ESOC Analysis Centre Status Report

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Overview

- Tropospheric gradients
- Low elevation data for Jason-2 and Cryosat-2
- DPOD2008 evaluation with Envisat
- Routine delivery
- Summary

Tropospheric Gradient

- 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)

Low elevation data

- 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 evaluation with Envisat

DPOD2008 Evaluated based on our routine Envisat Processing:

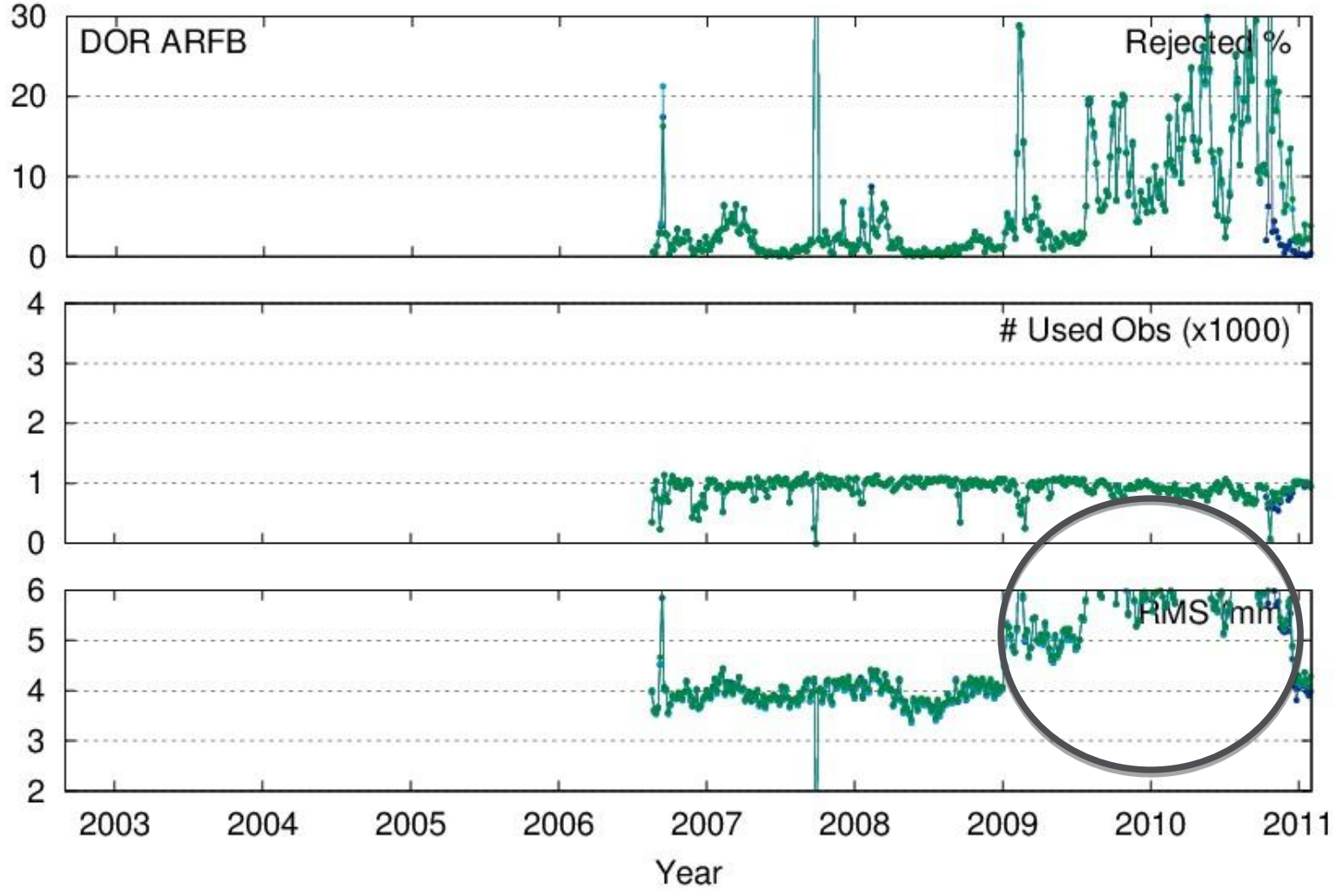
- Close to CNES GDR-C' standards
- Gravityfield: EIGEN-GRGS GRACE release 2bis
- Modeling according to (IERS2003) standards
- DORIS + SLR used, technique-specific weighting
- DORIS and SLR station coordinates kept fixed
- Estimated parameters
    - Orbit parameter (7-day arcs)
        - SV
        - 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

