IGS 2nd Reprocessing at GFZ

Zhiguo Deng, Gerd Gendt, Tilo Schöne, Thomas Nischan and Mathias Fritsche

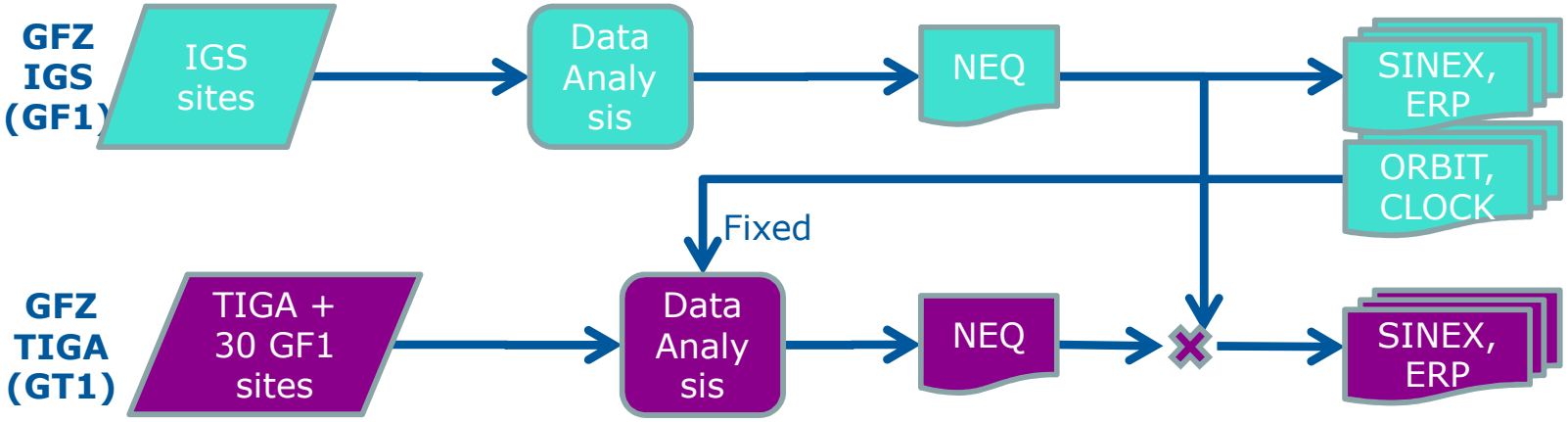
Helmholtz-Zentrum Potsdam
Deutsches GeoForschungsZentrum (GFZ)

deng@gfz-potsdam.de

Content

- Reprocessing activity at GFZ
- Two solutions from GFZ: GF2 & GT2
- Orbit combination 2000.0~2008.0
- Validation of GF2 & GT2
- Summary

