NASA/GSFC
Model and analysis standards

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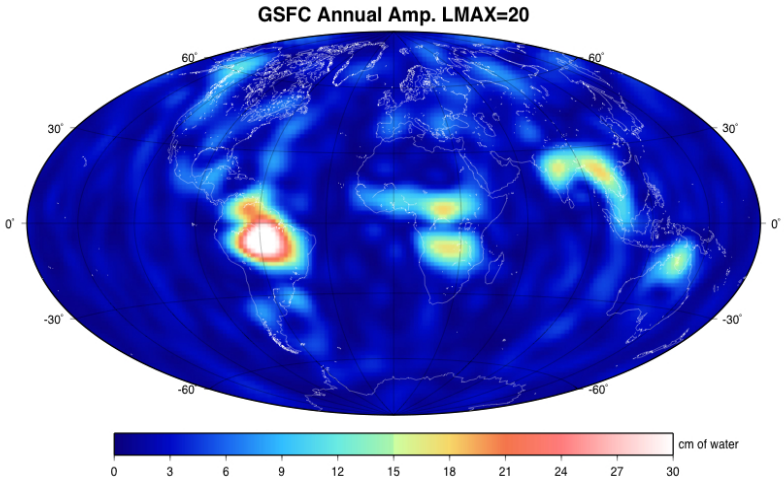
TOPEX/Jason GSFC Modeling Improvements

Models	**TOPEX GDR orbits**	**GSFC Replacement Orbits: March 2007**
Gravity (static)	JGM3 (70x70)	GGM02C (120x120) *(Tapley et al., 2004)*
Gravity (time-variable)	C20dot, C21dot, S21dot	C20dot, C21dot, S21dot + 20x20 annual terms from GRACE KBRR data. *(Luthcke et al., 2006)*
Atmospheric gravity	Not applied	NCEP, 50x50 @6 hrs (22-year mean removed) *(Petrov and Boy, 2004)*
Ocean Tides	Ray 94 + GEMT3X	(T/P-derived) GOT00.2 (20x20) *(Ray and Ponte, 2003)*
Solid Earth tides	k_2= 0.300; k_3=0.093 + FCN special handling	IERS2003
Station Coordinates	CSR95L02 (c001-359) ITRF2000 (c360-481)	ITRF2000 / DPOD2000 or ITRF2005
Tracking data	SLR / DORIS	same (+ Jason/DORIS SAA correction)
Parameterization	C_D/8-hrs + opr along+ cross track/day	Same: dynamic

Grace-derived time-variable gravity to 20x20 (annual terms only)



- Monthly solutions from KBRR data only
- Fit mean, trend, & annual harmonic
- 2 solutions: 1-yr & 3-yr data span

Reference:

'Monthly spherical harmonics gravity field solutions determined from GRACE inter-satellite data alone,' Luthcke et al., *Geophyscal Research Letters,* 2006.

Jason SLR/DORIS orbit summary (cycles 1-176) TVG model	average RMS residuals		
	DORIS (mm/s)	SLR (cm)	Crossovers (cm)
atmosphere gravity + (no annual)	0.3699	1.482	5.580
atmosphere gravity + tvg1 (1-year annual)	0.3698	1.462	5.577
atmosphere gravity + tvg3 (3-year annual)	0.3698	1.461	5.577

New Models and corrections

(available now or in 1-2 months)

- Gravity field = GGM02C ---> ***Update? GGM03C?***
- Atmospheric density = DTM94 ---> ***DTM2004? - If a compact subroutine is available.***
- Tides: Ocean (FES2004) --> ***GOT4.7b is available.***
- Atmospheric loading : not applied --> ***APLO files available from JP Boy based on ECMWF-6hr. Application needs testing in GEODYN.***
- Atmospheric gravity (NCEP-6hr - from Leonid Petrov or ECMWF-6hr available from JP Boy).
- Satellite physical model = IDS --> ***UCL for SRP? Tuned macromodels?***
- Solar pressure : no infra-red --> Update based on CERES/ERBS data? (Geodyn applies rudimentary Knocke & Ries).