DPOD2008 evaluation with Envisat

Overlap (mm)	ITRF2008	DPOD2008
Radial	1.30	1.22
Along	5.18	4.85
Cross	4.77	4.71

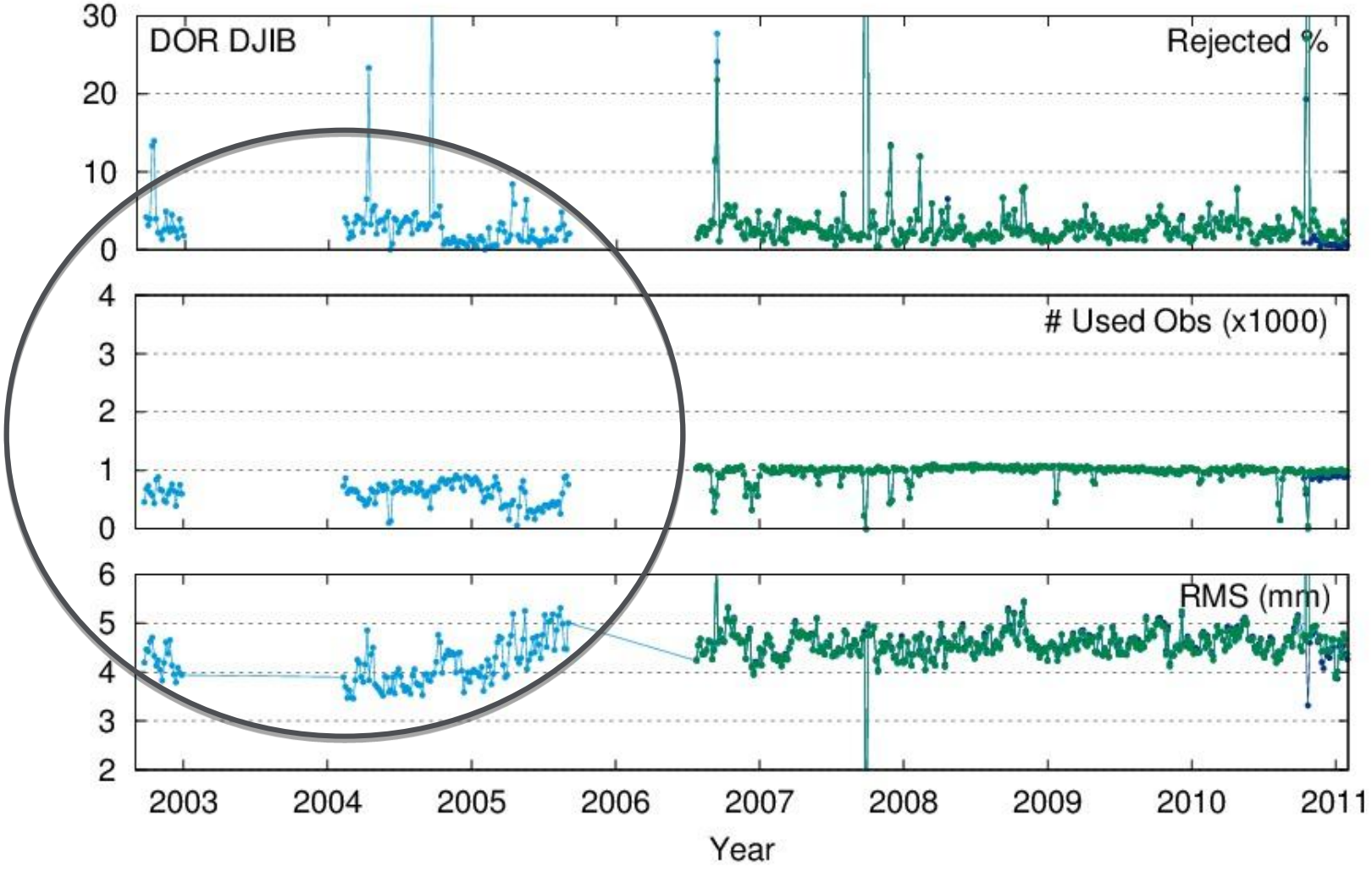
- The Table gives the middle day overlap statistics for the period from September 2002 until March 2011 (~610 arcs).
- DPOD2008 gives about a 6% improvement in Radial and Along track direction compared to ITRF2008.
- For the missing stations in ITRF2008 the DPOD2005 coordinates were used transformed to ITRF2008 using the transformation parameters from the IERS conventions.

