

Data & Modelling Improvements for next ITRF

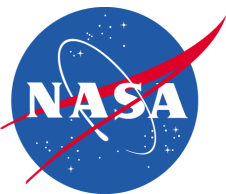
IDSAWG1304-

F.G. Lemoine

IDS Analysis Working Group Meeting

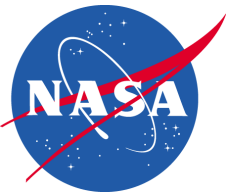
Toulouse, France

April 4, 2013



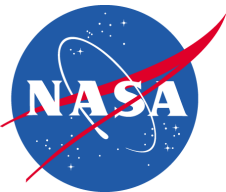
DORIS AC Desired Model Updates (1)

Model	Rationale
New Static Gravity Model	ITRF2008 vintage models (e.g. GGM01C, EIGEN-GL04S1) are now superceded
New Time-Variable Gravity Model	Strong signal in TVG > 2008. (Cerri et al., 2010; 2013)
All ACs to apply atmospheric gravity (ECMWF-6hr or NCEP-6hr)	5-7 mm signal radial on Jason-2/TP orbits. (Lemoine et al., 2010)
Air Tides (Apply separately if - 6hrly atmospheric gravity used)	Avoid double bookkeeping of air tide constituents. (Ray and Ponte, 2003; Bode & Biancale, 20XX)
Updated macromodels – Different satellites depending on AC	Nonconservative force mismodelling produces draconitic period signals in station coordinates time series & geocenter parameters.
Adjust drag more frequently near solar maximum (~2001-2003)	(Gobinddass et al., 2010; Valette et al., 2010). ~800 km DORIS satellites strongly perturbed by drag.
Use GMF or VMF for Troposphere mapping function	Earlier functions and models (cf Niell) no longer state-of-the-art.
Met. Info for DORIS Data: GPT, GPT2, or ECMWF-derived	DORIS in situ meteorological data are not reliable.



DORIS AC Desired Model Updates (2)

Model	Rationale
Ocean Tide Models: for dynamical modelling & Ocean Loading: GOT4.8, FES2004, (Is FES2004 update available?)	Earlier models superceded. Even FES2004 & GOT models have some issues at S2 frequency in polar regions.
Station Coordinates	Latest DPOD2008? DPOD2008v1.9
Solid Earth Pole Tide	Part of IERS Conventions (2003)
Ocean Pole Tide	Part of IERS Conventions (2010)



DORIS AC Desired Data Updates (1)



Model	Rationale
Jason-2	<ul style="list-style-type: none">• New satellite not in ITRF2008.• Strongest DORIS data source (DGXX, 7 channel)
Cryosat-2	<ul style="list-style-type: none">• New satellite not in ITRF2008.• DGXX Receiver.
SPOT-4 new Data (May 1998 – January 1999)	<ul style="list-style-type: none">• DORISMAIL 0701 (22-Sept-2010, Pascale Ferrage).• Data previously not used by most Acs in ITRF2008.
New Envisat Data (June 2002 – May 2007, cycles 1-255)	<ul style="list-style-type: none">• DORISMAIL 0823 (16-May-2012, Luca Cerri)• Updates Ionosphere correction; More data.
Update Cryosat-2, Jason-2 data (Problem with stations with beacons shifted in frequency) Jason2: Cycles 1-102; Cryosat2: Cycles 1-54	<ul style="list-style-type: none">• DORISMAIL 0750 (17-May-2011, Pascale Ferrage)• Updates 2.2 Data for GR3B, GAVB.
New SPOT-5 Data (SAA-Corrected)	TBD
Jason-1 (SAA-Corrected)	TBD