

**First validation of new IGS  
products generated with  
absolute antenna models**

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## ***Switch to new absolute PCV model***

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- **To have only one major change the IGS will switch to the new antenna model after the release of ITRF2005 and the related RF IGS05.**
- **Changes in the IGS products have to be studied carefully**

**Since June 2005 (week 1325) parallel IGS Final products are generated using the new APCV model**

- **to test the implementation in the software packages,**
- **to test the effects on the IGS products,**
- **to generate a new compatible RF IGc00.**

## *Switch to new absolute PCV model*

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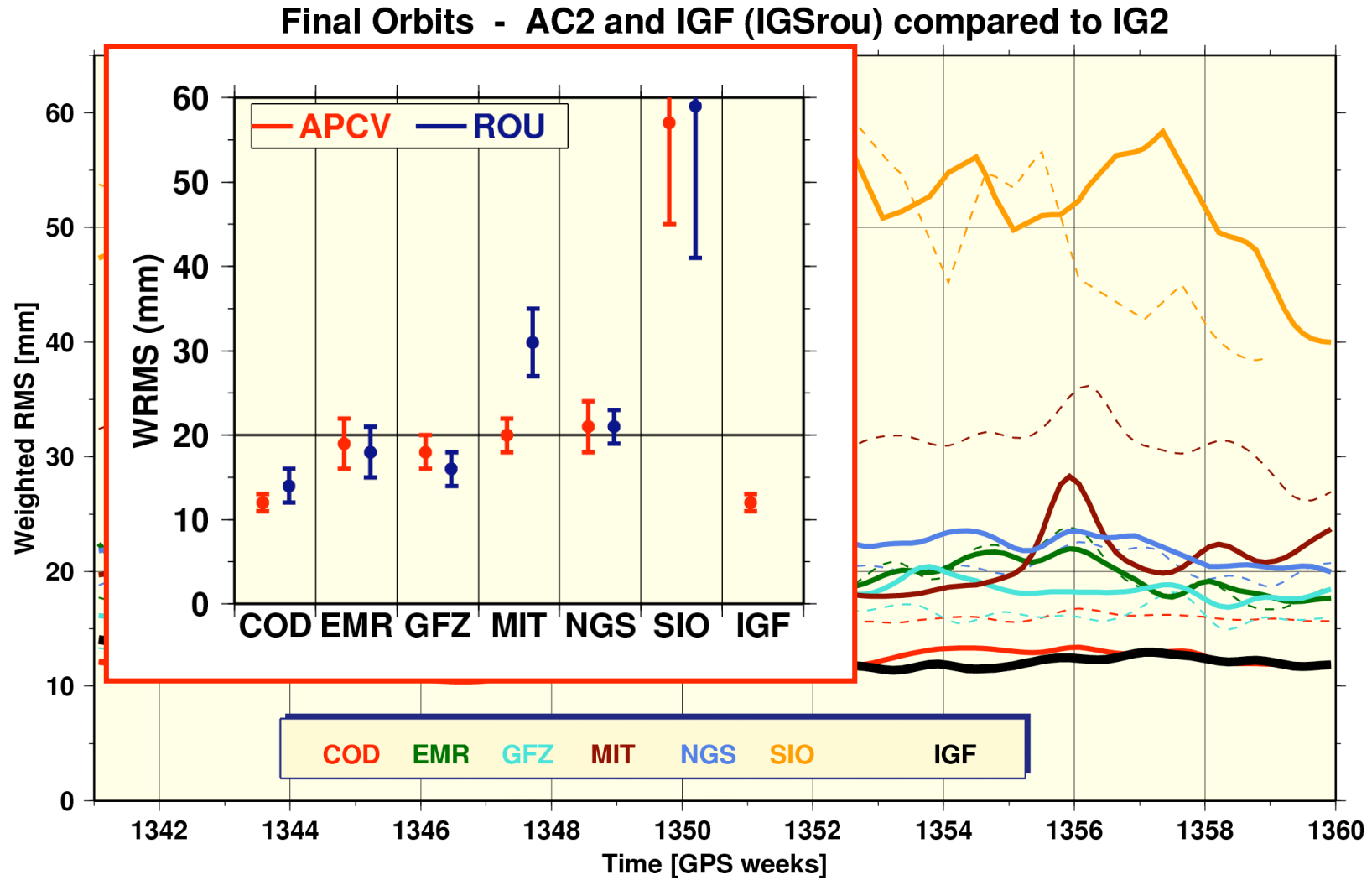
**Following ACs are contributing to the test:**

(AC with number of stations used)

