mm]	RMS U [mm]
IGS05 (global)	IGT05	0.0	0.0	0.0	1.5	1.3	7.4
IGS05 (EPN sites)	IGT05	-	-	-	1.0	1.3	7.9
		-3.3	0.1	-4.7	1.9	1.4	5.2

Comparison IGS05 vs. ITRF2005

- *EPN Sites of IGS05* -



Station-Specific Height Changes

■ IGS:

- Approx. 1 year parallel processing of relative and absolute PCV
- Estimation of station specific height changes
- Subsequent alignment to ITRF2005

■ EPN:

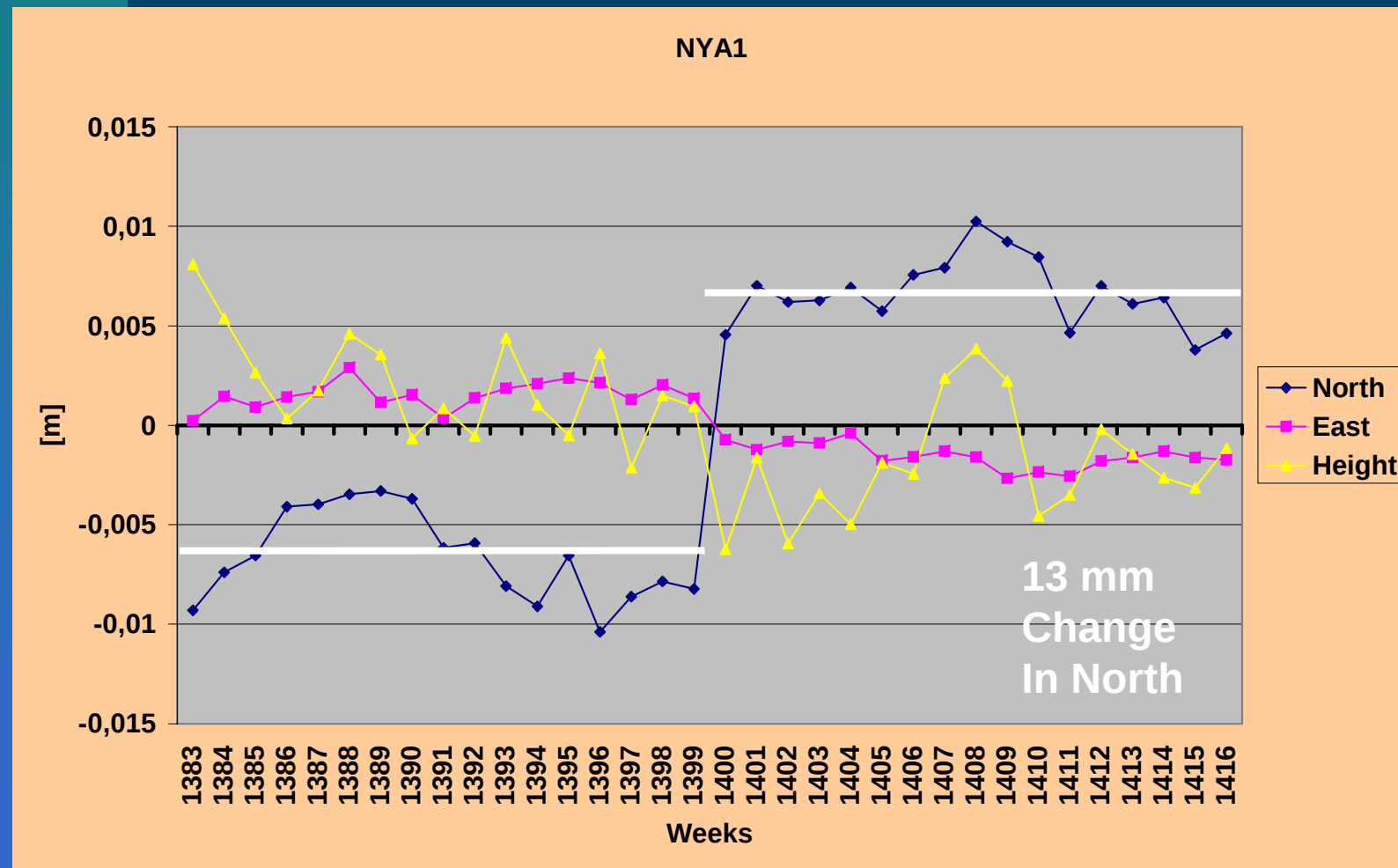
- Parallel processing not performed, but optional
- No set of „EPN05“ coordinates needed, after datum definition by IGS05

