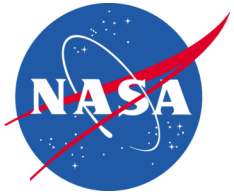

Future Reprocessing Plans

F.G. Lemoine

IDS Analysis Working Group Meeting

Paris, France

May 23-24, 2011

Schedule for a new ITRF

- A call for submissions will not be issued before another year (cf. Zuheir Altamimi, email 05/20/2011).
- IGS Reprocessing with IGS08 and updated models from IERS2010 standards is underway; The IGS readiness will probably dictate the schedule of a new ITRF call since their work load and schedule is the most intensive and requires the longest lead time of all the services.
  (see http://acc.igs.org/reprocess2.html for IGS reprocessing plans).

- There are technique-related issues and modelling improvements that we should address prior to initiating a new ITRF reprocessing.

Post-ITRF2008 Modelling Issues (1)

• Troposphere modelling:

GMF/GPT and/or VMF are the current standards for processing -- not all Acs used these in the previous ITRF2008 work.

Any other efforts to investigate improvements troposphere modelling (gradients, apriori modelling from atmosphere models, ray-tracing) should be encouraged.

What is sea level pressure default for apriori dry tropo correction? Is this responsible for two groups of AC's? (GAU, GSC, ESA vs others?)

• Solar radiation pressure/macromodels:

We need to agree on a best set of models for each of the DORIS satellites to minimize radiation-pressure-induced mismodelling in the geocenter.

A first step would be to intercompare the macromodels coefficients (reflectivities, normal vectors, cross-sectional areas) of the AC's, and the residual (OPR) accelerations per AC

A second step is to repeat/continue the frequency spectrum decomposition of geocenter time series of current operational series.

Post-ITRF2008 Modelling Issues (2)

Drag modelling & Parameterization.

==>We know that station positioning error increases near solar maximum - and that this can be mitigated with more frequent drag parameterization….
(cd's per 1 - 2h, where data permit for the 800 km satellites, with appropriate constraints seemed to have worked adequately).
==>Newer atmosphere models are available and might be interesting ….

Scale offsets in individual satellite solutions:
==> We have to ascertain the cause and a method to mitigate scale offsets between contributions of different satellites. SPOT4 vs ENVISAT; Gr

Ocean loading:
==> All need to use the more recent ocean-tide models for ocean loading; FES2004; GOT4.7; EOT10A, EOT11A ….

SPOT5-SAA issue:
==> Investigate and develop a mitigation strategy.

Post-ITRF2008 Modelling Issues (3)

Static Gravity Model:

==>New GRACE+GOCE gravity models? New GRACE-only models?

Time-variable Gravity Model

==> Atmospheric gravity. Not all AC's applied Atmospheric gravity; 5-7 mm effect in annual signal in radial component of orbits for LEO satellites.

==> Time variations in other coefficients;

Albedo Planetary Radiation Pressure modelling:
-Test new models to update model of Knocke & Ries?

IERS2010 Modelling standards

New Pole: Proposed IERS 2010

S1, S2 air-tide loading:

Ocean pole tide: Desai (2002)