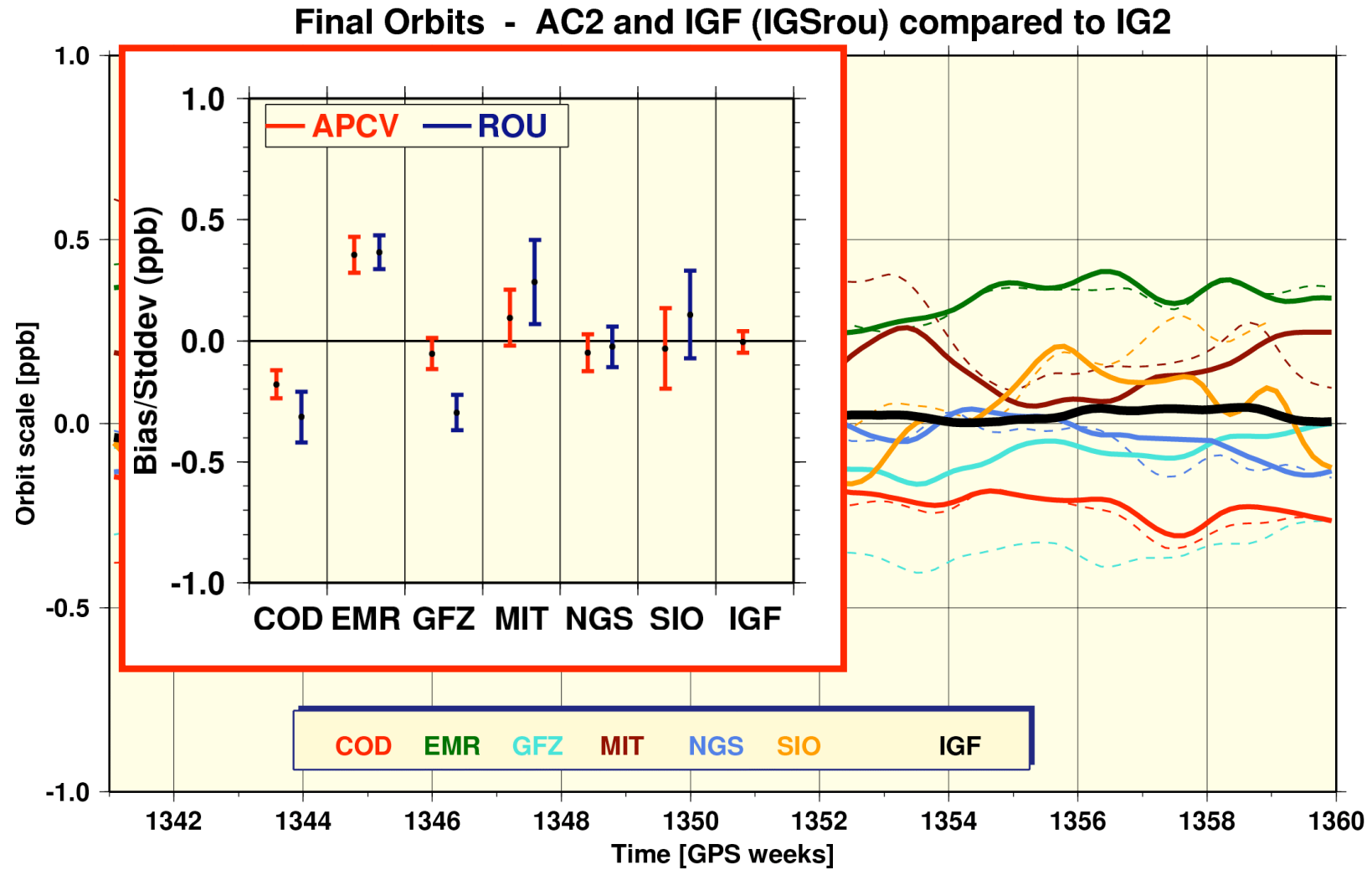
- **COD (175), EMR ( 45), GFZ(185)**  
**MIT (145), NGS (145), SIO (170)**
- **Bugs solved - some reprocessing performed**
- **Since 1341 all ACs in final stage**

