

GAMIT/GLOBK : Lessons from Reprocessing

- ❖ MIT (T Herring, R King, S McClusky)
 - ❖ 1993-2010, 900 sites (240 current)
- ❖ SIO (Y Bock, P Fang)
 - ❖ 1992-2010, 400 global sites (270 current) + 1400 regional sites
- ❖ ULR (G Woppelmann, A Santamaria Garcia, M-N Bouin)
 - ❖ 1994-2009, 316 sites, 216 collocated with tide gauges
 - ❖ CATREF for weekly combination
- ❖ ANU/UTas (P Tregonning, C Watson)
 - ❖ 2000-2008, 80 sites
 - ❖ Atmospheric loading and VMF1 tested

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Radiation-parameters constraints

Always estimate Direct, Y-, and B-axis constant; once-per-rev terms estimated if indicated by overlaps, with constraint determined by chi2 test

For most weeks, most satellites, only B-axis once-per-rev term needed

Orbital improvement (vs IGSF) compared with no constraints > 10 cm

Atmospheric gradient parameters

Allowing a slope over 24h vs a single parameter produces significant noise reduction rss difference vs IGS combination:

Orbits 5-10 cm

Sites 0.8 mm N 0.6 mm E 4 mm U

Loading and mapping function effects (*Tregoning and Watson, 2009*)

Atm loading + VMF1 mapping function and a priori ZHD compared with GMF/GPT

rss difference: 0.5 mm horizontal 2.7 mm vertical

Modeling diurnal and semi-diurnal atmospheric tides reduces 351-d and 175-d periods in site positions

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Sub-networking

For 100-site solution two 50-site subnets as good as single net
(MIT and SIO solutions use 40-60 sites in up to six subnets)

Discontinuities (MIT)

400 breaks identified with antenna/radome changes; 115 of unknown origin
(216 earthquakes)

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