GFZ contribution to IGS Repro1

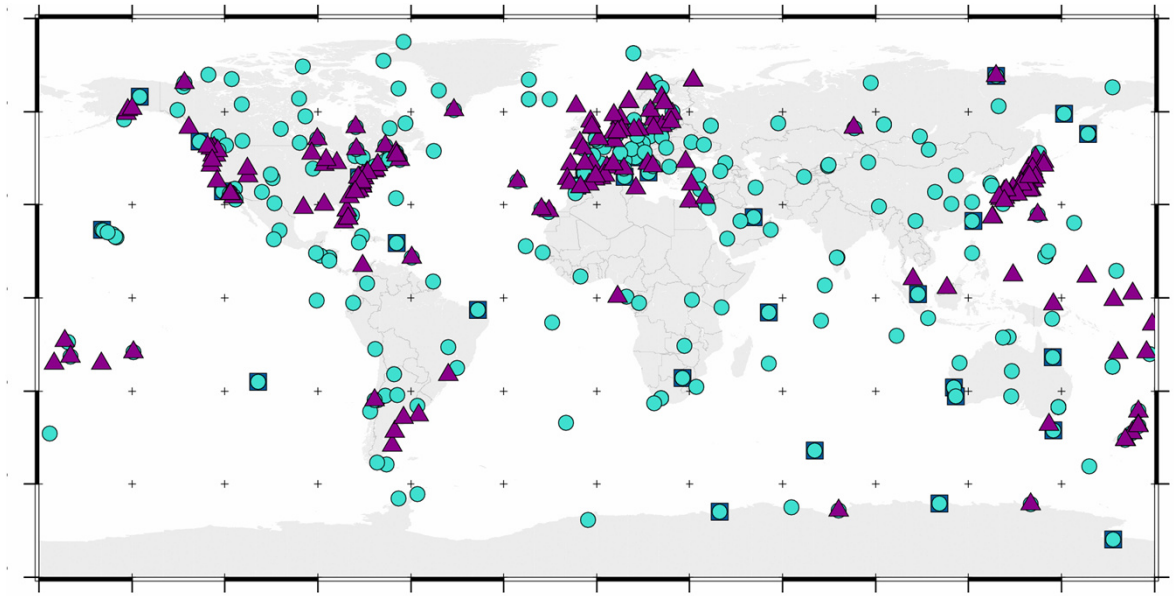


1994-2007

Total: 272 sites

1998-2007

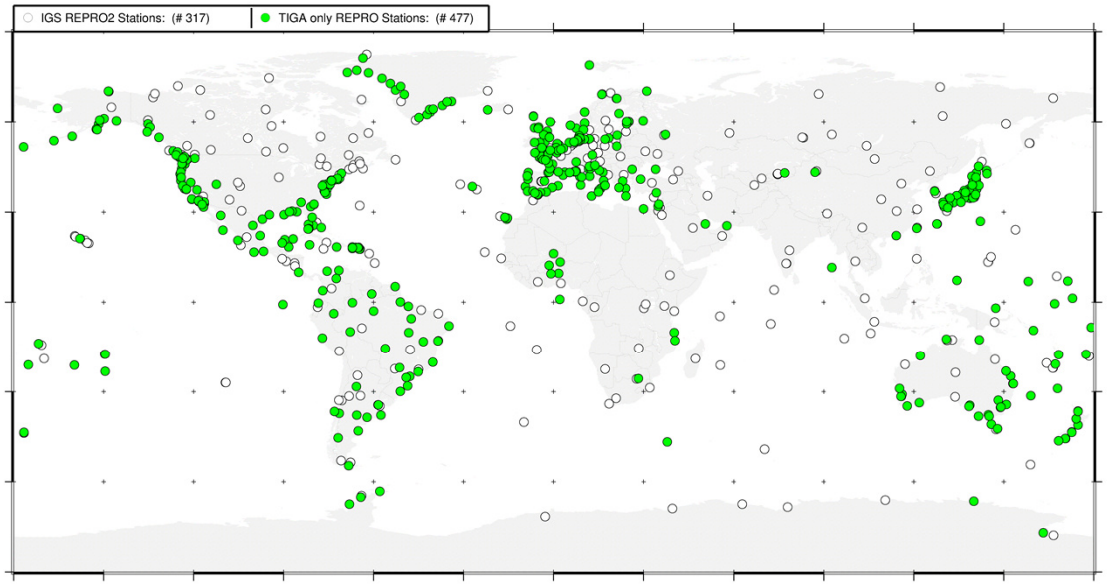
Total: 403 sites



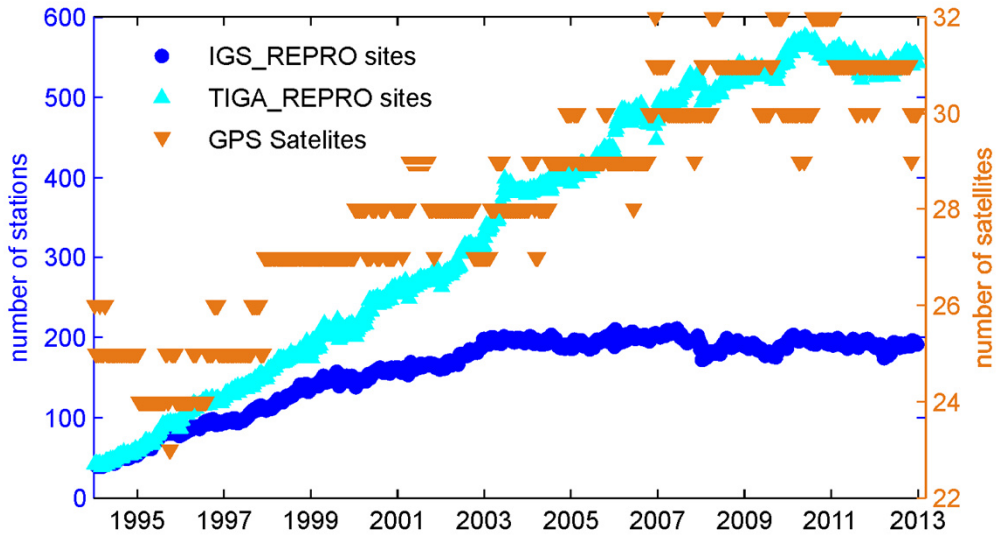
Two solutions: GF1 & GT1

(Uhlemann et al. 2010, IGS workshop)

GFZ contribution to IGS Repro2

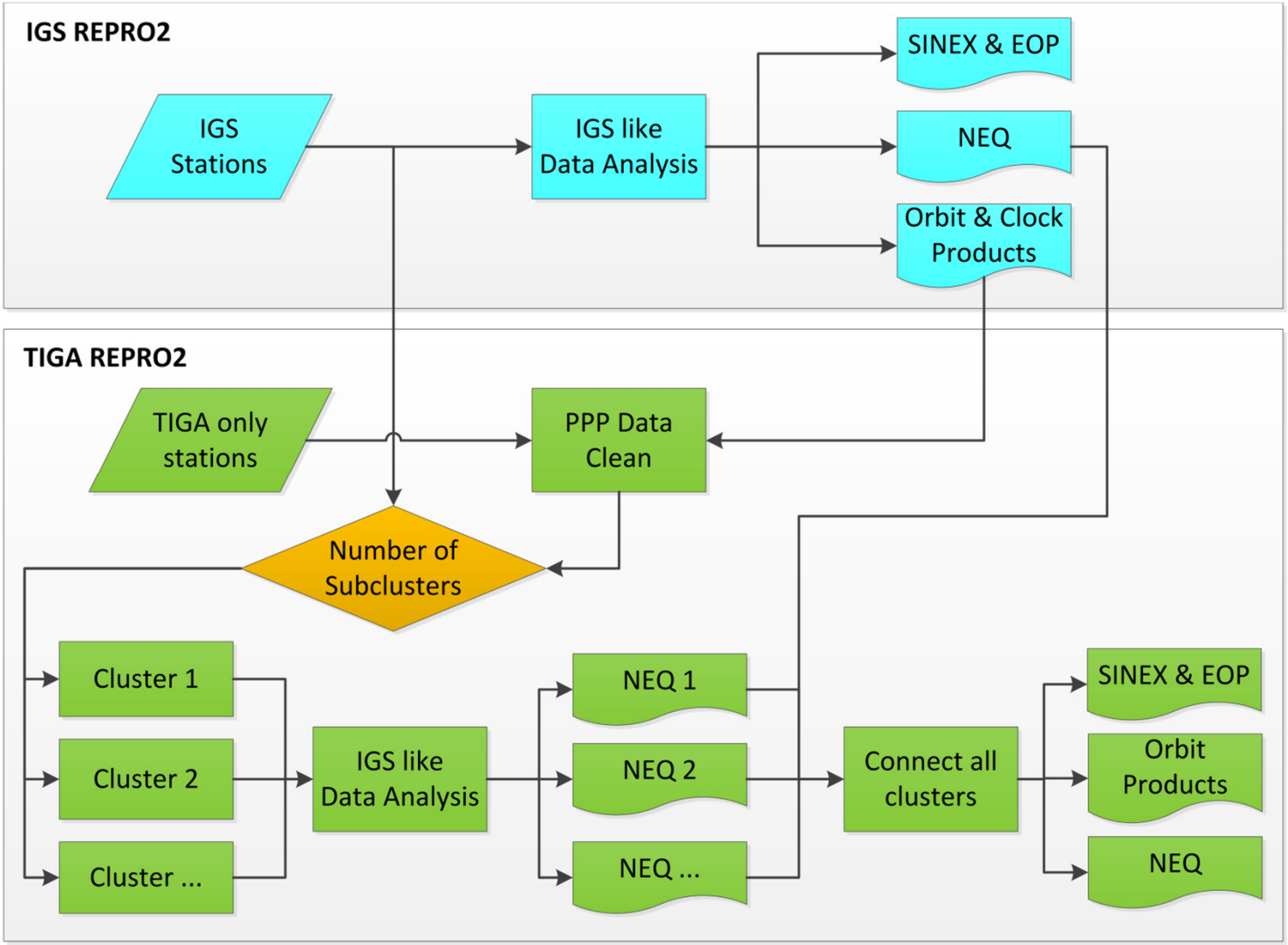


- Two solutions GF2 & GT2
  GF2: 317 stations (white dots)
  GT2: 794 stations (white+green dots)



- Products
  GF2: 15 min. GPS SP3, 5 min. clk, daily SNX & ERP
  GT2: 15 min. GPS SP3 & daily SNX