***Station coordinate aspects and RF issues will be presented in the next talk.***

# Orbit combinations and comparisons (Diff WRMS)

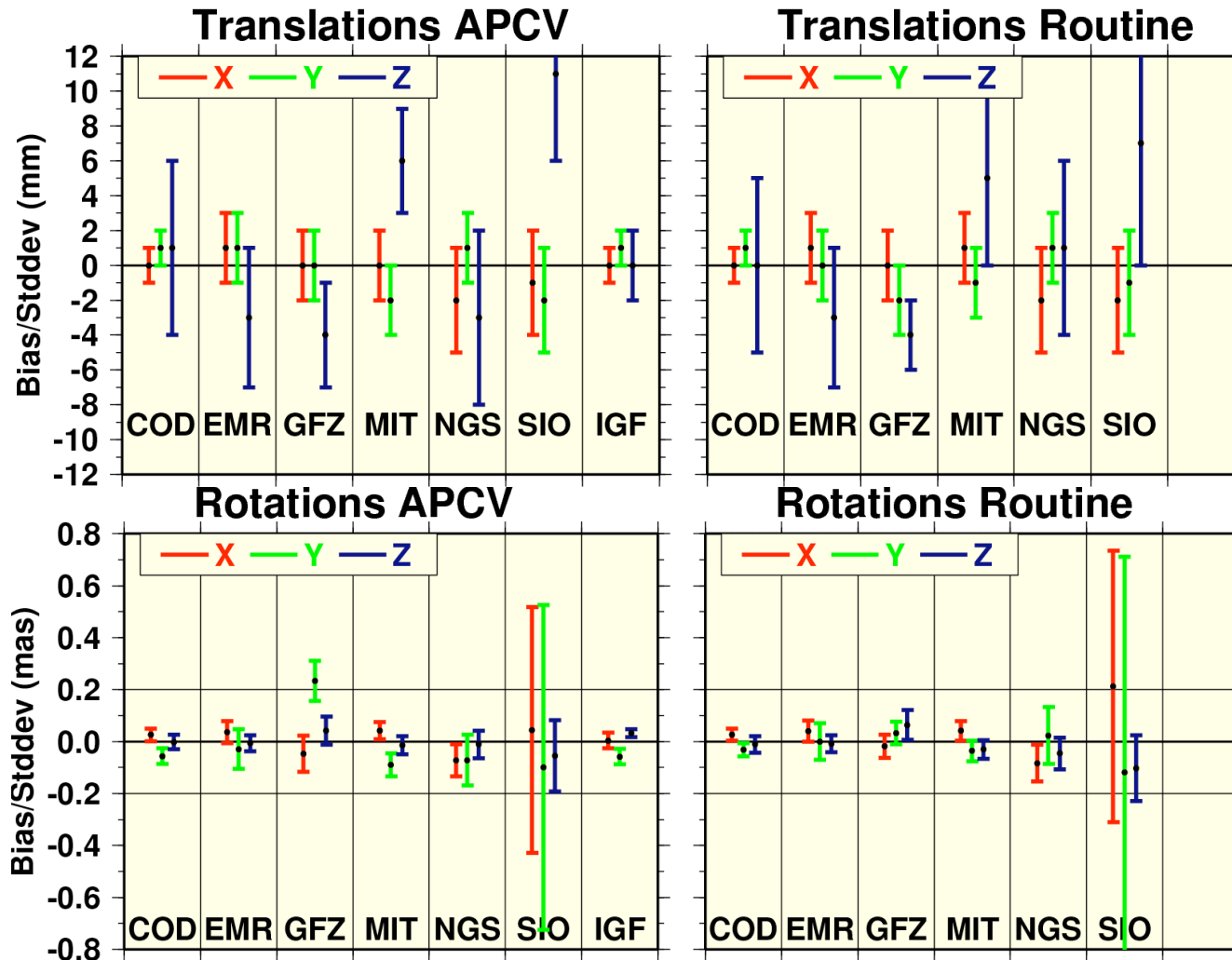


# Orbit combinations and comparisons (Scale)

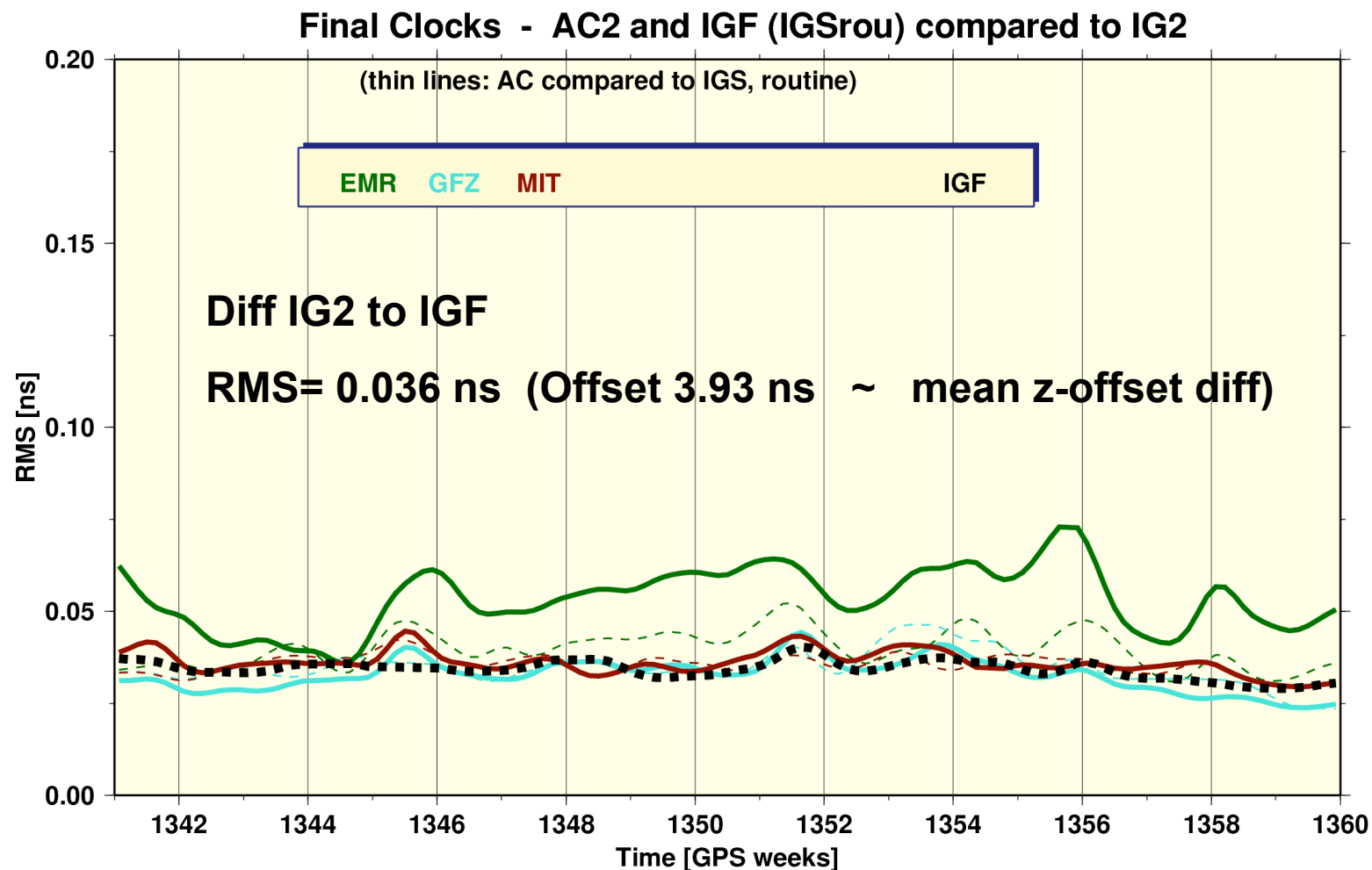


## Orbit combinations and comparisons (Transformations)

- **Translations of AC2 and IGSrou (IGF) to new combined product (APCV)**
- **Translations of AC to combination (Routine)**



