ESOC Analysis Centre Status Report

Michiel Otten, Werner Enderle
The Navigation Support Office, ESA/ESOS, Darmstadt Germany.

Overview

- Tropospheric gradients
- Low elevation data for Jason-2 and Cryosat-2
- DPOD2008 evaluation with Envisat
- Routine delivery
- Summary
The inclusion of Tropospheric gradients in the daily estimation (one gradient per day in East and one in North) improves the week to week repeatability of the station coordinates solution. The improvement is of the order of 1-2mm in 3D WRMS depending on the week.

The Tropospheric gradient estimation has so far only be tested for mid 2010 onwards in which 5 satellites are available (Spot-4/5, Envisat, Jason-2 and Cryosat-2). Test for early periods with limited number of satellites still has to be performed (for example the Spot-2 & Topex/Poseidon only period).
Several tests were performed to include the large amount of low elevation data (below 10 degrees) that is now available with Jason-2 and Cryosat-2 (~35% data below 10 degrees).

Current processing (esawd05) uses a 10 degrees elevation cut-off.

Test were performed with 7, 5 and 0 degrees.

Using data up to 5 degrees improves the weekly repeatability of our solution by up to 3mm 3D rms.

But low elevation data has to be down weighted. Currently we are using sin(elevation) as a weighting function.
DPOD2008 evaluated based on our routine Envisat Processing:

- Close to CNES GDR-C' standards
- Gravityfield: EIGEN-GRGS GRACE release 2bis
- Modeling according to (IERS2003) standards
- DORIS + SLR used, technique-specific weighting
- DORIS and SLR station coordinates kept fixed
- Estimated parameters
  - Orbit parameter (7-day arcs)
    - SV
    - 4 CPRs (sin/cos in along-track/cross-track) every 12h
    - 10 Drag parameters every 24h
  - DORIS station frequency bias, time-tag bias, atmospheric zenith delay correction
The Table gives the middle day overlap statistics for the period from September 2002 until March 2011 (~610 arcs).

DPOD2008 gives about a 6% improvement in Radial and Along track direction compared to ITRF2008.

For the missing stations in ITRF2008 the DPOD2005 coordinates were used transformed to ITRF2008 using the transformation parameters from the IERS conventions.
High RMS and number of rejected observation for 2009 until early 2011
Data before 2006 looks good but is set to not use in DPOD2008. Light blue residuals are from ITRF2008 solution.
Strong increase of RMS before mid 2005 gap
Data for 2005 looks good excluded in DPOD2008
Data for 2006 looks good excluded in DPOD2008
Data for late 2003 looks good excluded in DPOD2008
Data for late 2010 looks bad
Routine delivery

• Since September 2010 the IDS processing at ESOC is running successfully in a routine and automatic way.

• The SINEX files since March 2011 are automatically delivered to CDDIS.

• Latest data that has been delivered to CDDIS is week 15 of 2011 (esa11100wd05.snx.Z week staring 10/04/2011).
Thank you

Michiel Otten
Michiel.Otten@esa.int