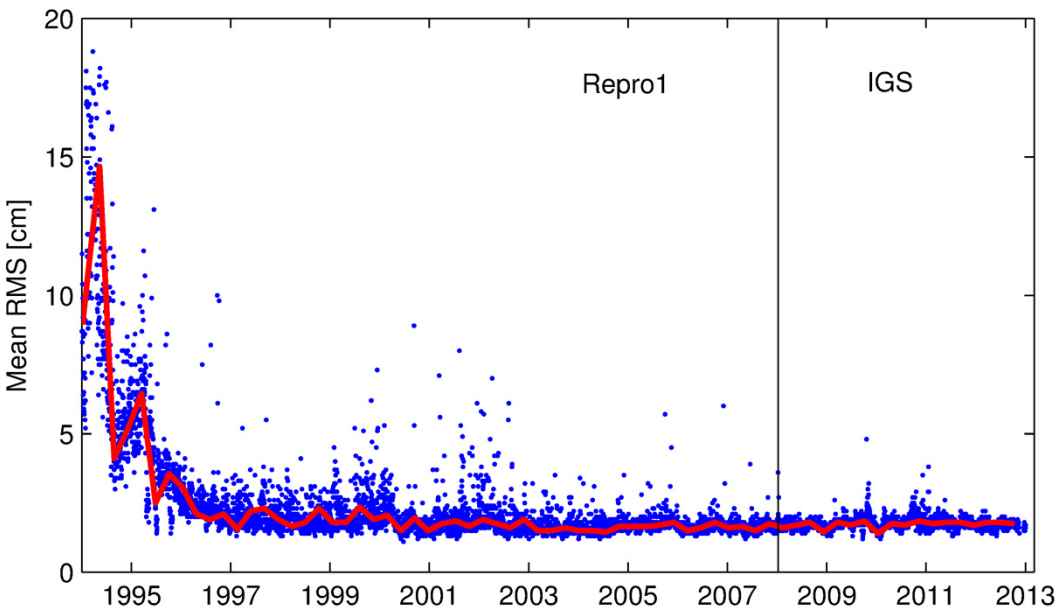
Processing Schemes



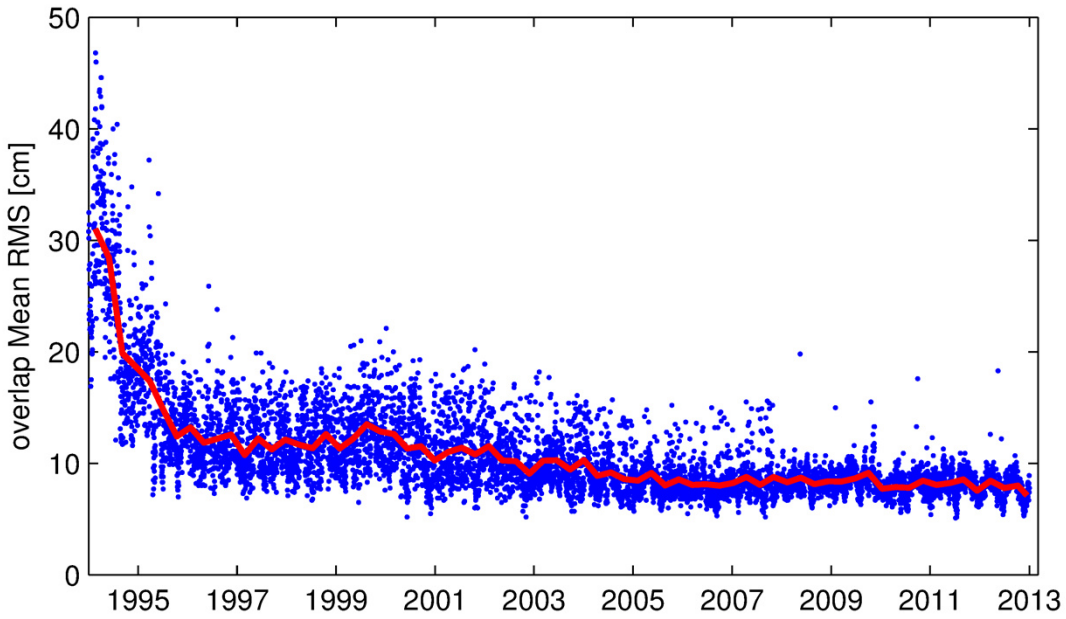
GF2 Products

GT2 Products

Repro2 orbit quality

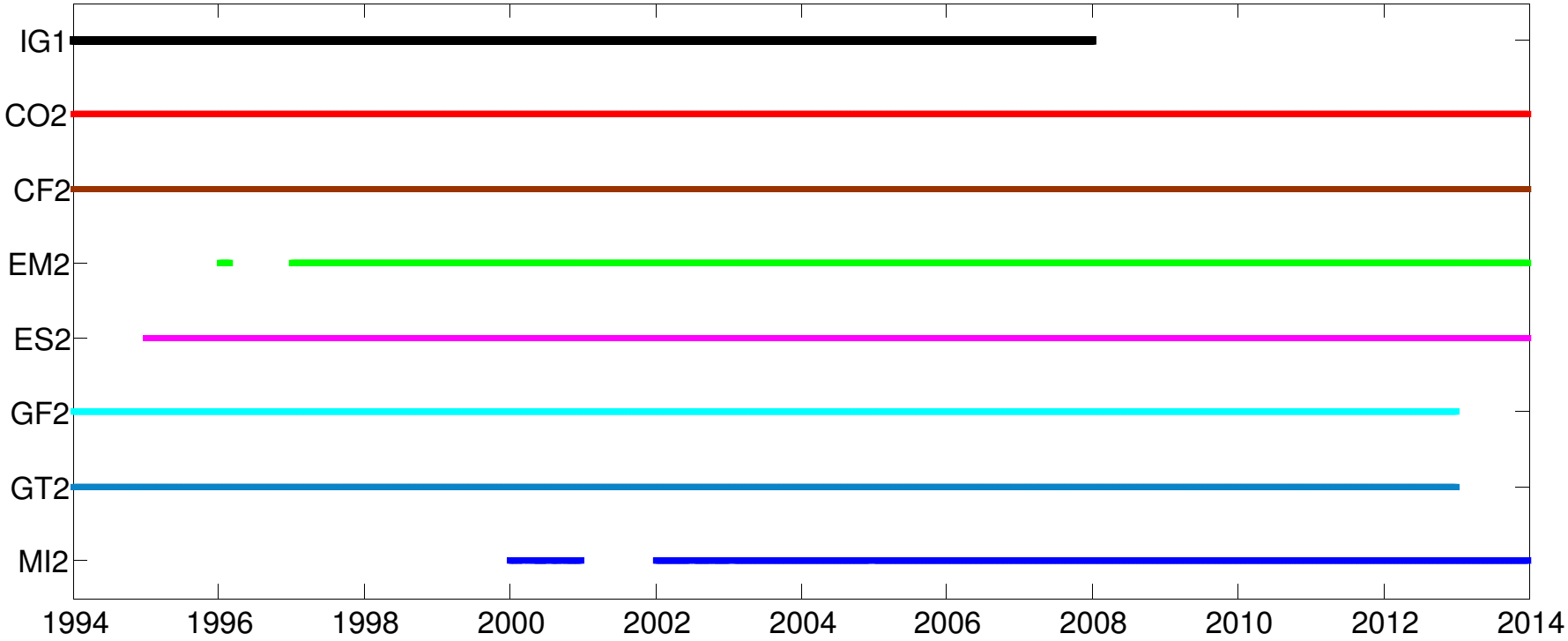


Mean RMS of transformed GF2 orbits w.r.t. the REPRO1 / IGS Final orbits



Mean RMS values of GF2 orbit over-laps (4 hours)