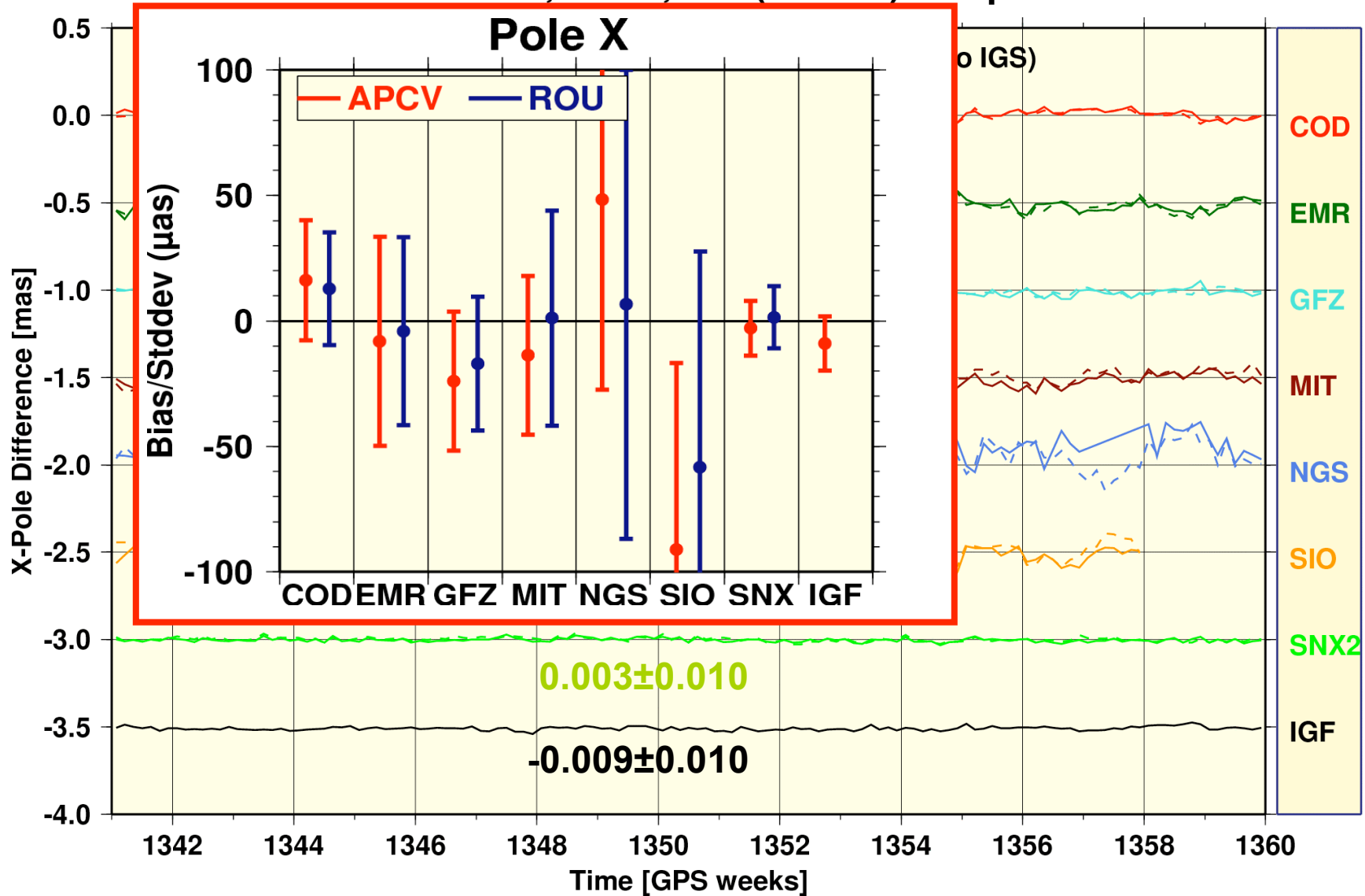
# Comparison of Clocks



For comparison the differences of the routine AC products to the routine combination are added (dashed lines)

*ERP combinations and comparisons (Pole X)*

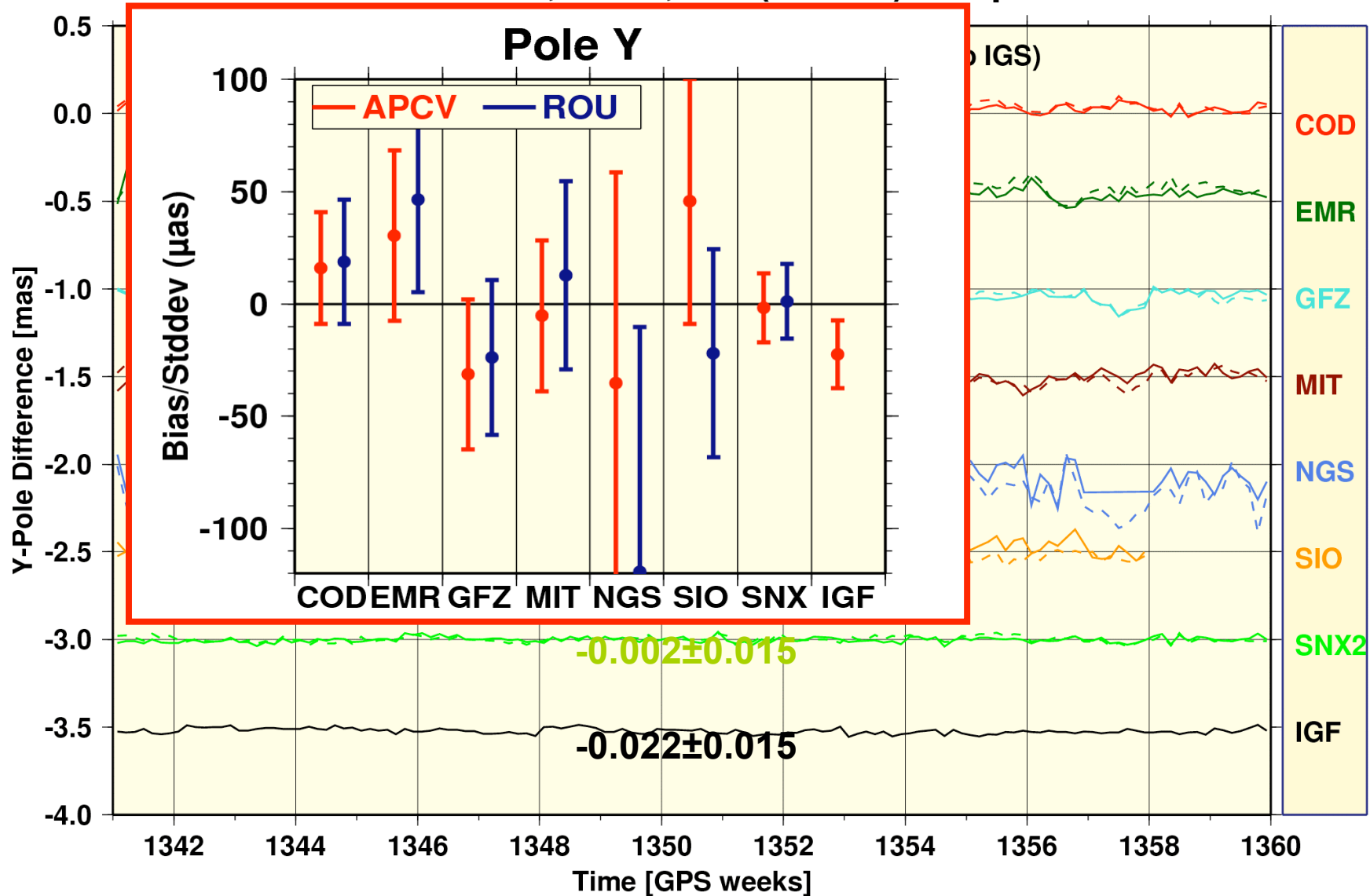
AC X-Pole - AC2, SNX2, IGF (IGSrou) compared to IG2