DPOD2008 – Station Evaluation



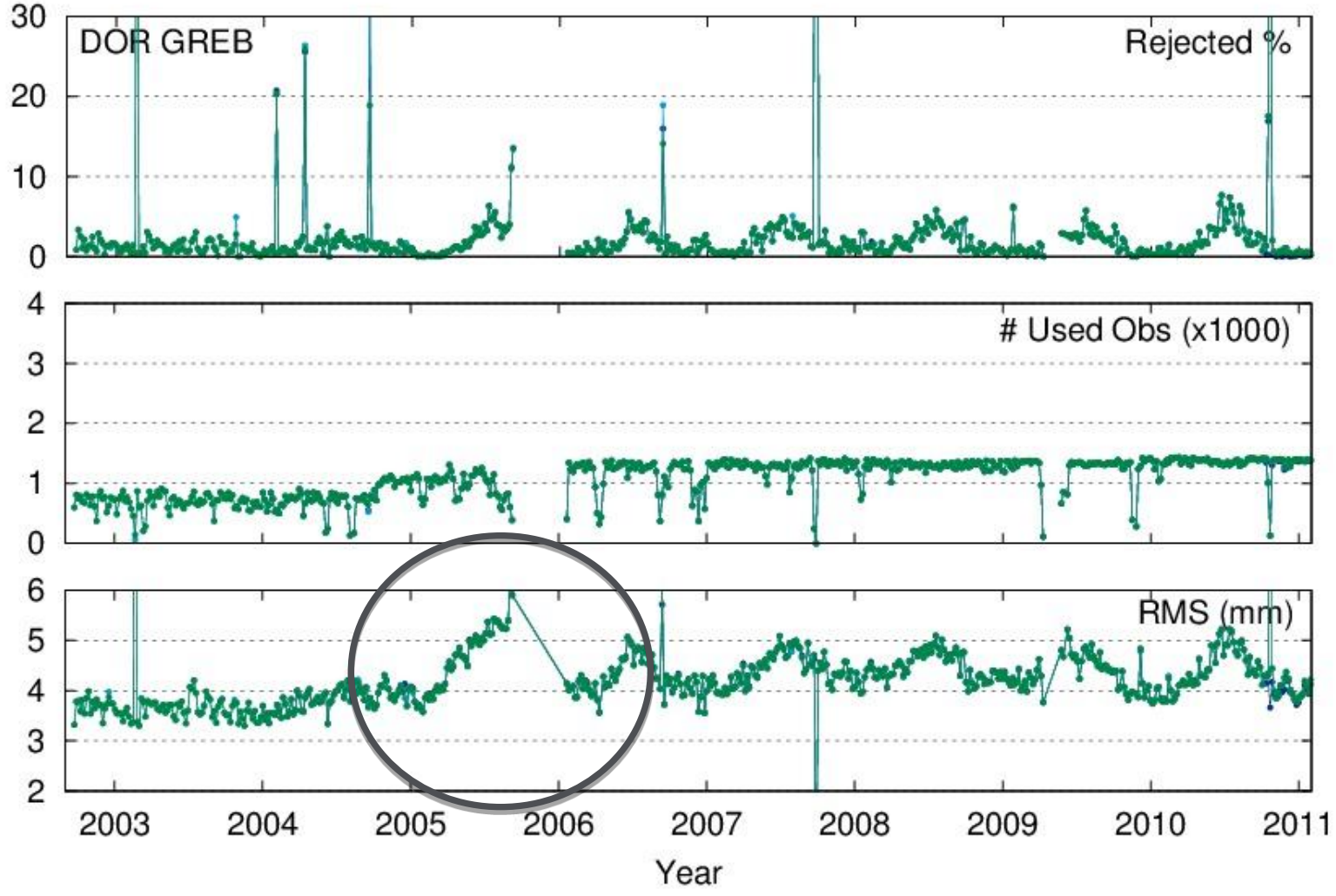
High RMS and number of rejected observation for 2009 until early 2011