ITRF and ETRF Series

- *Procedure* -

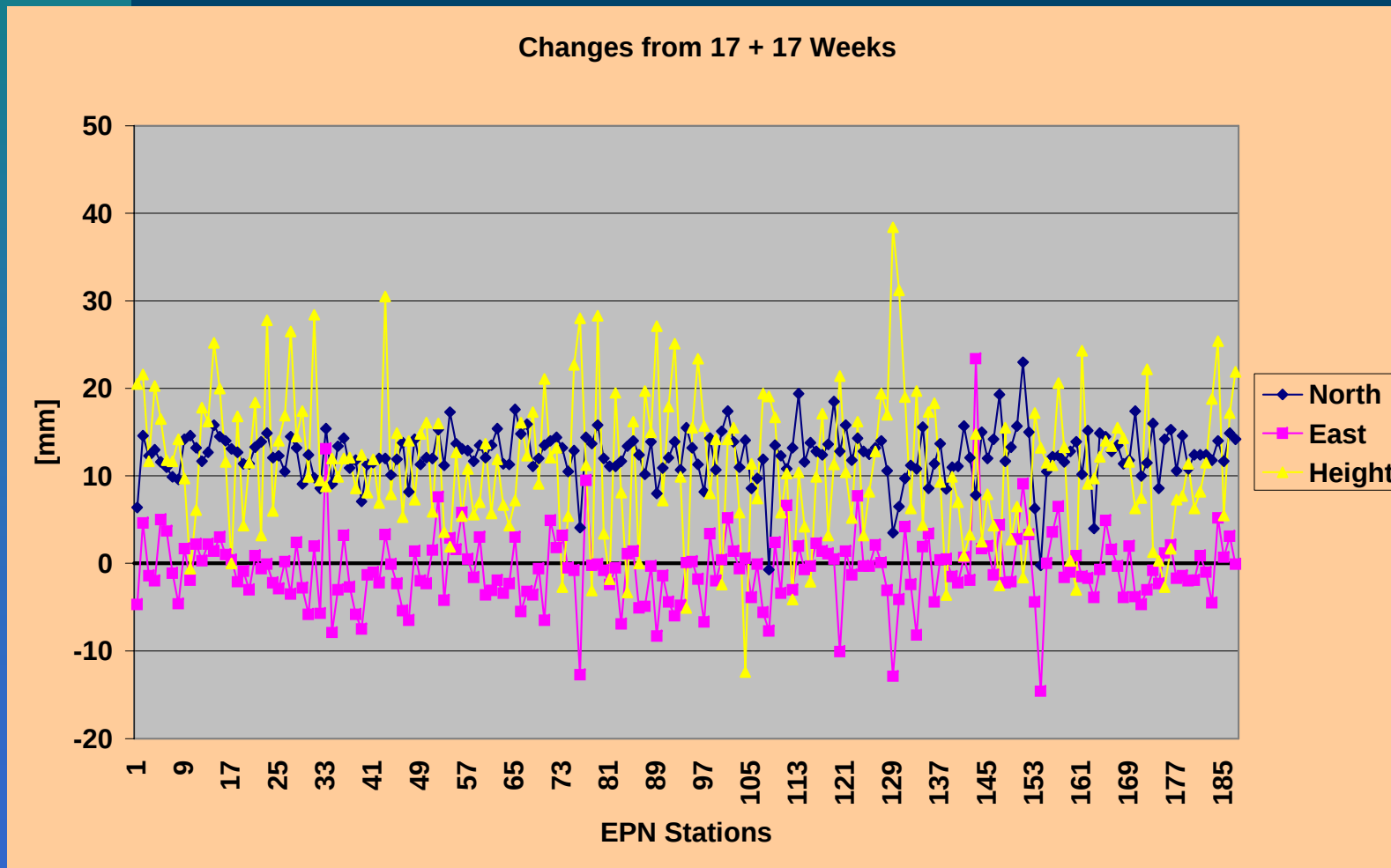
- 17 weeks 1383 – 1399
 - Relative PCVs and ITRF2000
- 17 weeks 1400 – 1416
 - Absolute PCVs and IGS05
- ITRF: All coordinates shifted to week 1400 and compared
- Determination of changes
 - Mean over 2nd period minus mean over 1st period

ITRF Series cont.



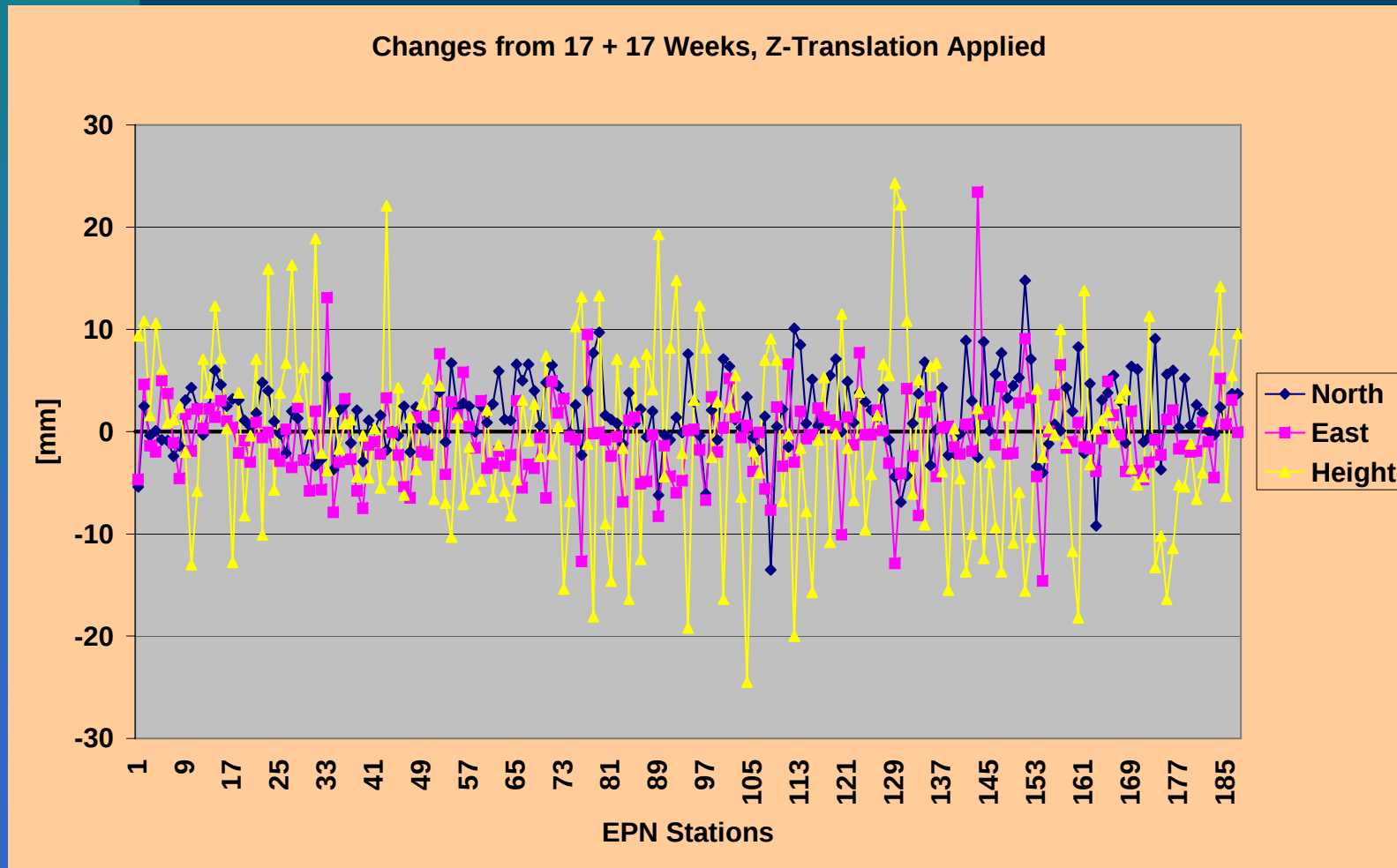
ITRF Series cont.