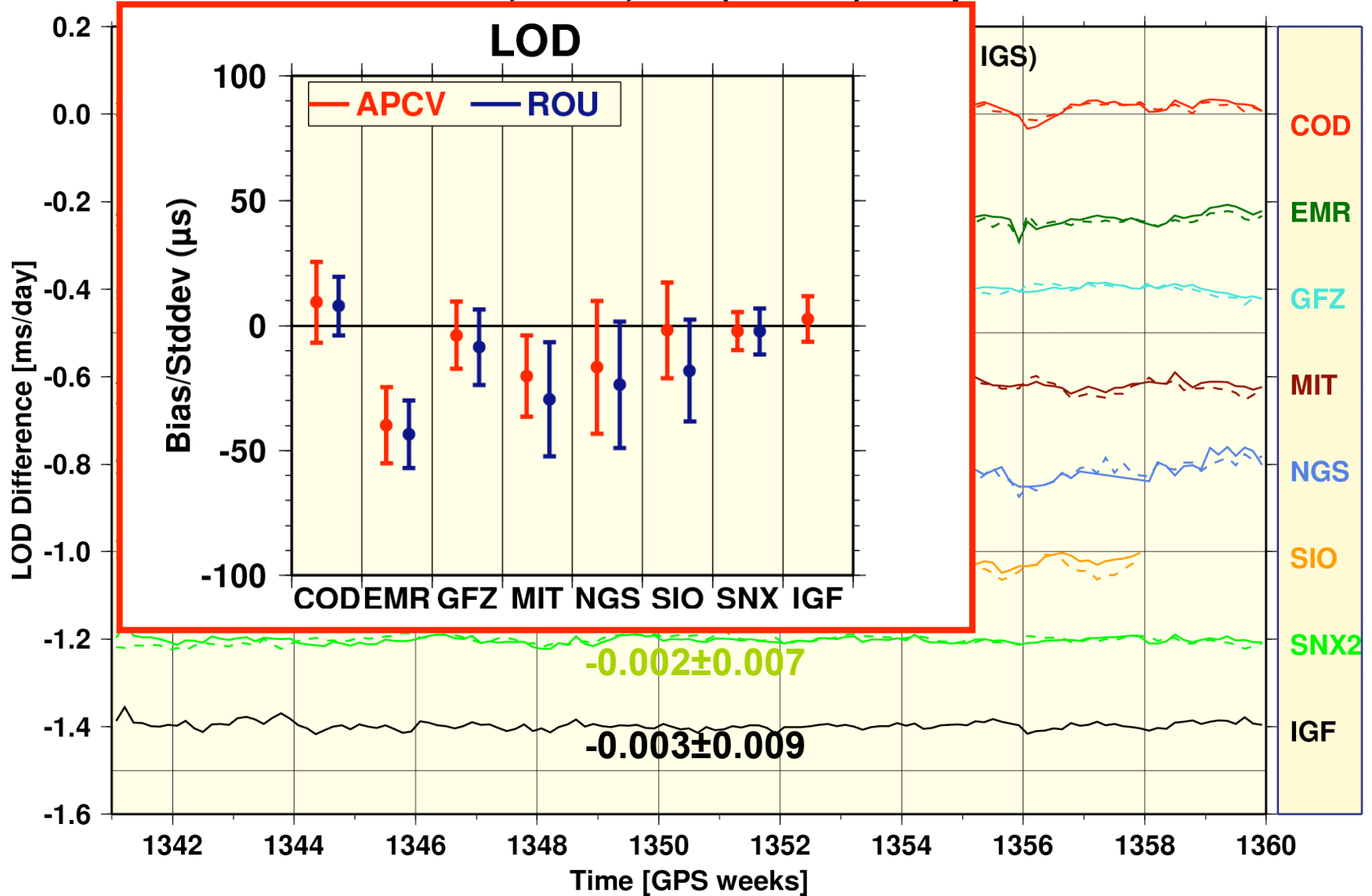
*ERP combinations and comparisons (Pole Y)*

AC Y-Pole - AC2, SNX2, IGF (IGSrou) compared to IG2



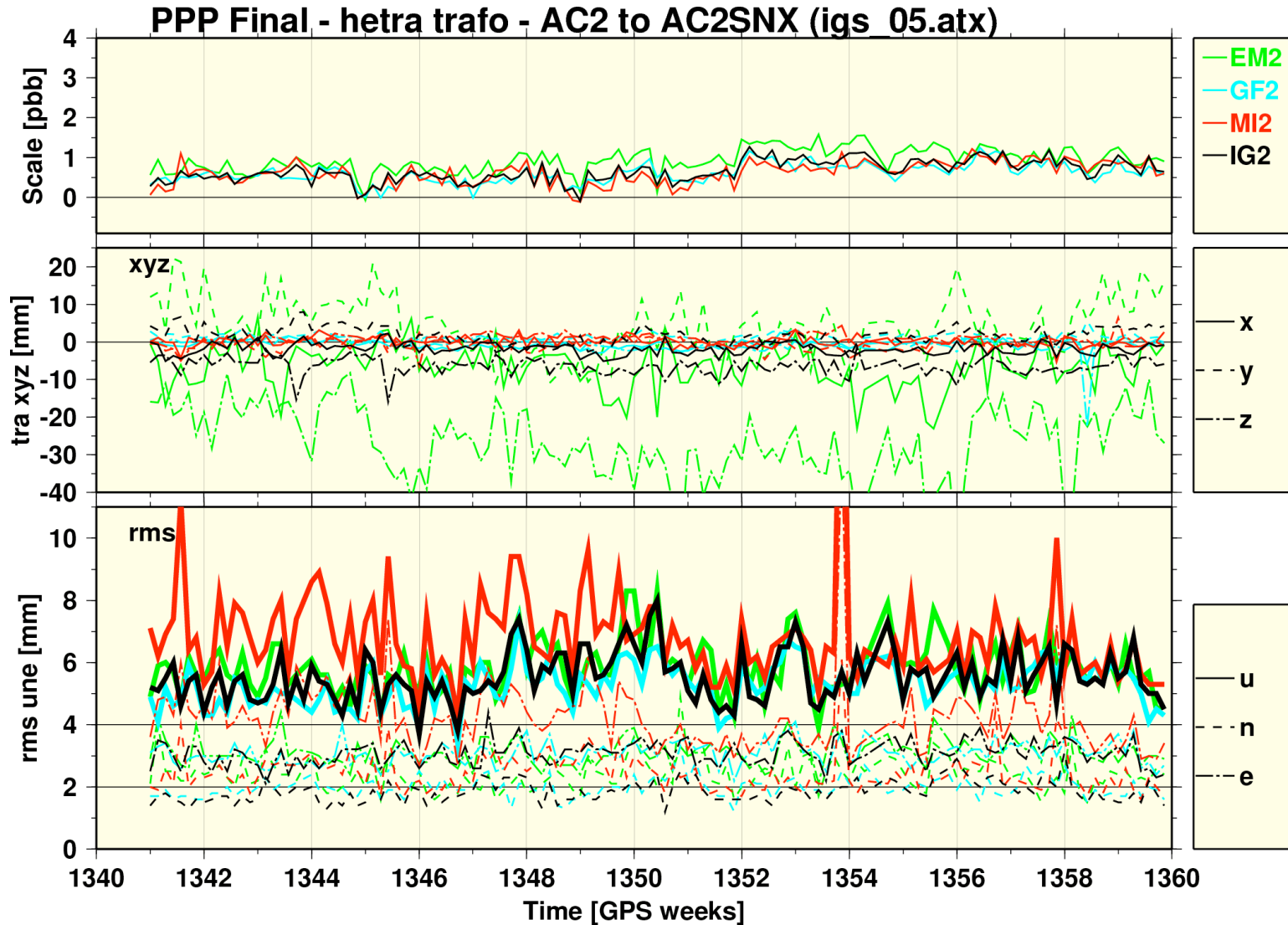
## ERP combinations and comparisons (LOD)