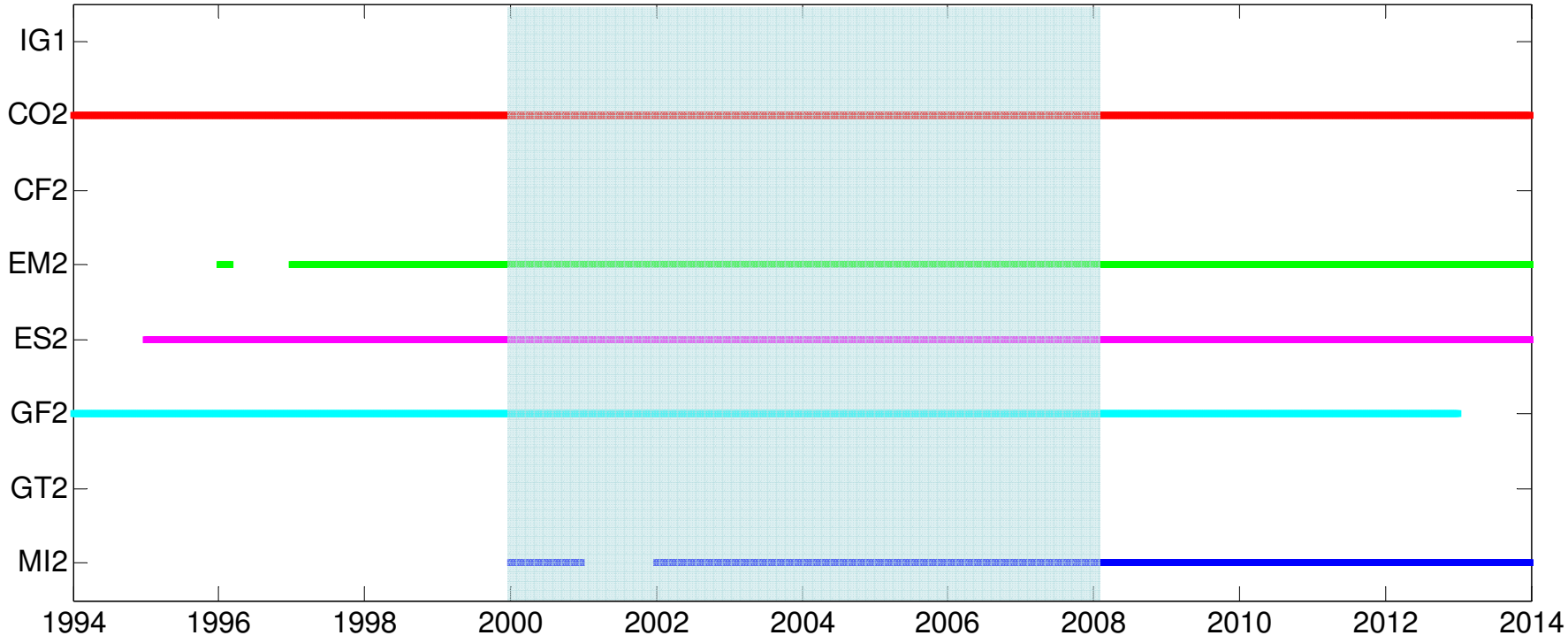
Repro2 products availability



Statuts: June 04 2014

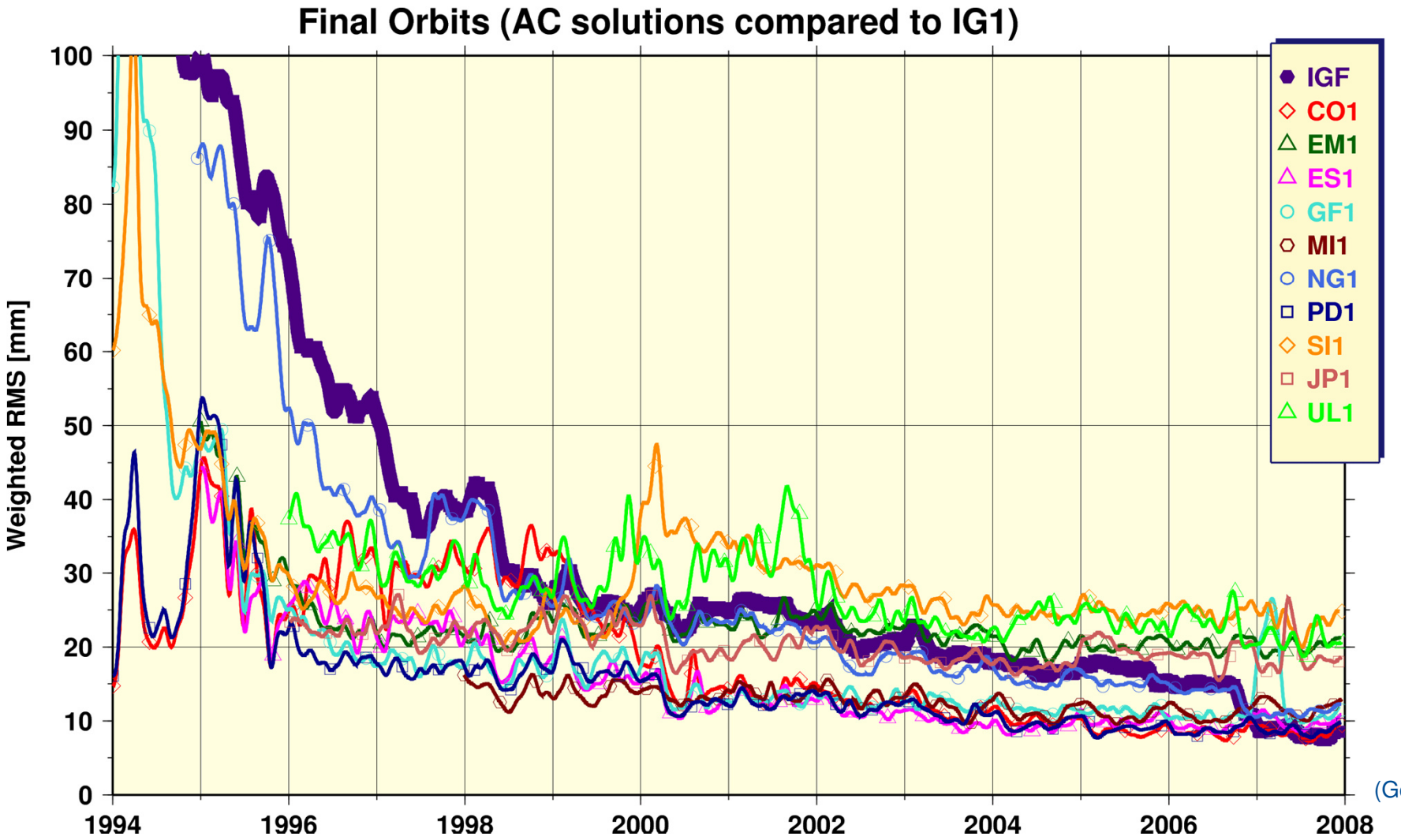
Repro2 products availability

Orbit combination: GFZ_COMB2



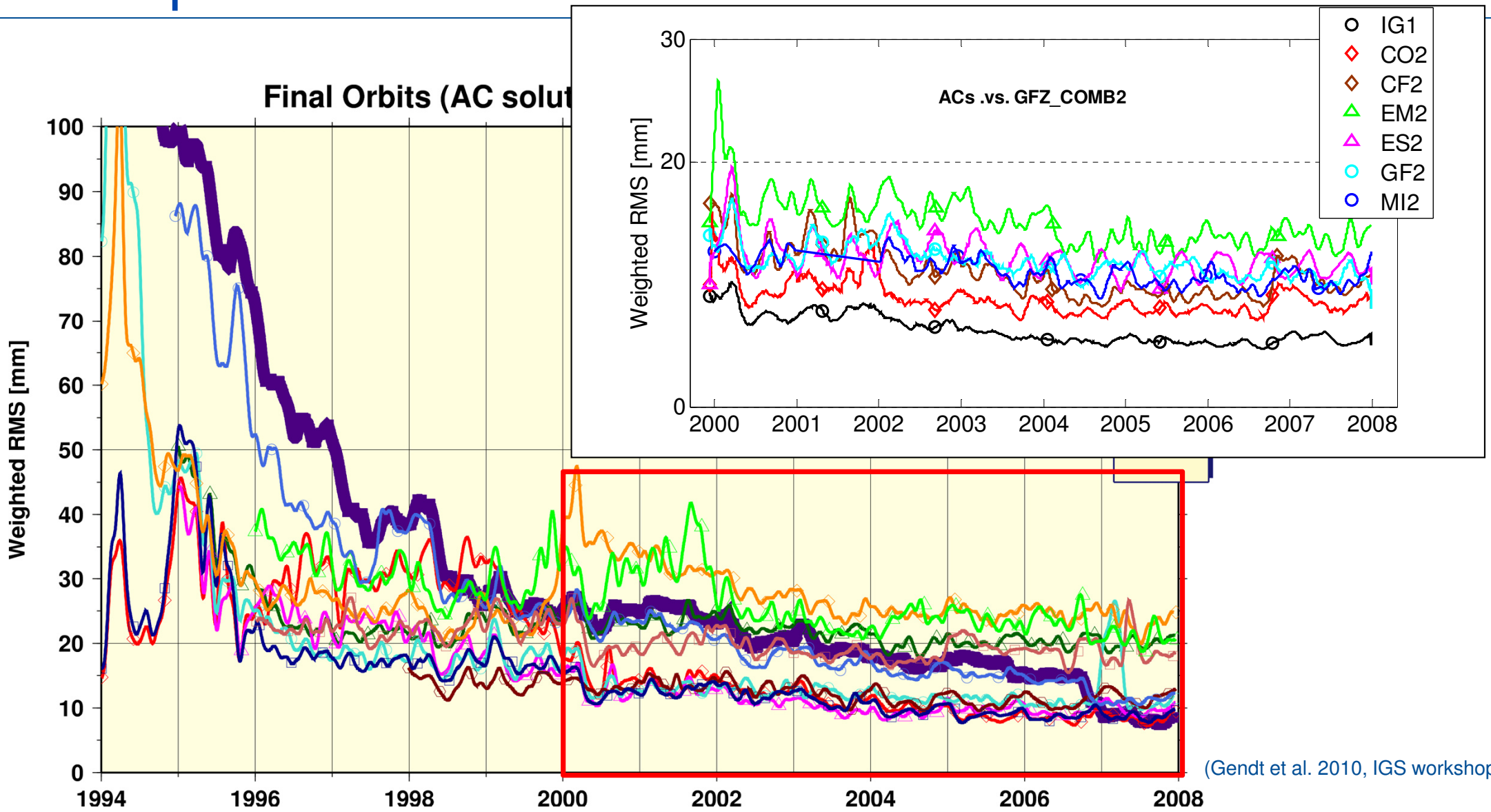
Statuts: June 04 2014