- *All EPN Sites* -



ITRF Series cont.

- *Z-Shift of 16.2 ± 0.4 mm* -



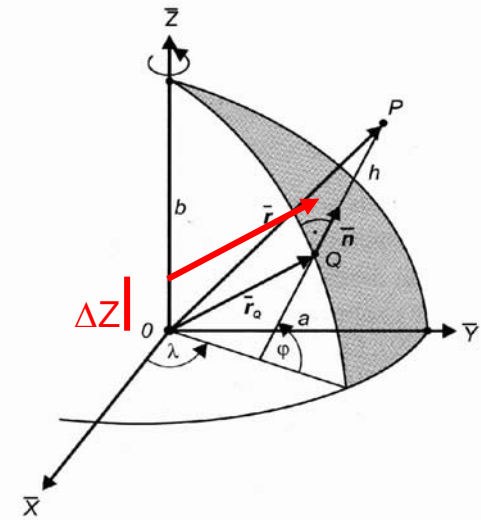
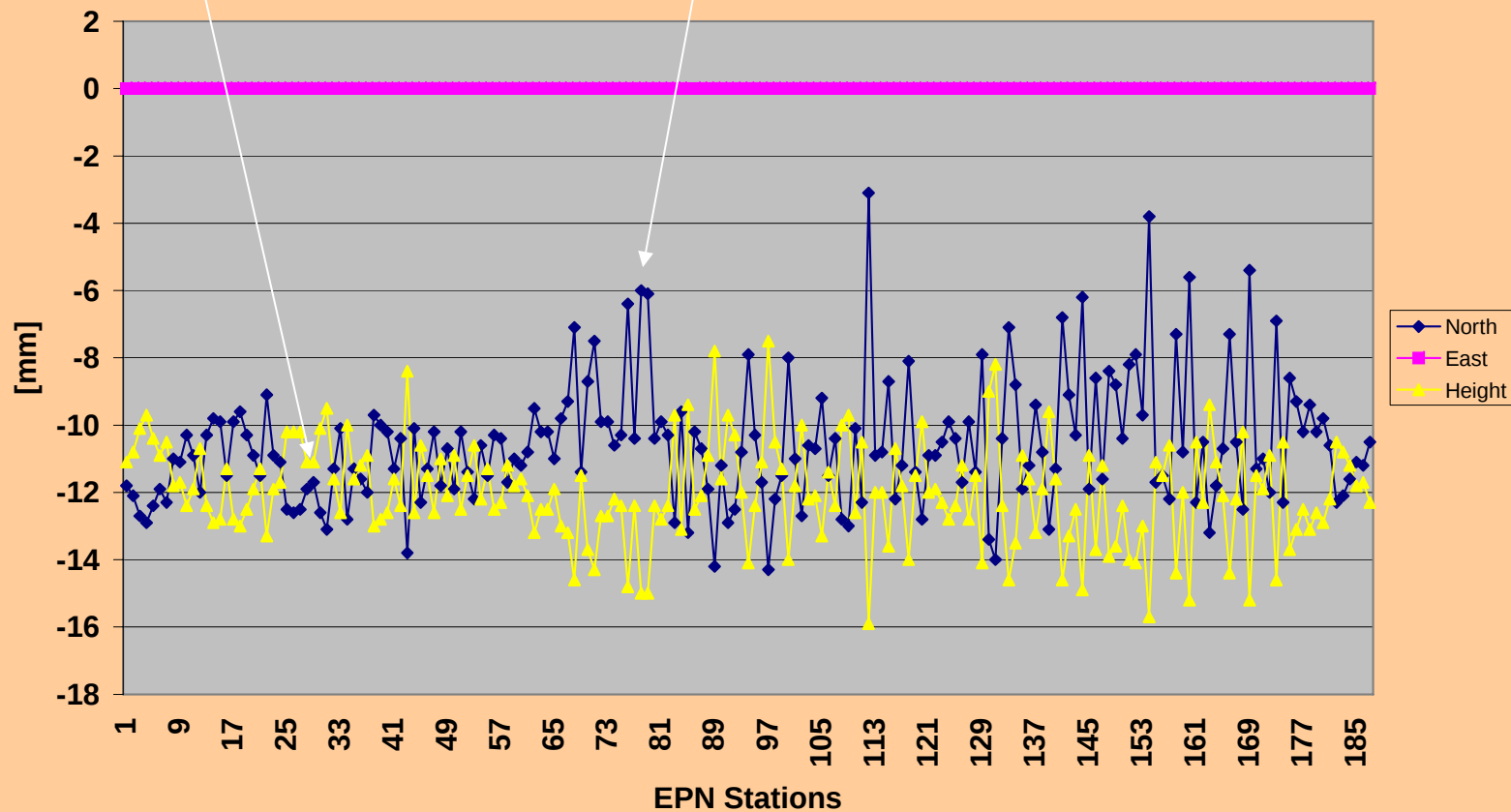
ITRF Series cont.