AC LOD - AC2, SNX2, IGF (IGSrou) compared to IG2

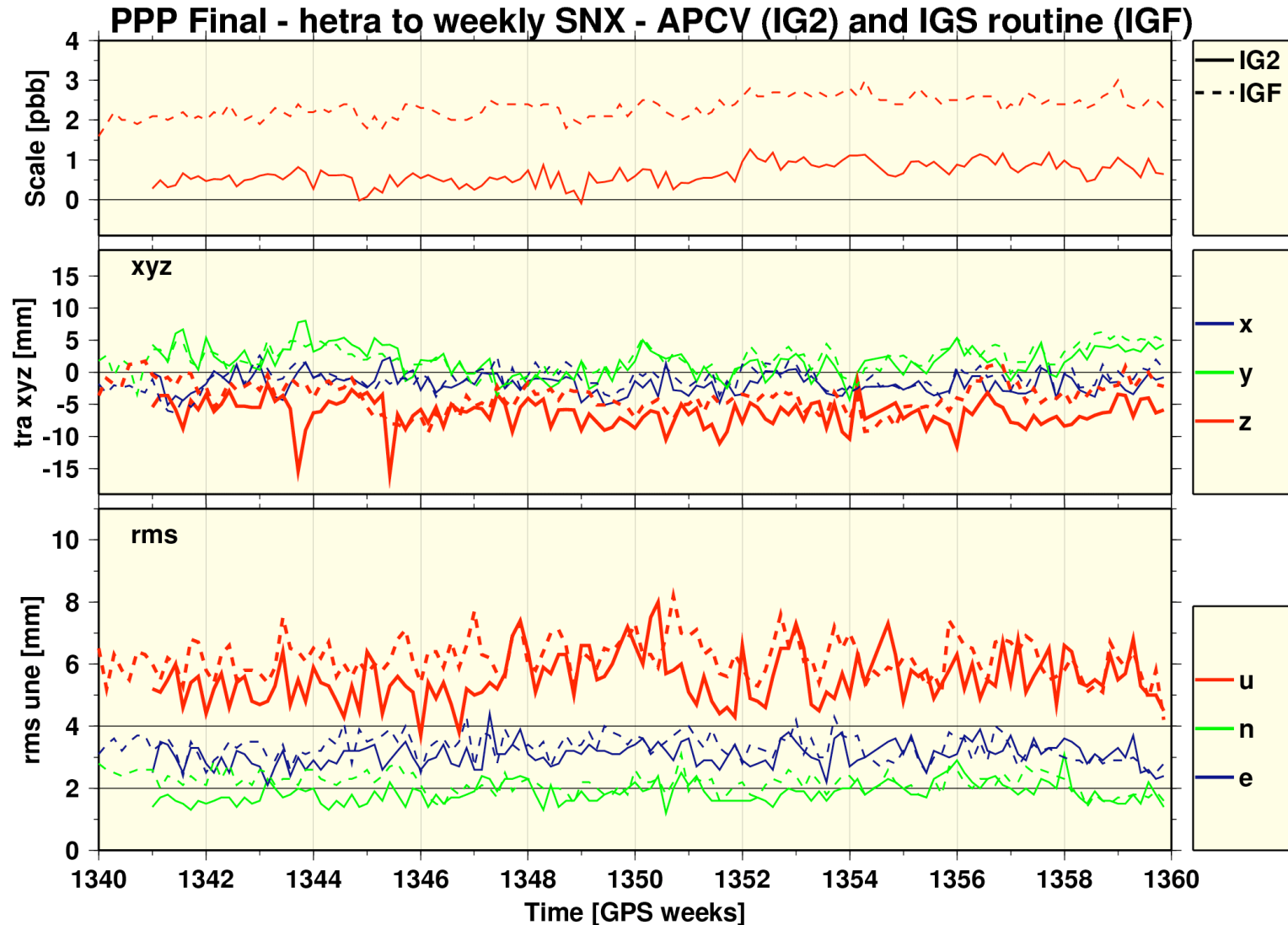


# PPP with the new APCV results

● **Comparison of PPP positions with SINEX combination from all AC2**