DPOD2008 – Station Evaluation



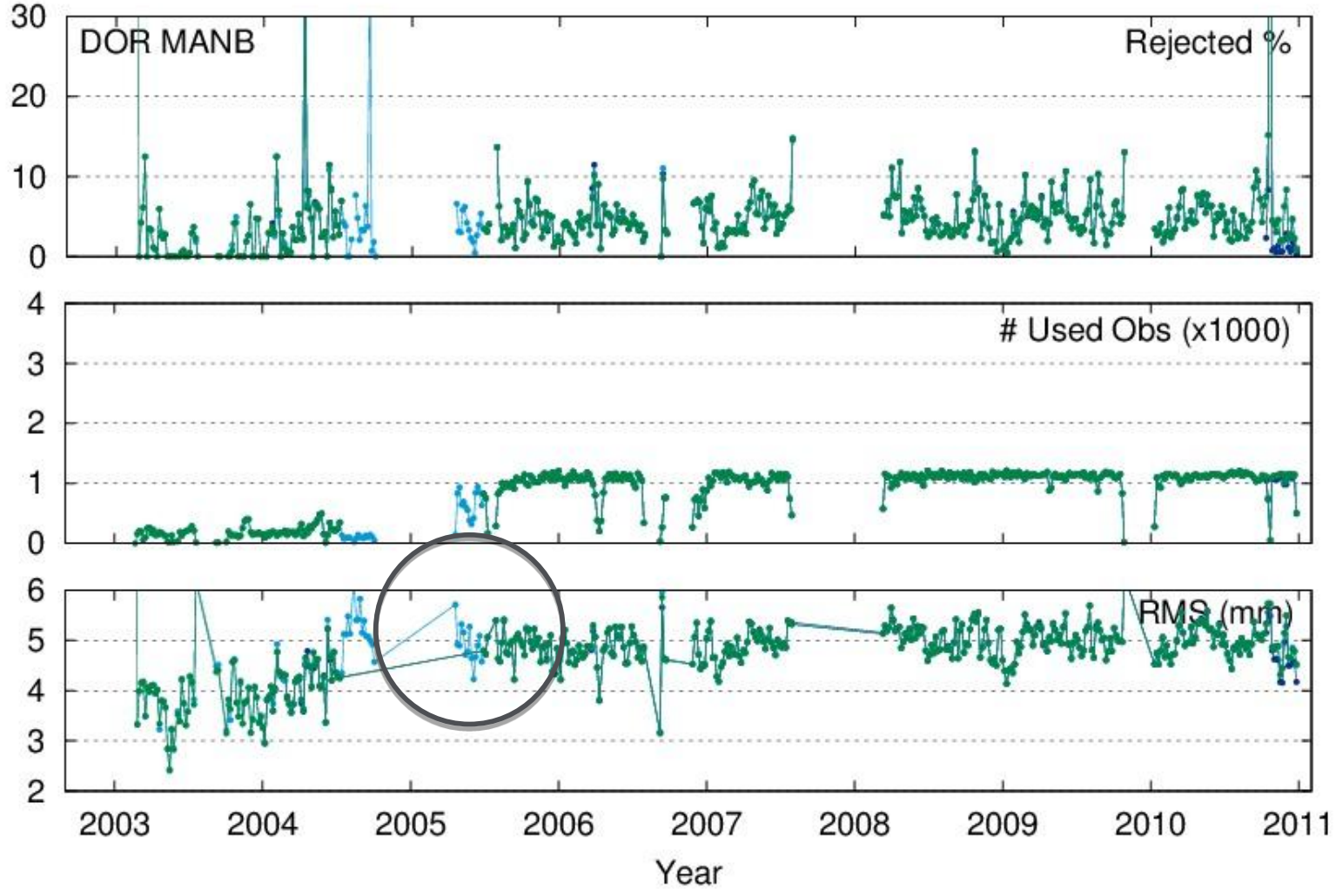
Data before 2006 looks good but is set to not use in DPOD2008. Light blue residuals are from ITRF2008 solution