Repro2 orbit validation

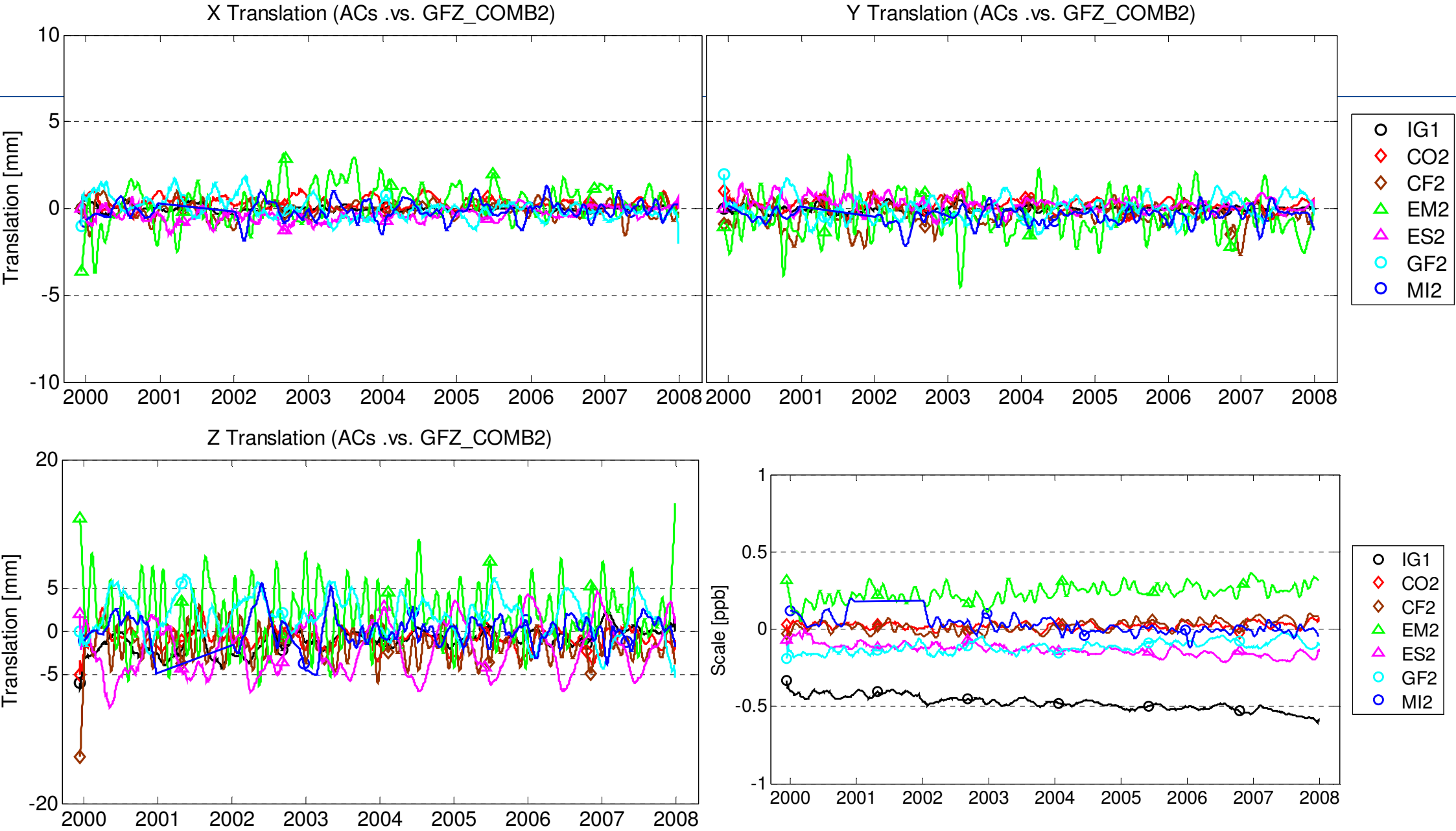


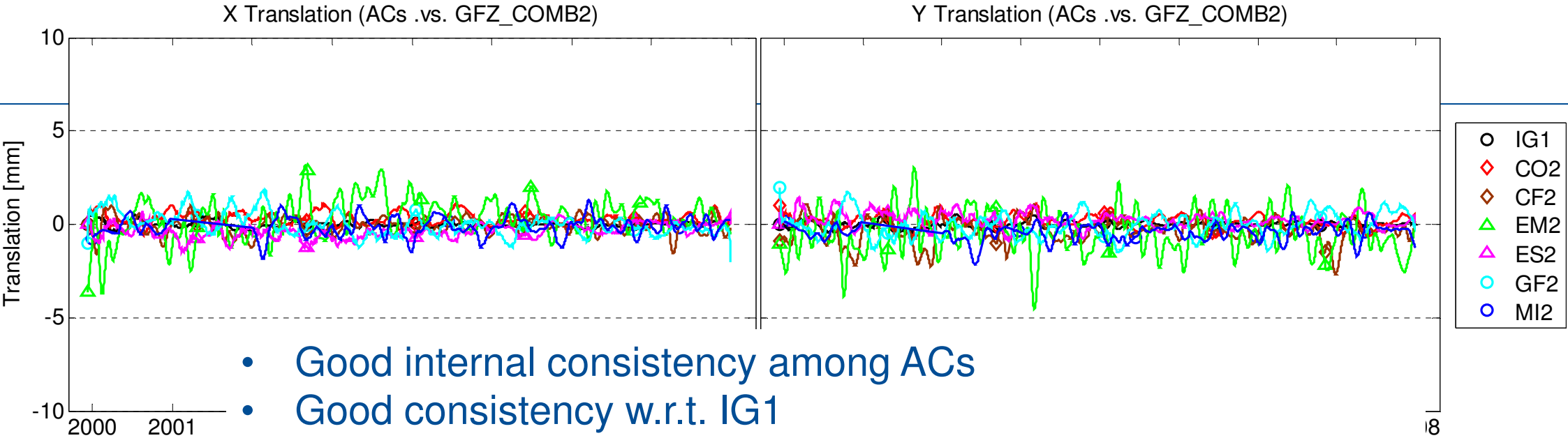
(Gendt et al. 2010, IGS workshop)

Repro2 orbit validation

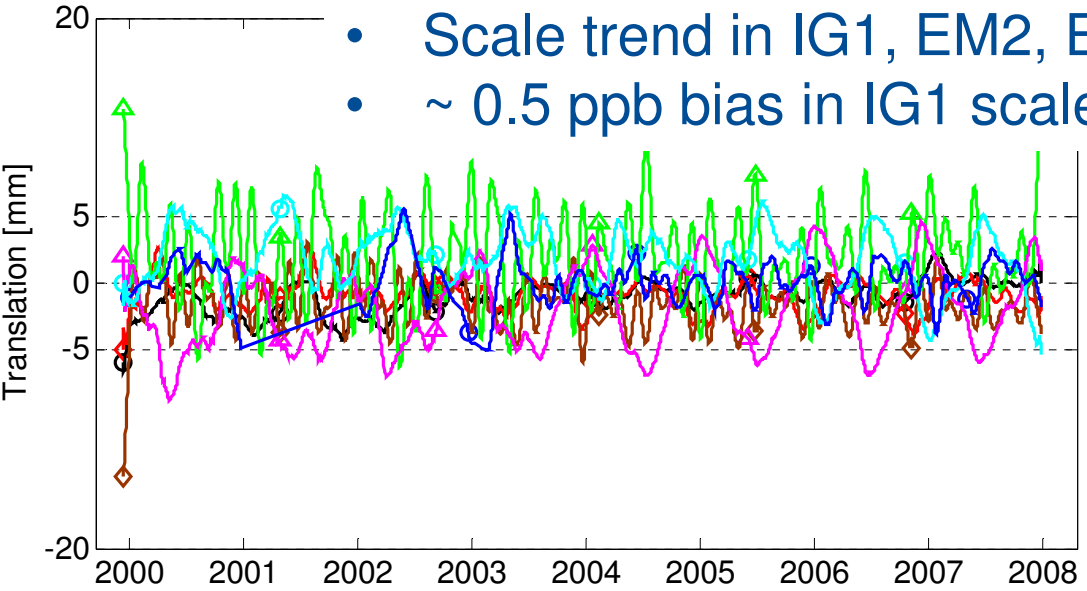


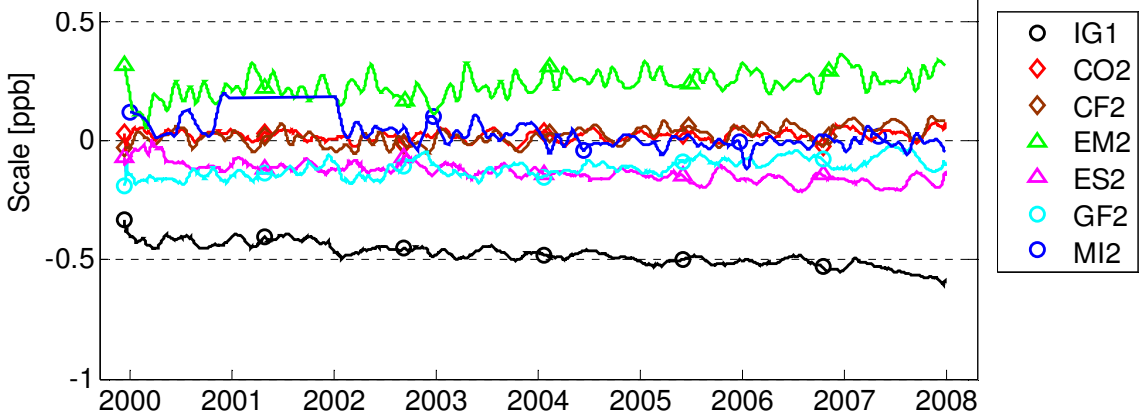
(Gendt et al. 2010, IGS workshop)


X Translation (ACs .vs. GFZ_COMB2)
Y Translation (ACs .vs. GFZ_COMB2)
Z Translation (ACs .vs. GFZ_COMB2)
Translation [mm]
Scale [ppb]
10
5
0
-5
-10
20
-20
1
0.5
-0.5
-1
2000
2001
2002
2003
2004
2005
2006
2007
2008
IG1
CO2
CF2
EM2
ES2
GF2
MI2