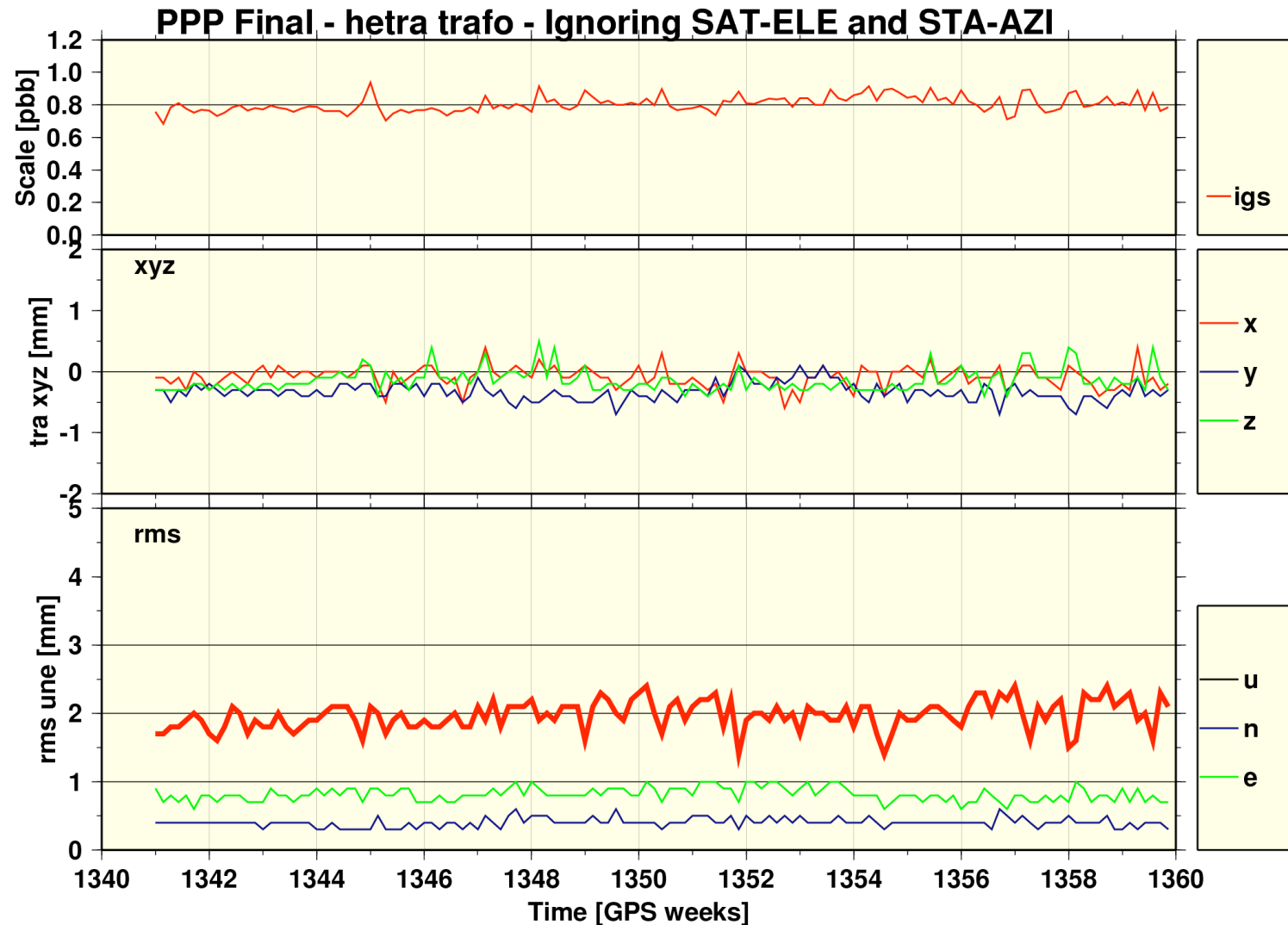


- Both PPP solutions are compared to its related SINEX combination



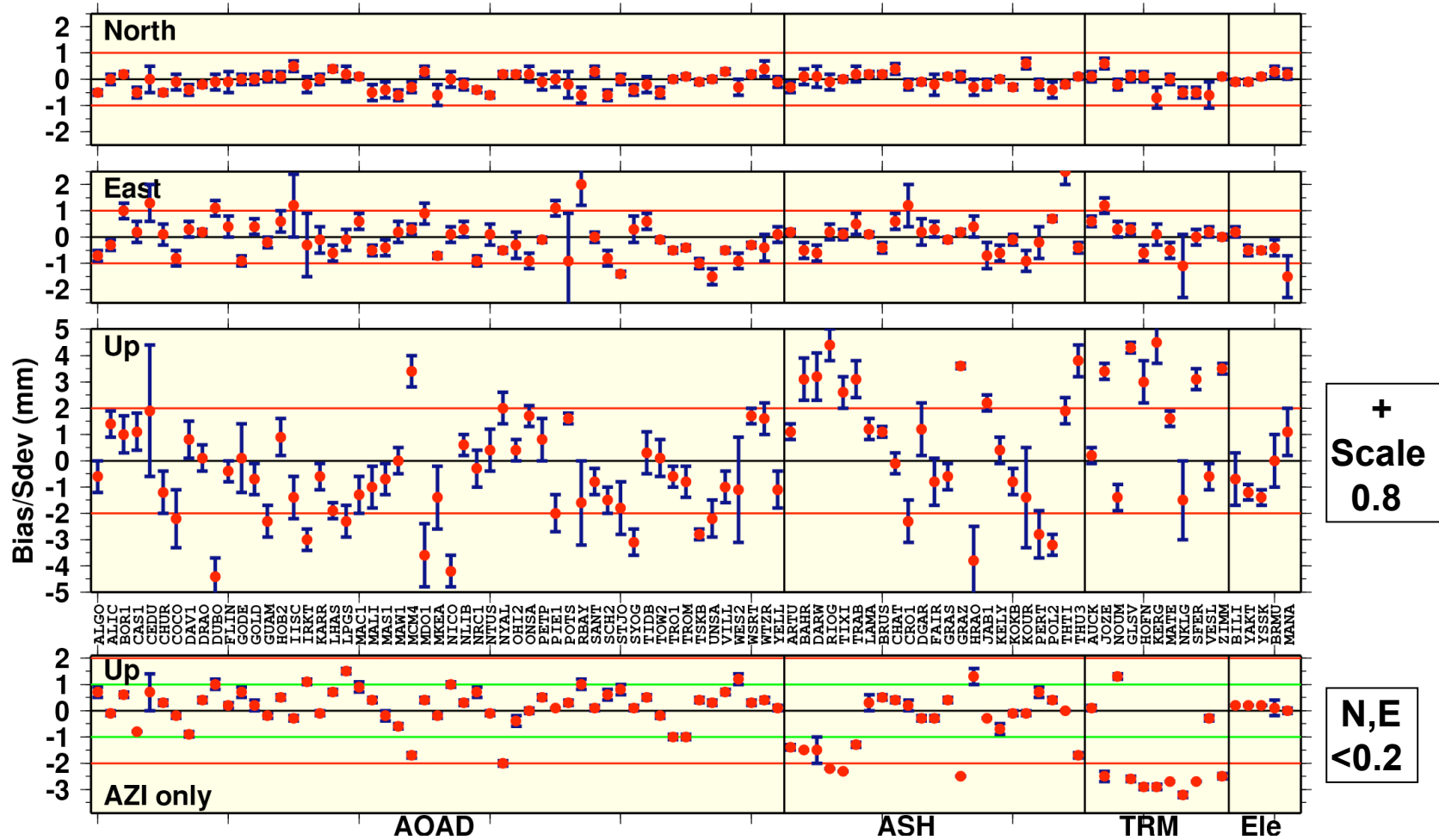
# PPP with the new APCV products and old software (1)