DPOD2008 – Station Evaluation



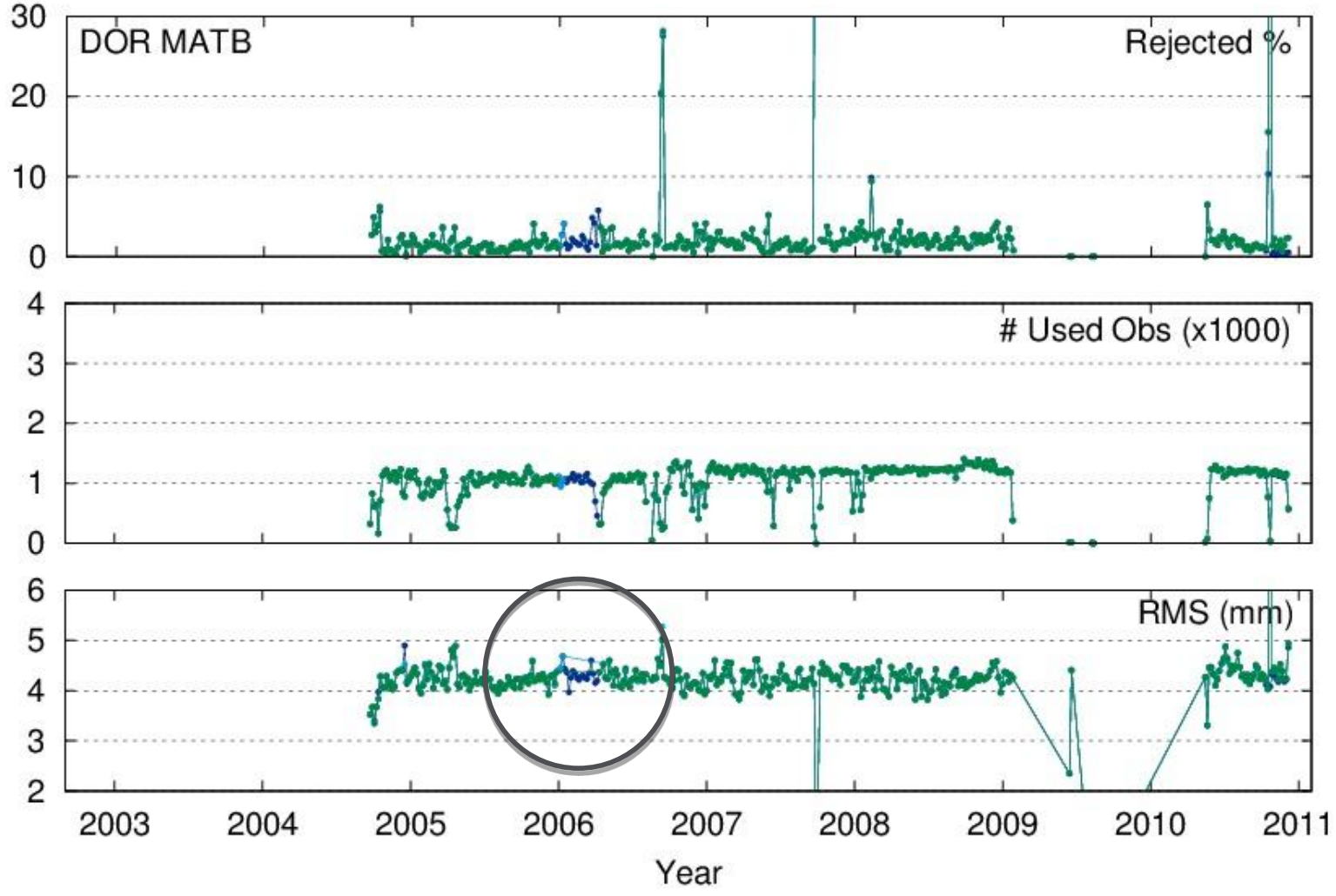
Strong increase of RMS before mid 2005 gap