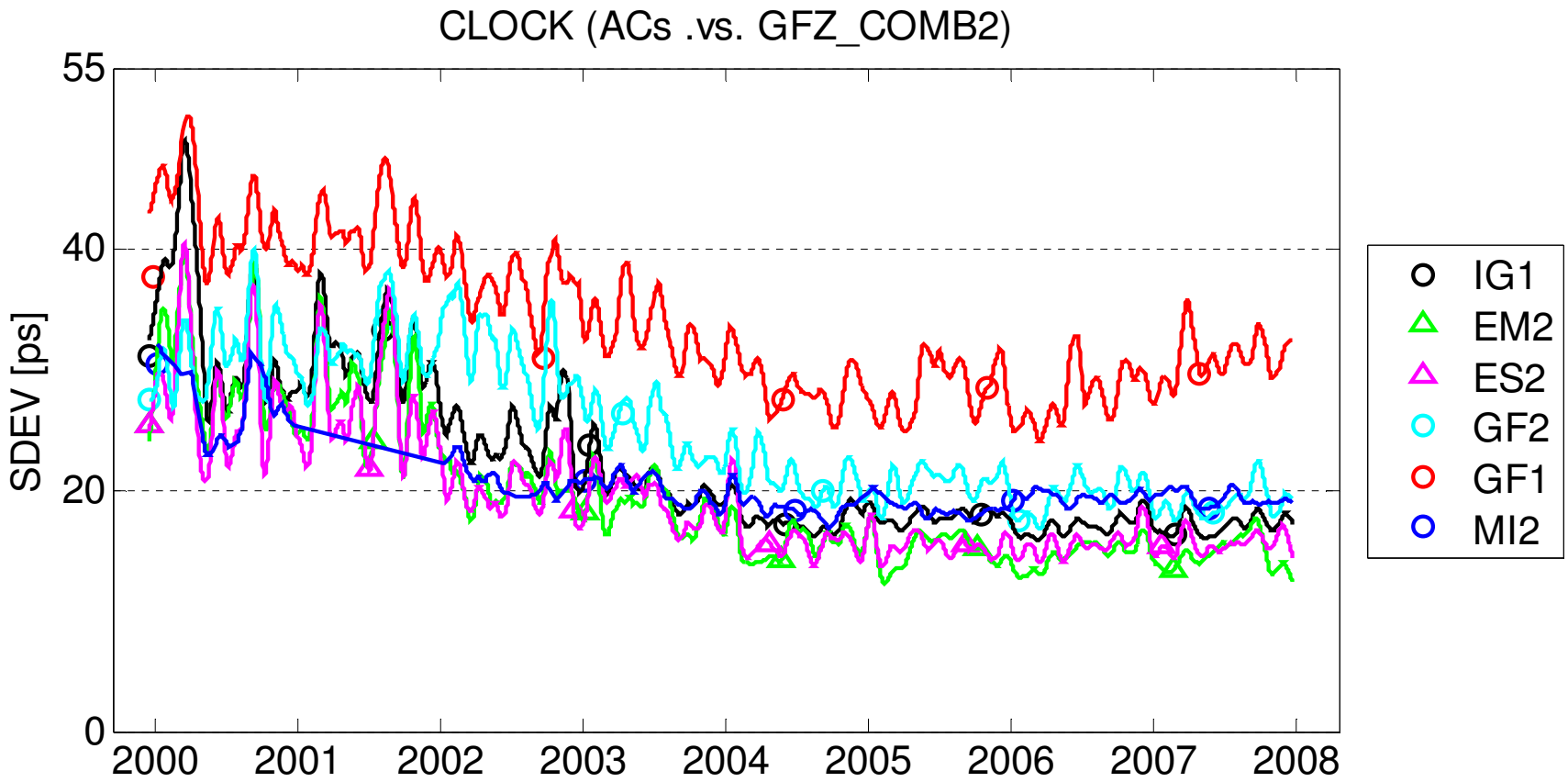


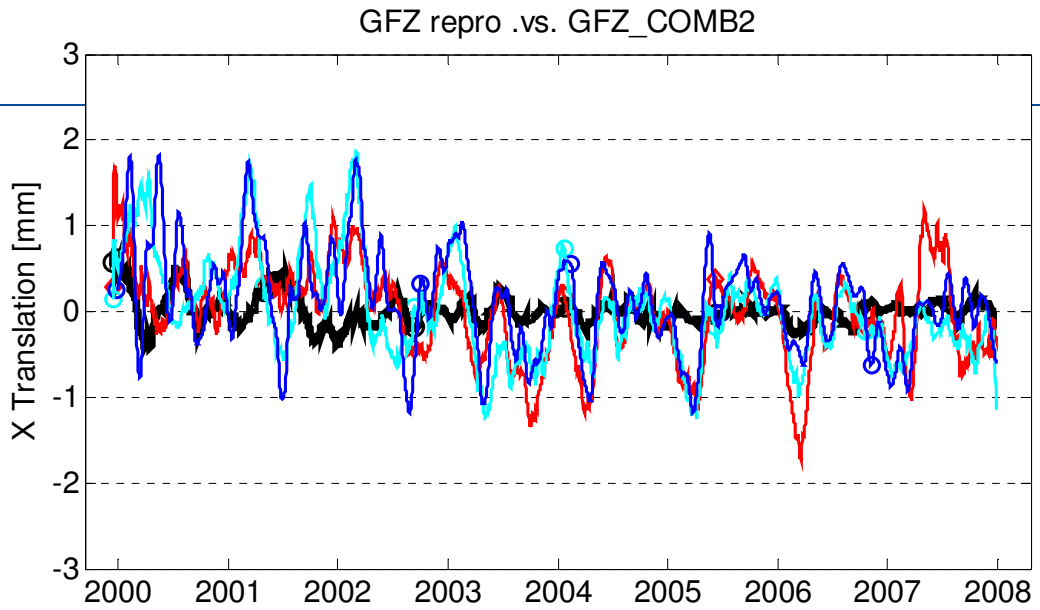
- Good internal consistency among ACs
- Good consistency w.r.t. IG1
- Seasonal signal in Z, 180° shift between MI2, GF2 & ES2
- Scale trend in IG1, EM2, ES2 and GF2
- ~ 0.5 ppb bias in IG1 scale caused by Albedo effect