- Only satellite offsets and station elevations are applied from APCV model
- Helmert transformation to full solution



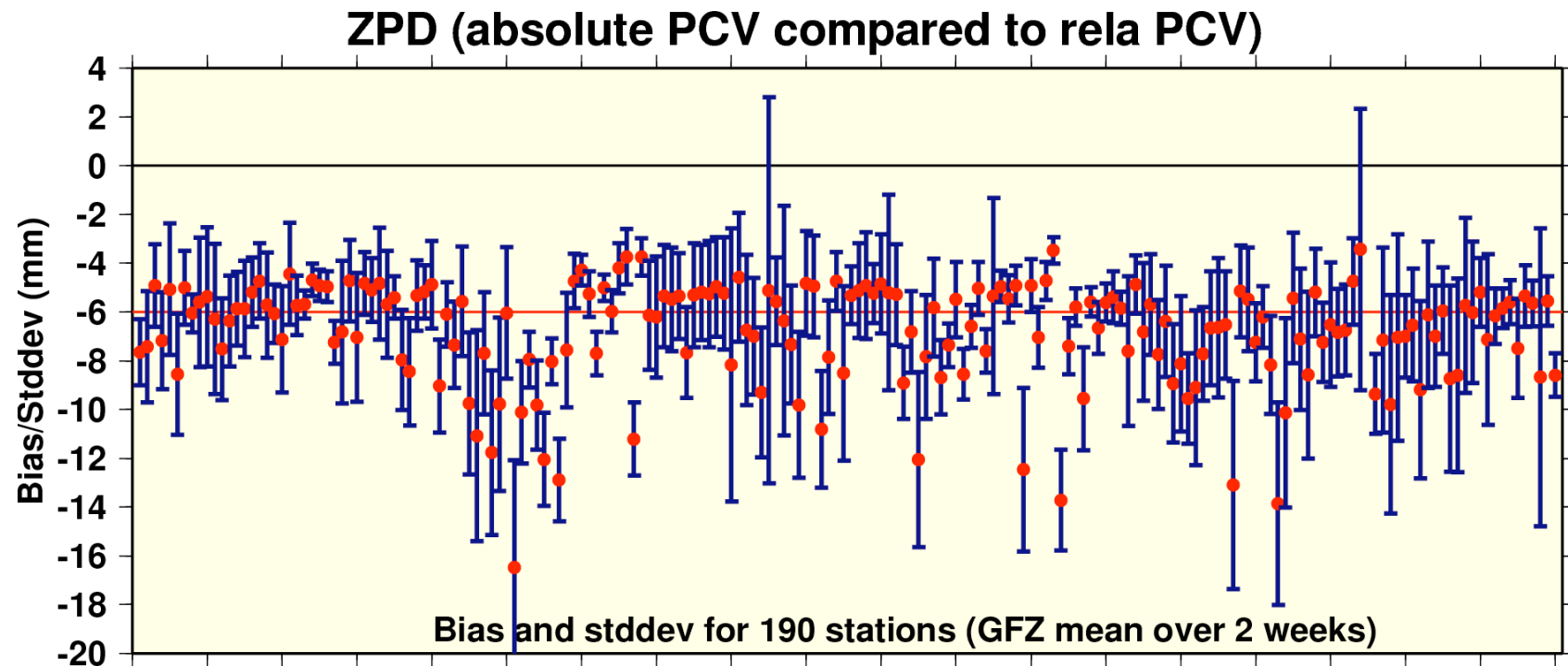
# PPP with the new APCV products and old software (2)

- From the APCV model only satellite offsets and station elevations are applied
- Helmert transformation to full solution, daily residual for single stations (for week 1359)
- Largest effect from satellite antenna PCV



## Tropospheric Zenith Path Delay

- GFZ APCV are compared to GFZ routine IGS solutions (190 stations, GPS weeks 1368 & 1369, hourly ZPD)
- The mean bias of about -6 mm will compensate for the wet bias seen in the present ZPD solutions compared to WVR, Radiosondes and VLBI



## Summary

- Tests have shown a high quality of parallel products
- No significant biases to old products for
  - ◆ orbit scale, shift and rotation
  - ◆ ERP (std dev: 0.015 mas for X,Y; 0.010 ms for LOD).
- Proposal: Switch with the new ITRF2005 (~Sept 2006 (TBC)).
- Sat Clock reference:

- ◆ Coded in SP3 and CLK file (comment line)

Old: /\* CLK ANTZ-OFFSET (M) : II/IIA 1.023; IIR = 0.000

New: /\*PCV:IGS05\_1361 OTL:FES2004 CMC:Y CLK:CoM

- SINEX: with SATA\_Z parameter (but stabilized)
- SINEX: handling of ANTENNA & GPS\_PHASE\_CENTER

real site antenna + effective calibration have to coded, e.g.:

+SITE/ANTENNA:

SANT A 1 P 06:021:00000 ... **AOAD/M\_T** **JPLA 251**

+SITE/GPS\_PHASE\_CENTER

**AOAD/M\_T** **NONE** ---- 0.0912 ... -.0006 IGS\_TEST05

*Radome not calibrated !*