DPOD2008 – Station Evaluation



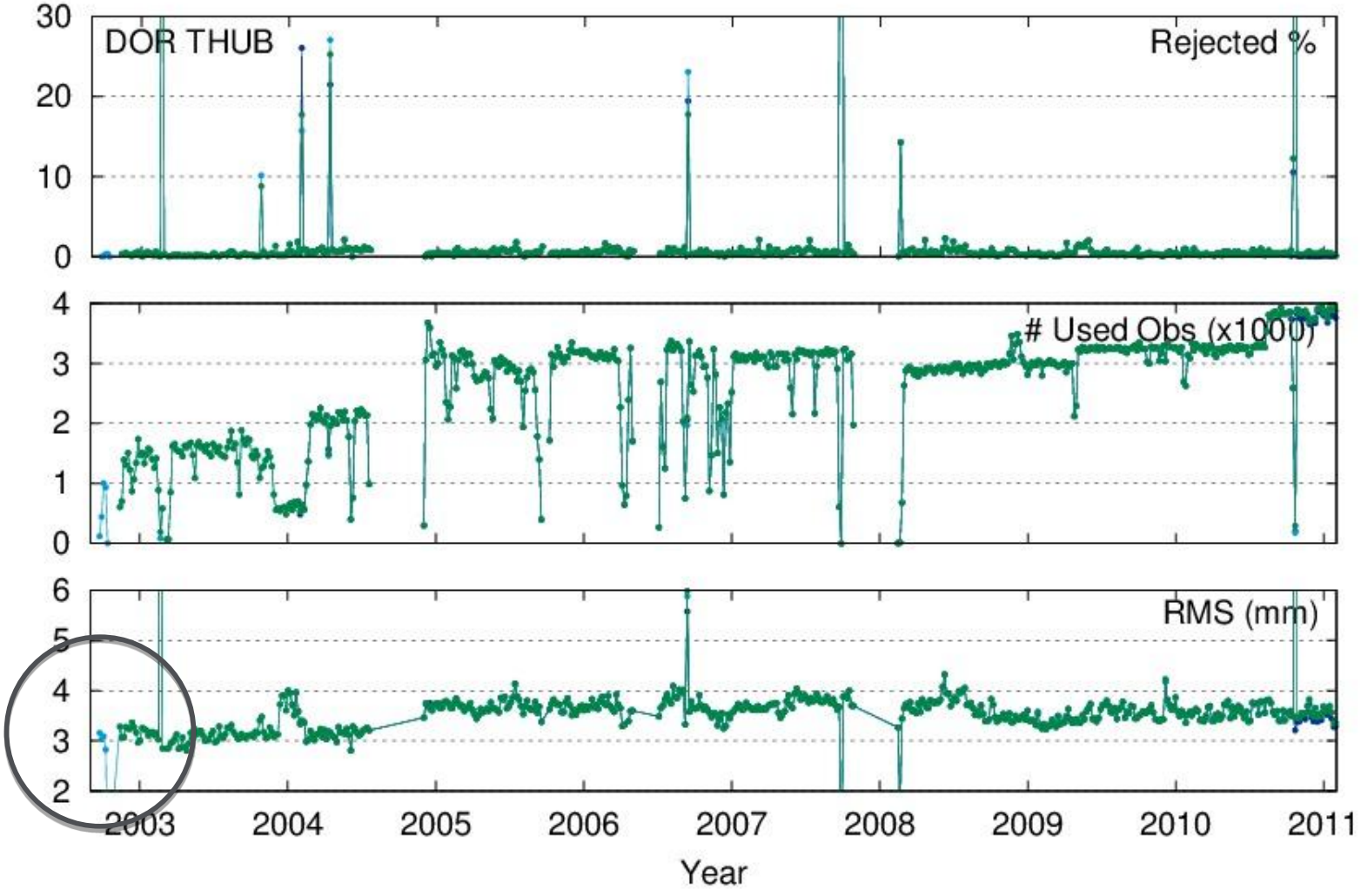
Data for 2005 looks good excluded in DPOD2008