- *Z-Shift for EPN* -

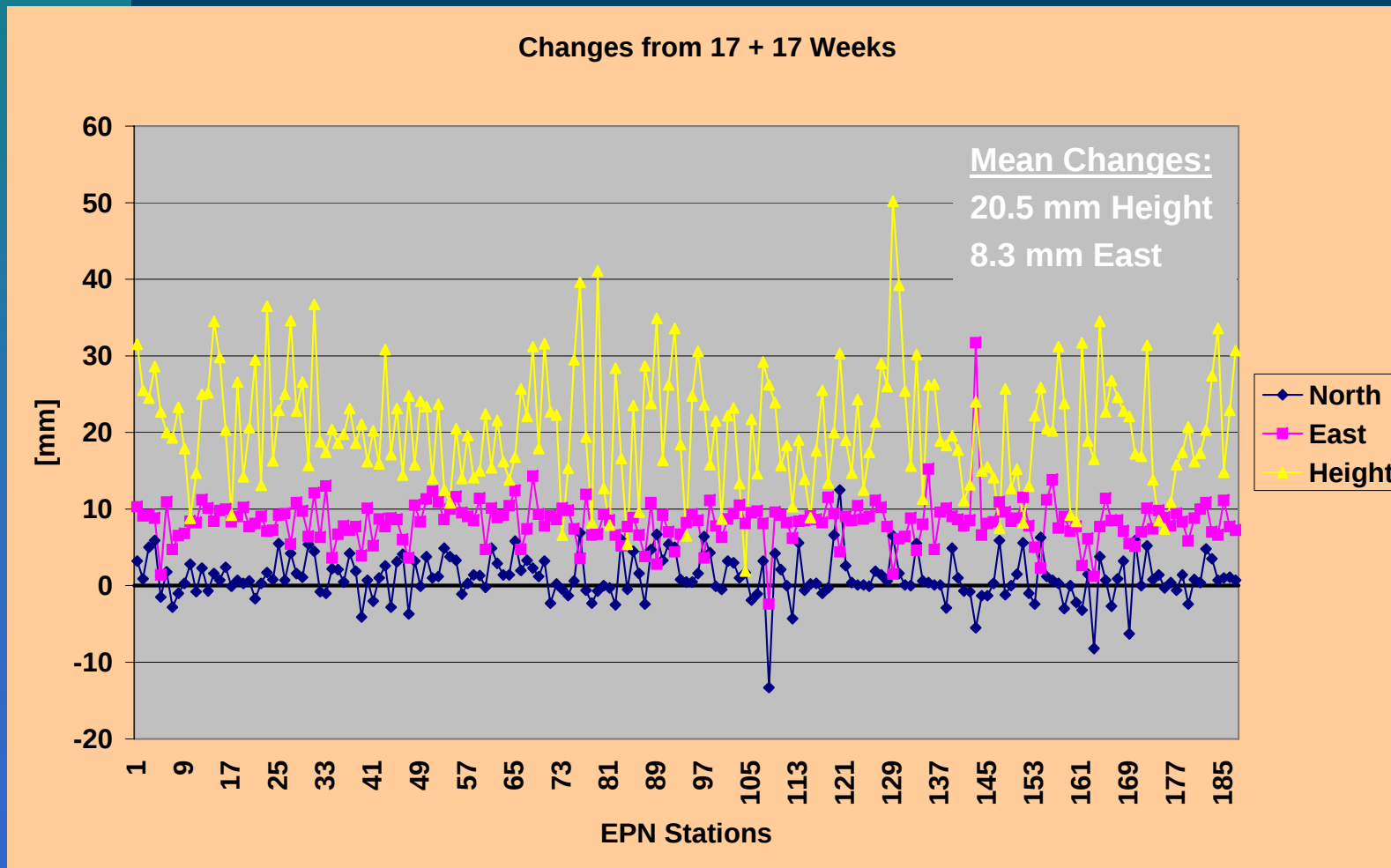
Mean latitude station

High latitude station

Changes by Z-Translation from 17 + 17 Weeks



ETRF Series



Results from Coordinate Series

- *Summary* -

- Additional alignment of IGS05 to ITRF2005 is not recommended.
- Z-Shift of 1 cm between ITRF2000 and ITRF2005 leads to EPN coordinate changes in the north and height components.
- New parameters for ITRF2005 to ETRF2005 transformation lead to changes in east (8 mm) and height (20 mm) components in the ETRF series, where the height changes are superposed by the station-specific height changes.

EPN rapid analysis products

- Scope:

- Monitoring
- High resolution coordinates

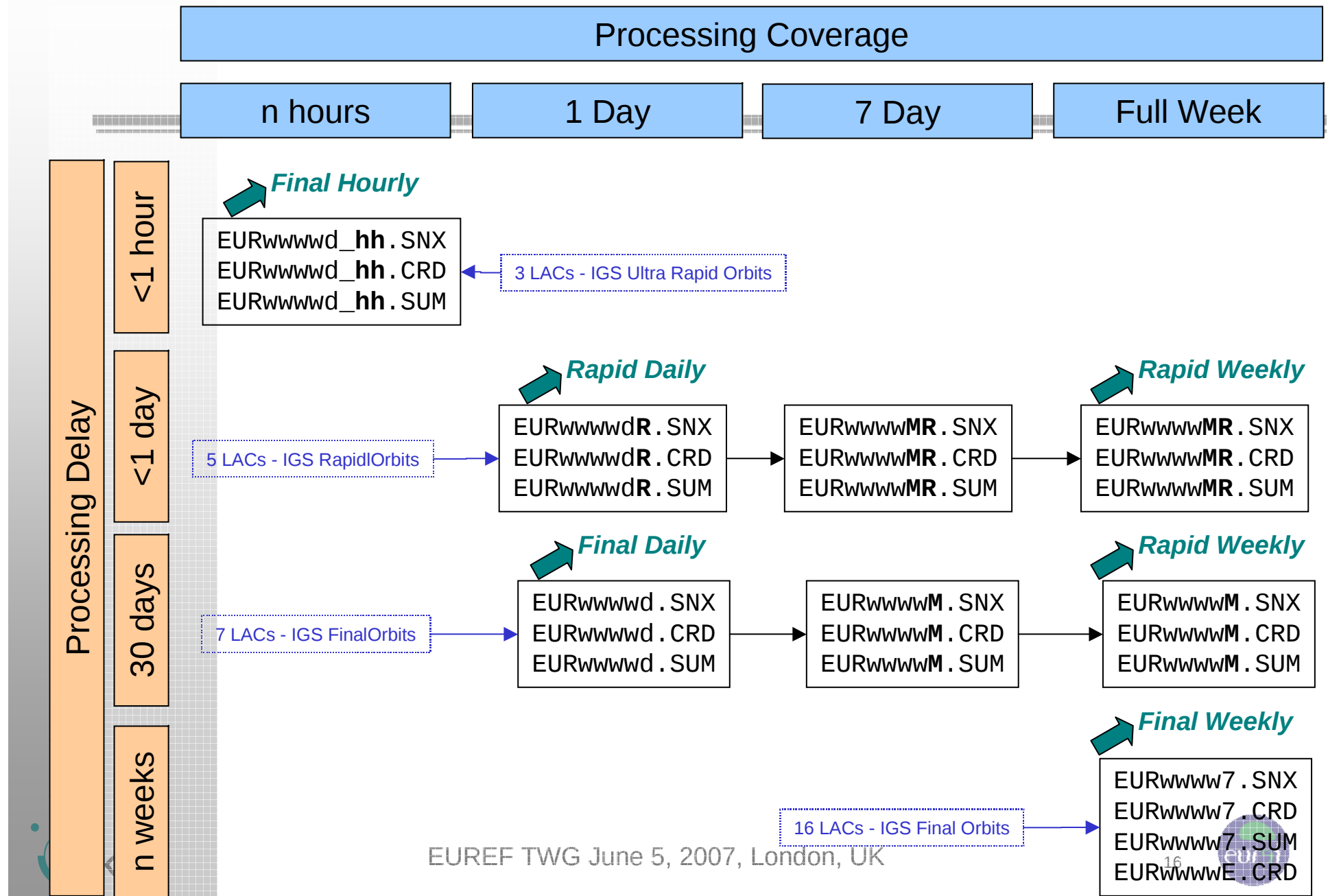
- Options:

- Option 1, daily SINEX files from IGS final orbits
- Option 2, daily SINEX files from IGS rapid orbits
- Option 3, daily SINEX files from both, IGS final and rapid orbits

- Realization of Option 3

- As result of questionnaire among LACs

Full EPN Combination Product Series



Rapid Product Holdings

EPN Rapid Products Summary

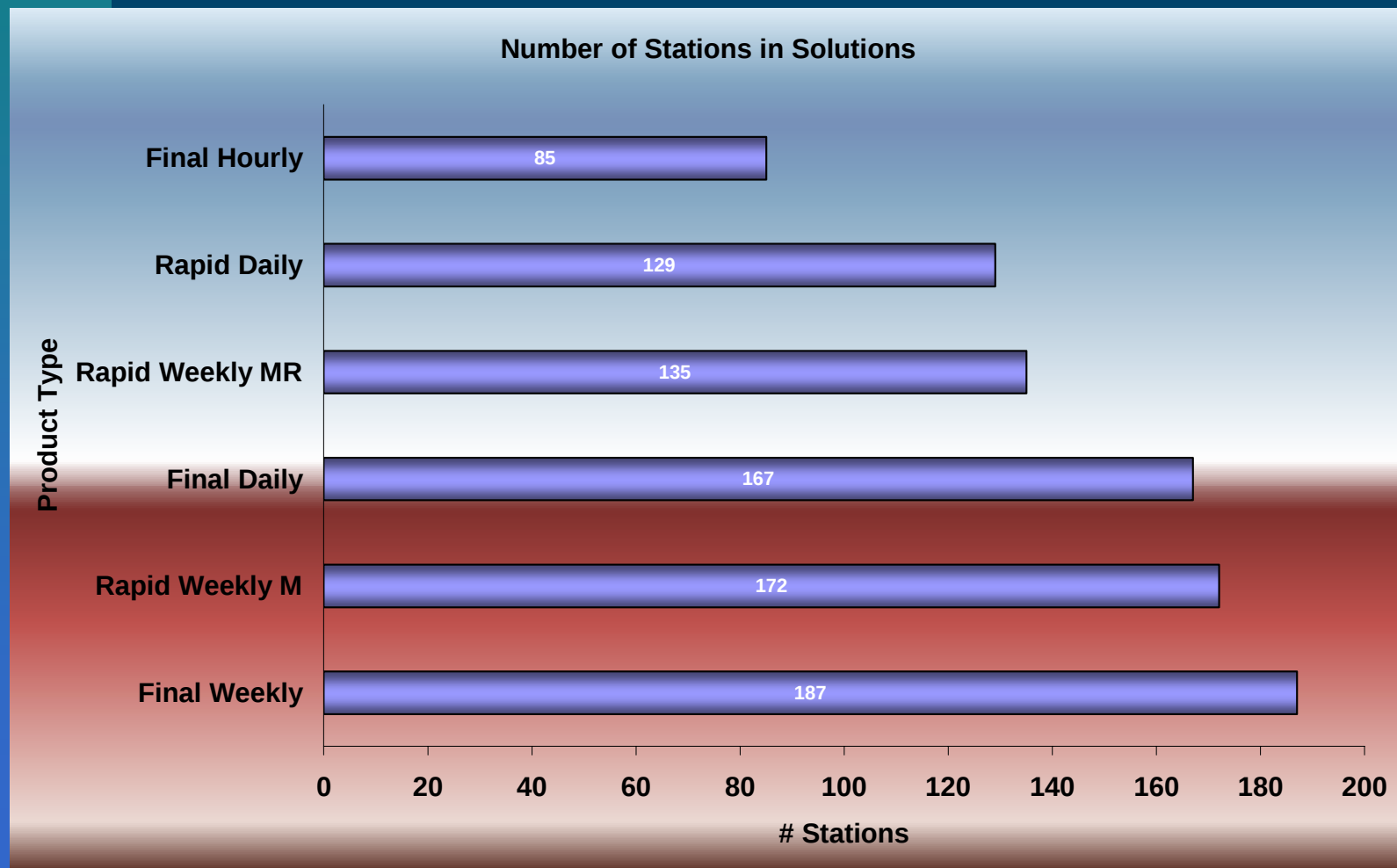
Date: 2007-05-30 13:11

www=Week, d=Day, _D=Final Daily, RD=Rapid Daily, [00-23]=Hourly

#Contributions

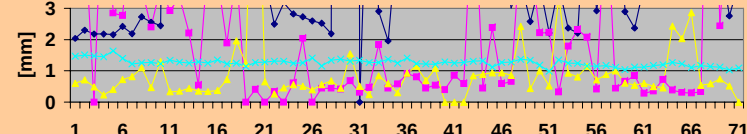
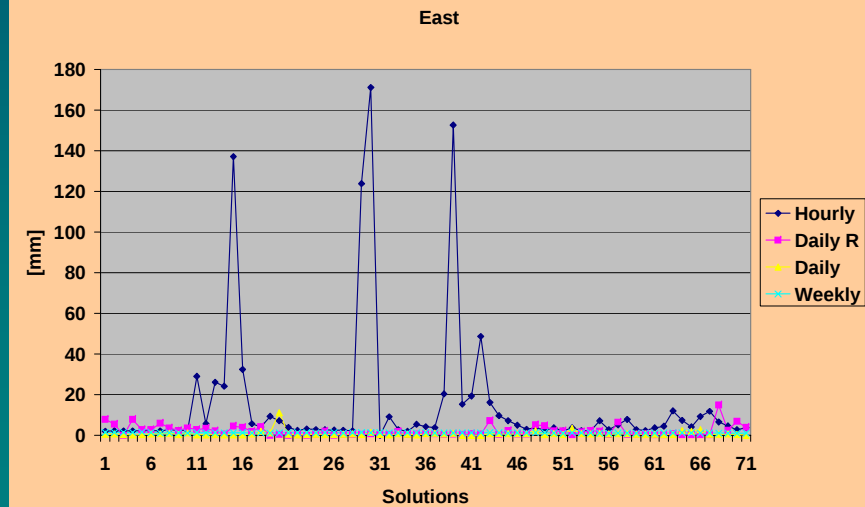
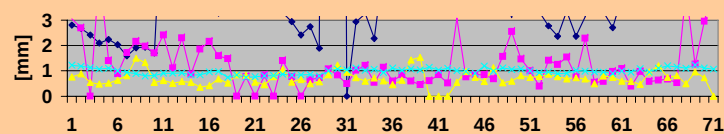
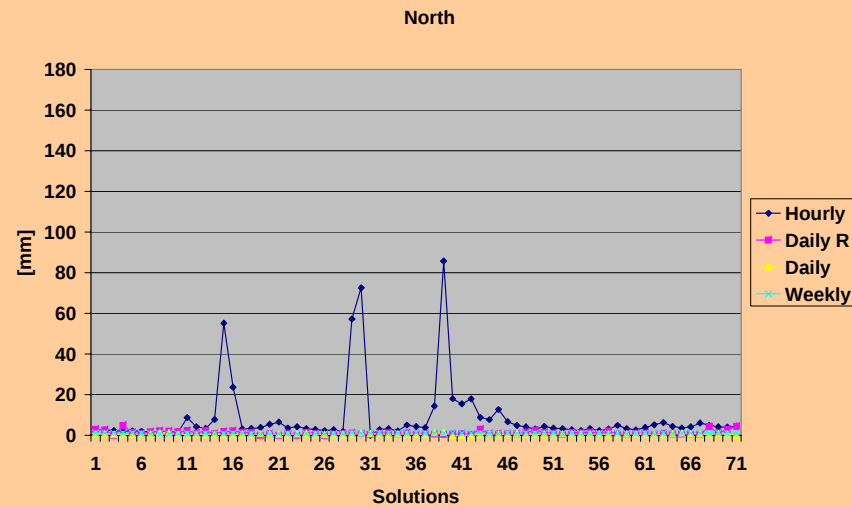
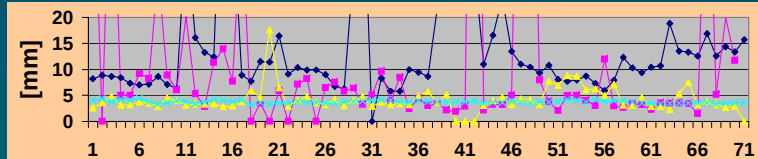
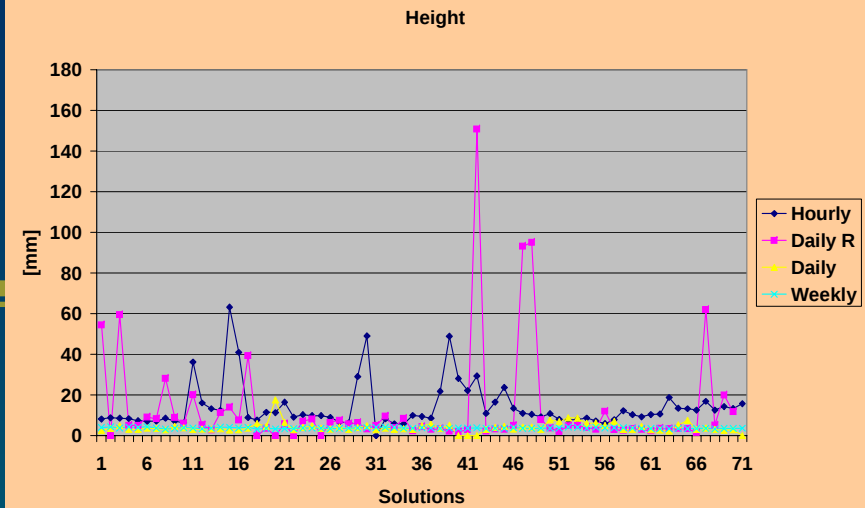
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14293			2	2	2	2	2	2	2	2	2	2	2	2												
14292			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
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14290	4		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
14286	4		2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
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14266	3		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
14265	3	1			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
14264	3				1	1	1	1	1	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1
14263	3	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1						
14262	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
14261	4																									
14260	4																									
14256	4																									
14255	3																									
14254	4																									
14253	4																									
14252																										
14251	6	4																								
14250	6																									
14246	6																									
14245	6	5																								
14244	6	4																								
14243	6	3																								
14242	6	3																								
14241	6	3																								
14240	5	3																								
14236	6	4																								