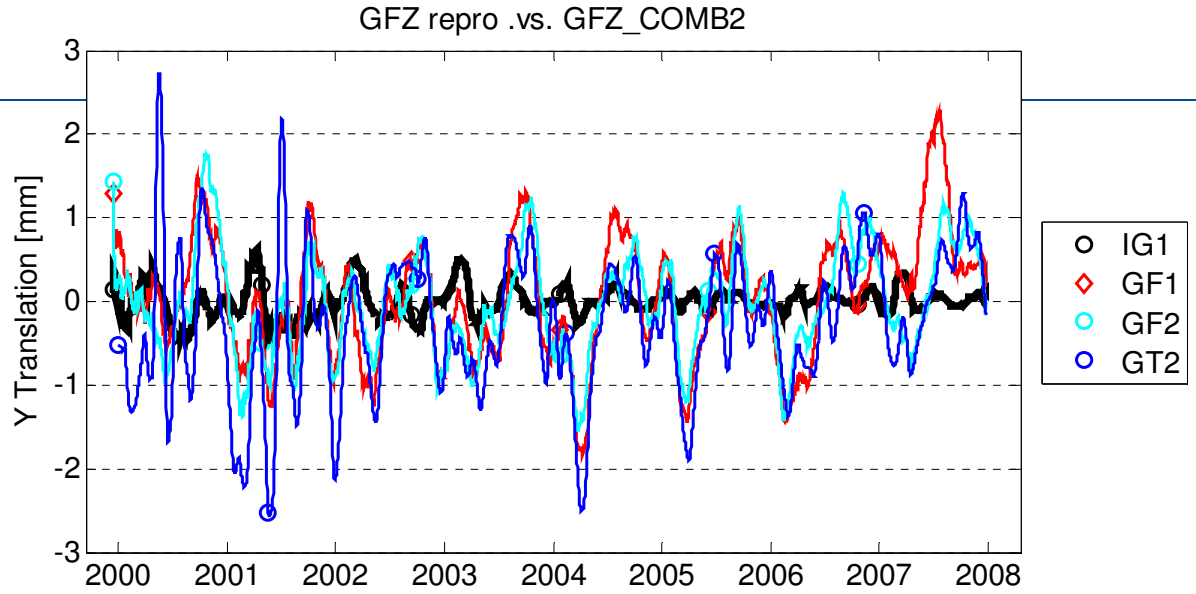


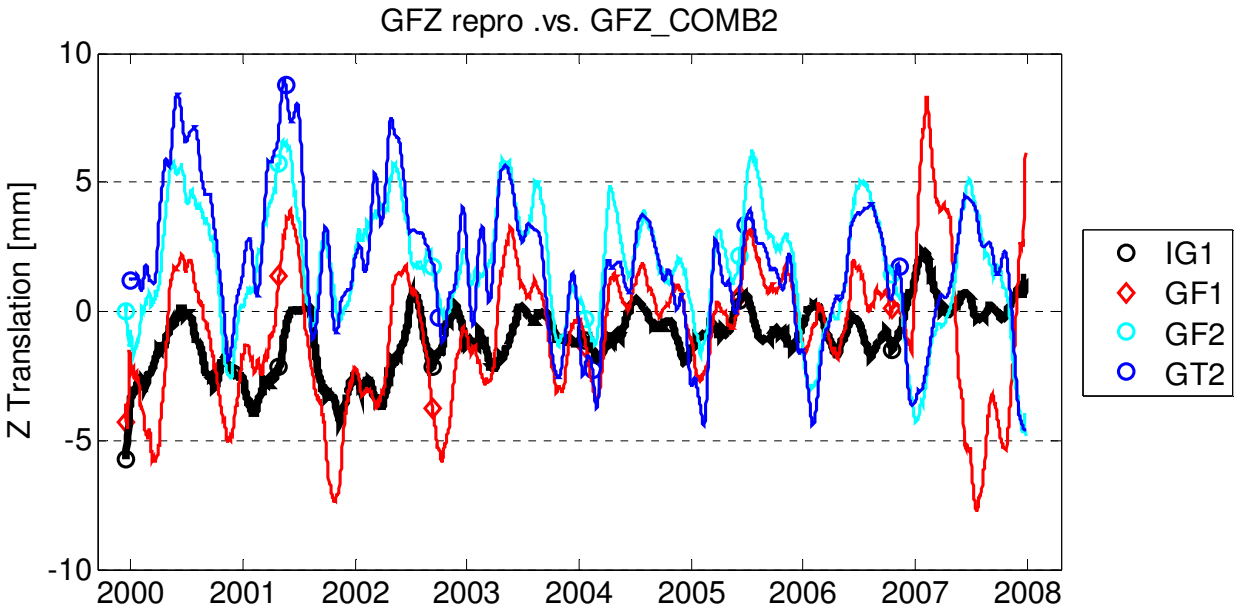


Repro2 clock validation

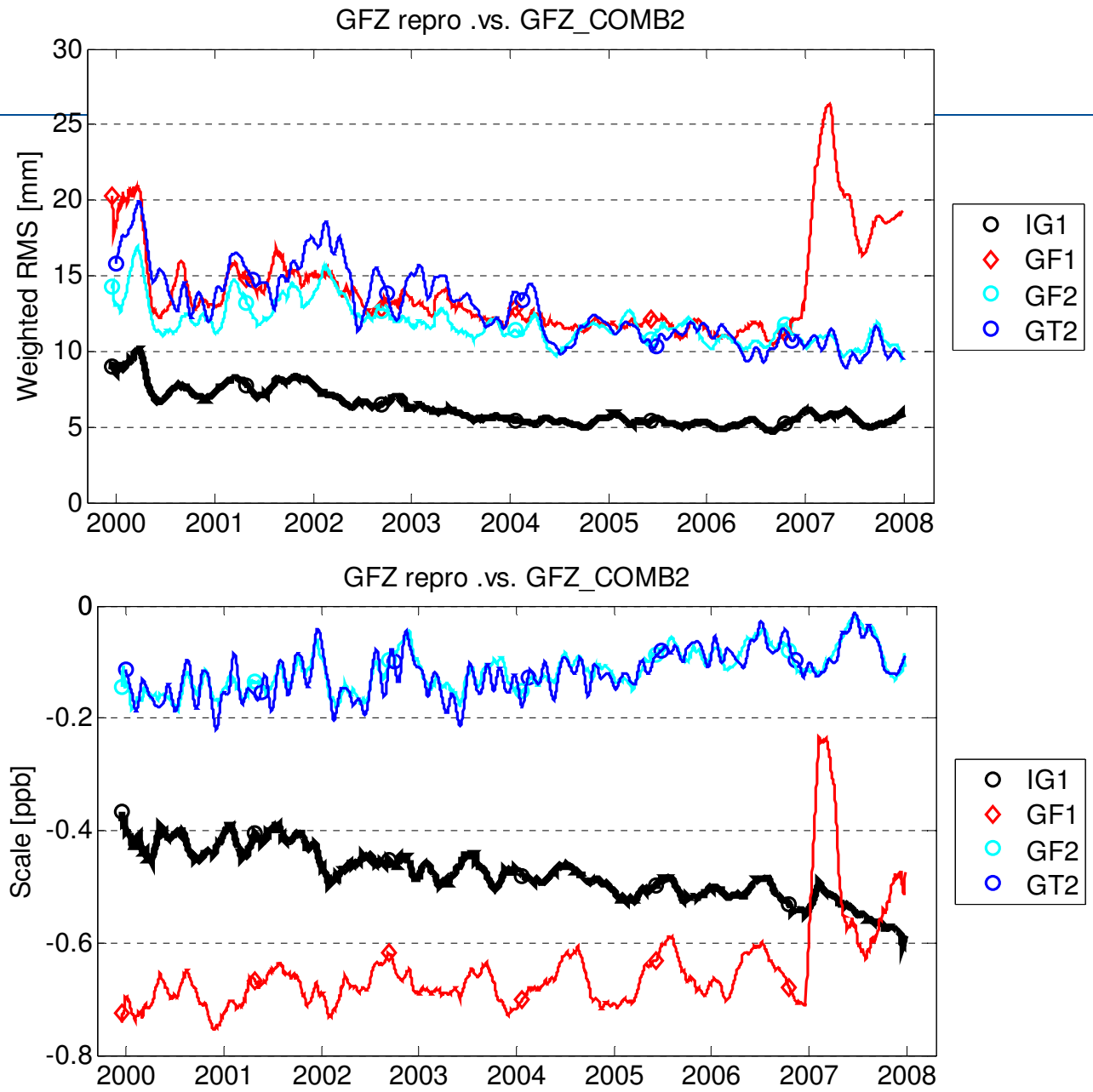








- GF2&GT2: same software and processing, different network,
- Significant annual signal in translations of GFZ repro. solutions



- GF2 and GT2 have significant improvement compared with GF1,
- Slight scale trend??

Conclusions

- Two GFZ product sets available at CDDIS (named gf2 & gt2)
- Products are aligned to coordinate and transformation (IGb08)
- Significant improvement in quality and homogeneity of delivered products w.r.t. GF1
- GFZ_COMB2 test shows good internal consistency among ACs
- Seasonal effects in translation Z, especially GF2, ES2 and IG1

Thank you for your attention