DPOD2008 – Station Evaluation



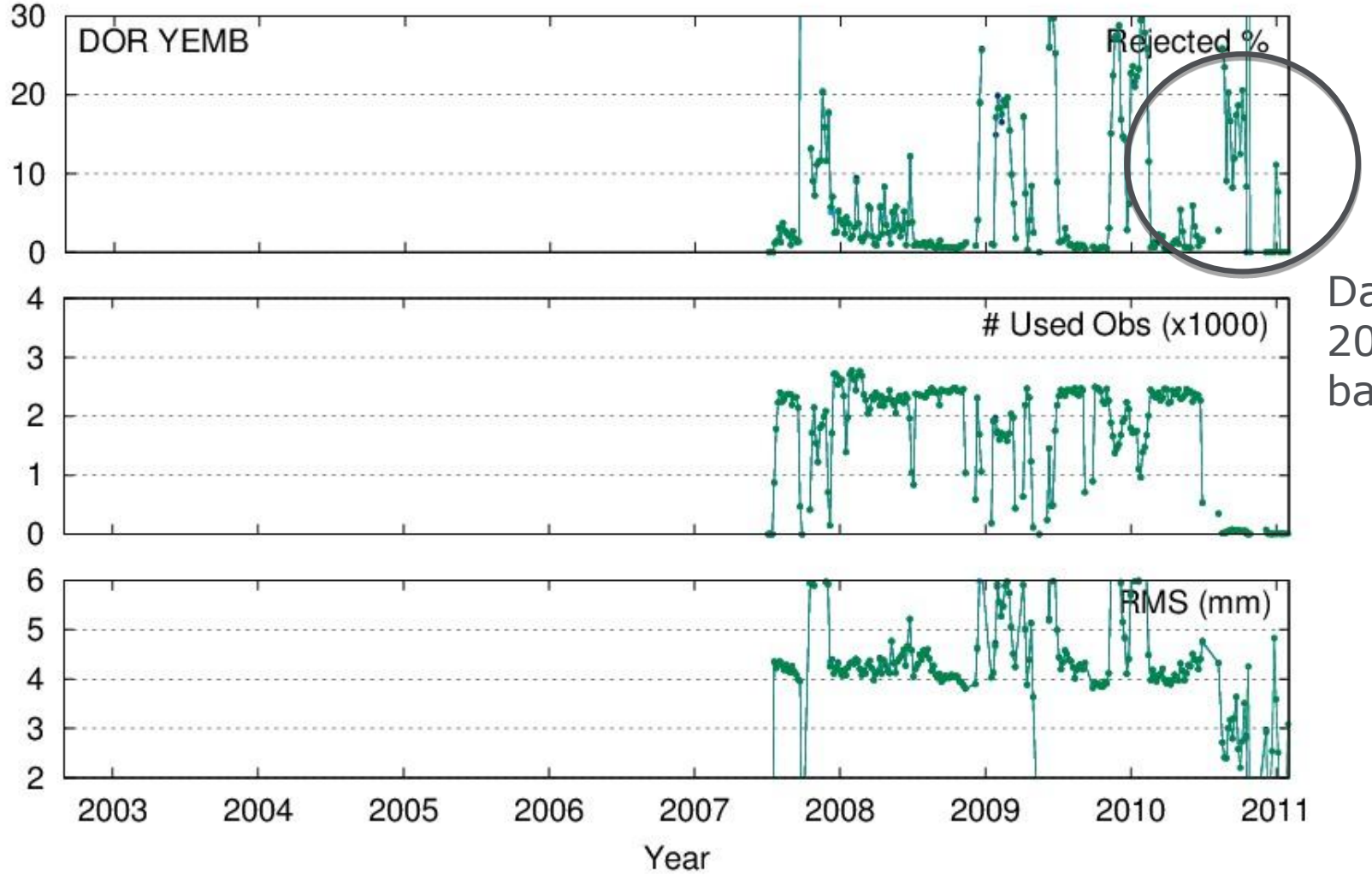
Data for 2006 looks good excluded in DPOD2008

DPOD2008 – Station Evaluation



Data for late 2003 looks good excluded in DPOD2008

DPOD2008 – Station Evaluation



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

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