Rapid Product Stations



Rapid Product Series

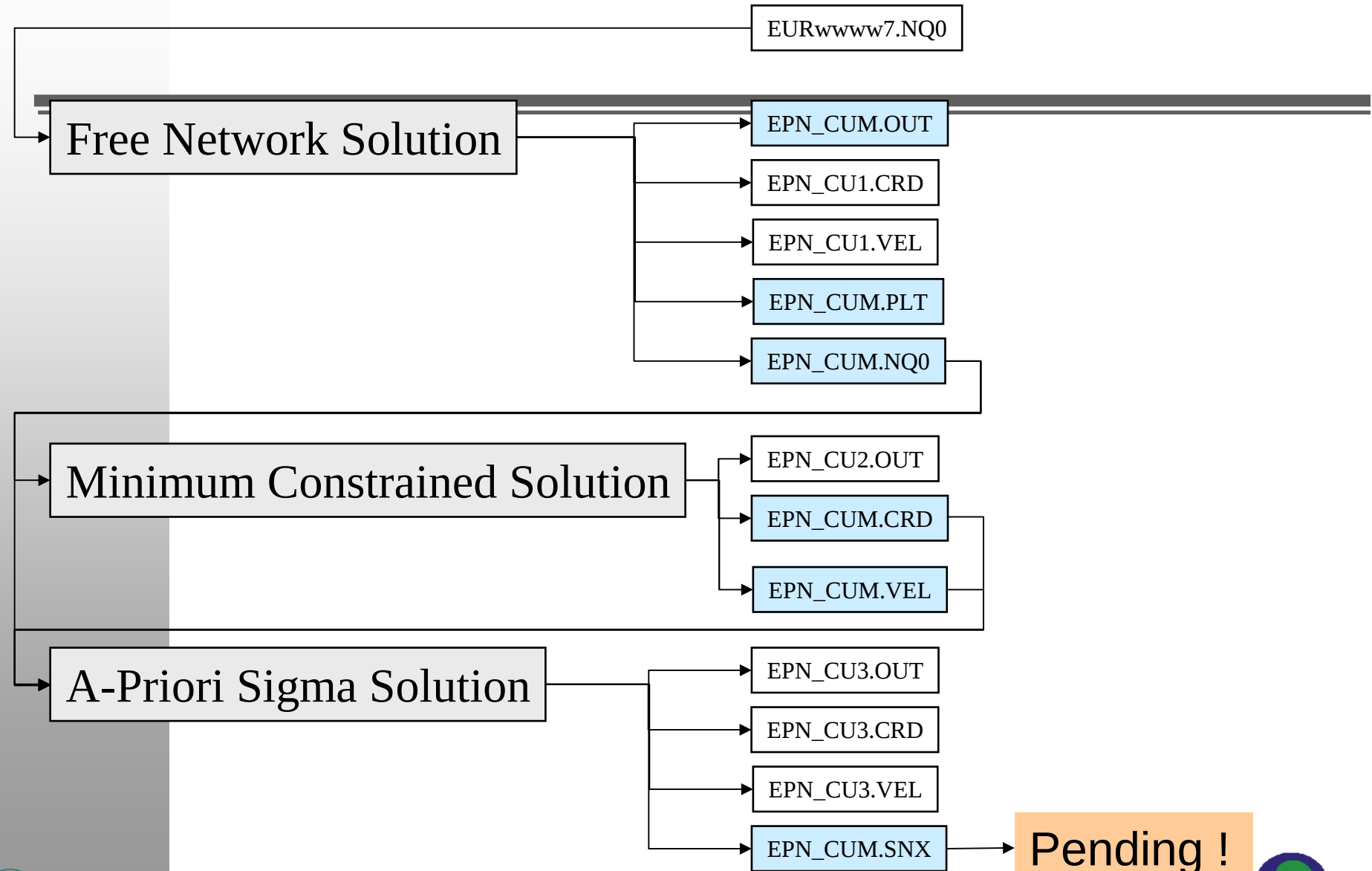
Repeatability of 70 solutions



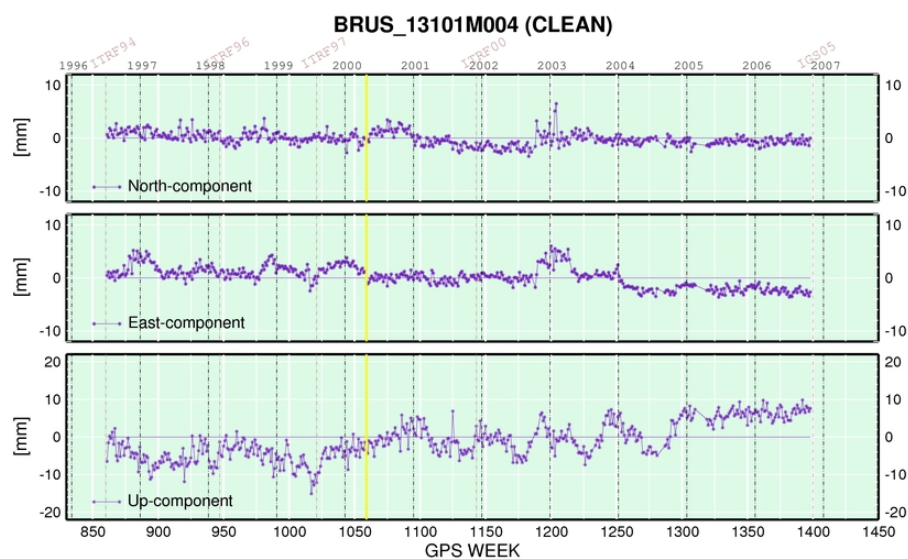
Status Note: INSPIRE

- 25 Apr 2007:
 - Publication of INSPIRE directive in Official Journal of EU
- 15 May 2007:
 - The INSPIRE directive entered into force
 - Data Specifications: Call for comments on the Definition of Annex Themes and Scope D2.3 (117 pages)
 - Data Specifications: Call for comments on the Generic Conceptual model D2.5 (93 pages)
- Action Item TWG-43-06:
 - Document to be compiled
- New action item:
 - EUREF is asked to comment on D2.3 and D2.5 until July 6
 - Comments on D2.5 by J. Mäkinen on July 30

EPN Multiyear Solution Strategy

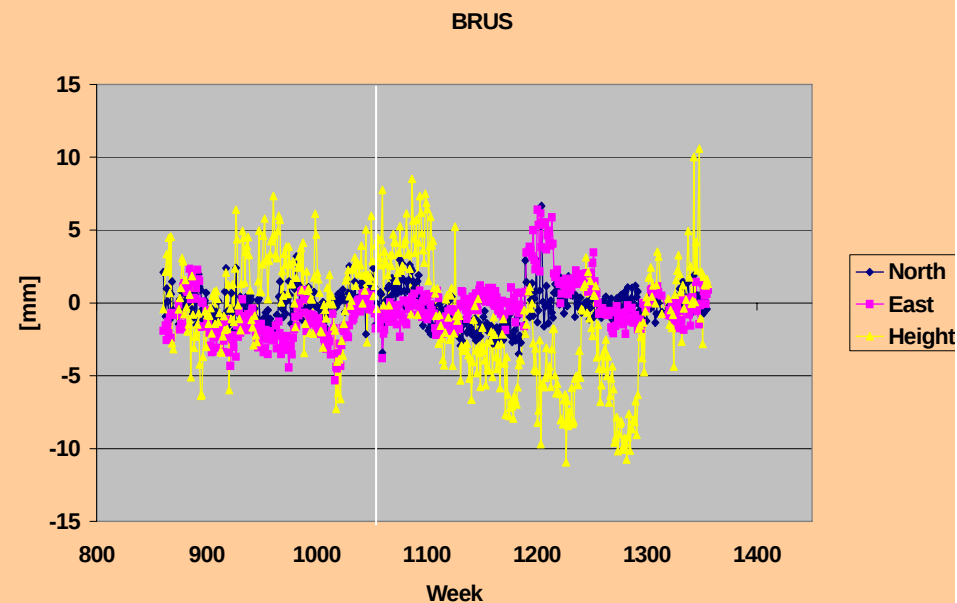


ITRF2005 Densification



EPN TSA_SP

Tue Apr 24 08:54:01 2007



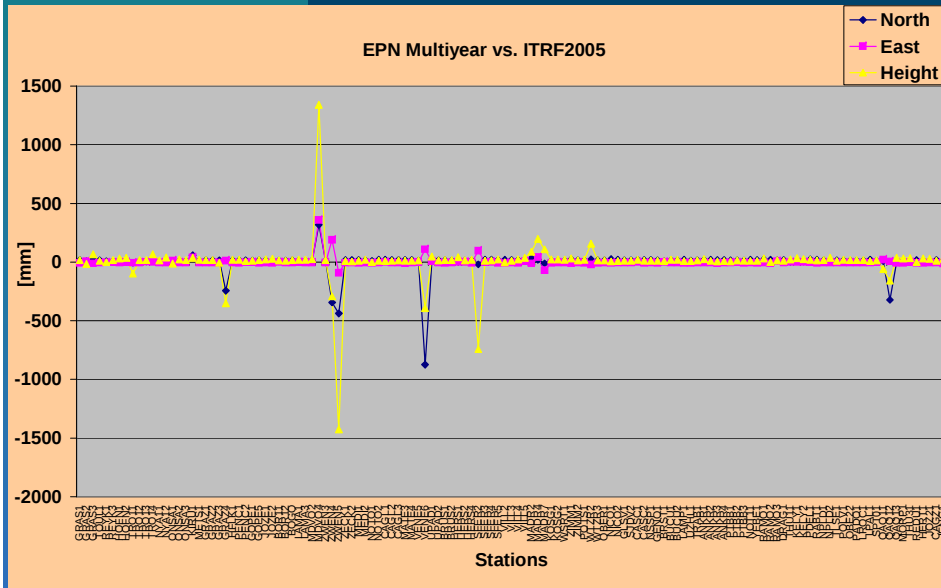
Estimated Velocity in mm

2 solutions caused by antenna change

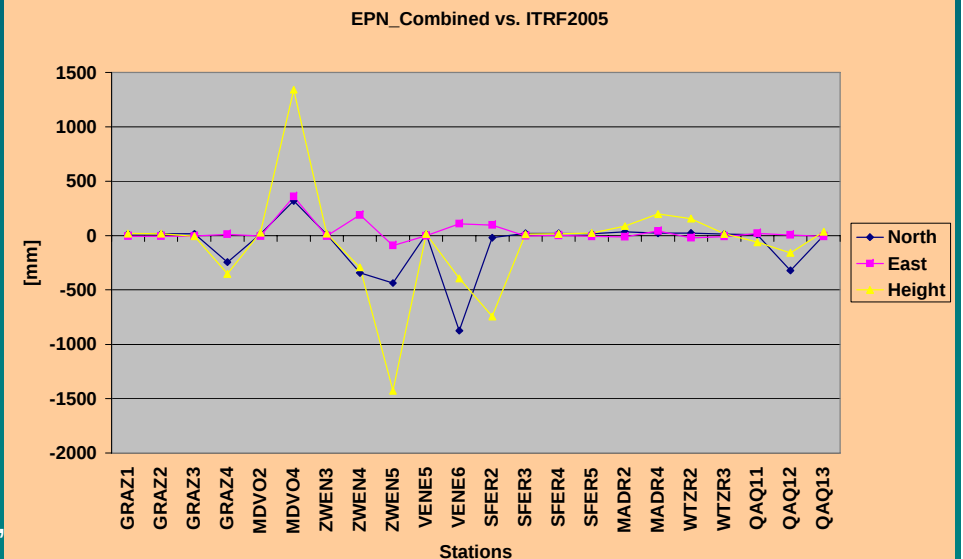
Weeks	North	East	Height	North	East	Height
860 – 1059	15.7	17.1	1.5	16.3	15.0	2.2
1060 – 1355	15.7	17.0	1.5	16.7	15.5	0.7

ITRF2005 Densification

- *New minus A-Priori for Ref. Sites* -



- Shown are the reference solutions
- Some solutions have to be removed from reference
- Data interval too small?
- To be improved...



Thank you