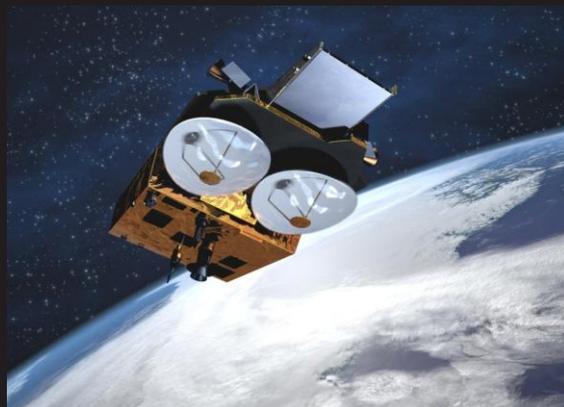




CryoSat-2 and Jason-2 POD Results

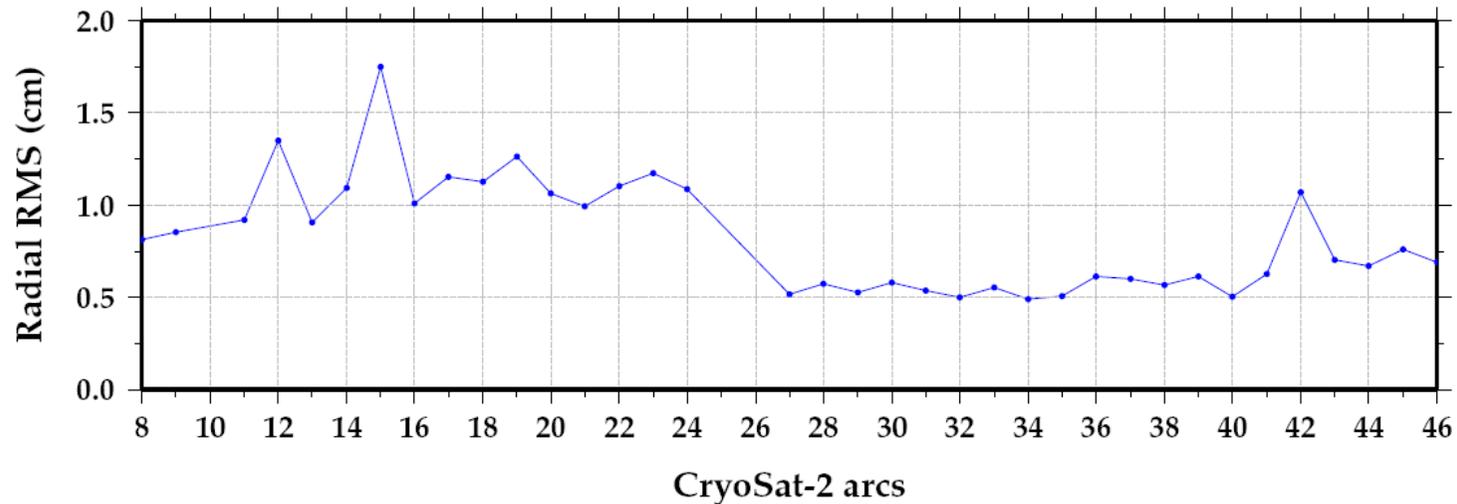
A. Couhert, L. Cerri
CNES, Toulouse, France



International DORIS Service
Analysis Working Group meeting, Paris, May 2011

CryoSat-2 CNES GDR & ESOC V1 orbits comparison (1/2)

■ RMS of radial orbit differences relative to the GDR solution



- ◆ From arc 25: increase of the DORIS measurements weight in the GDR solution (closer to ENVISAT's orbit determination strategy).
- ◆ **GDR radial differences w.r.t ESOC V1 orbits well below 1 cm (due to very similar models).**

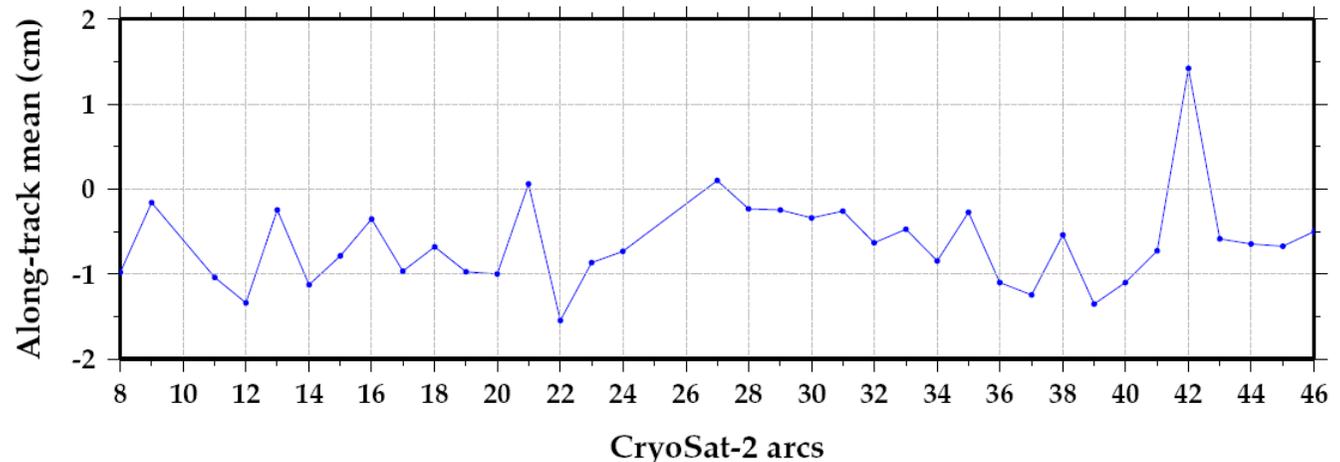
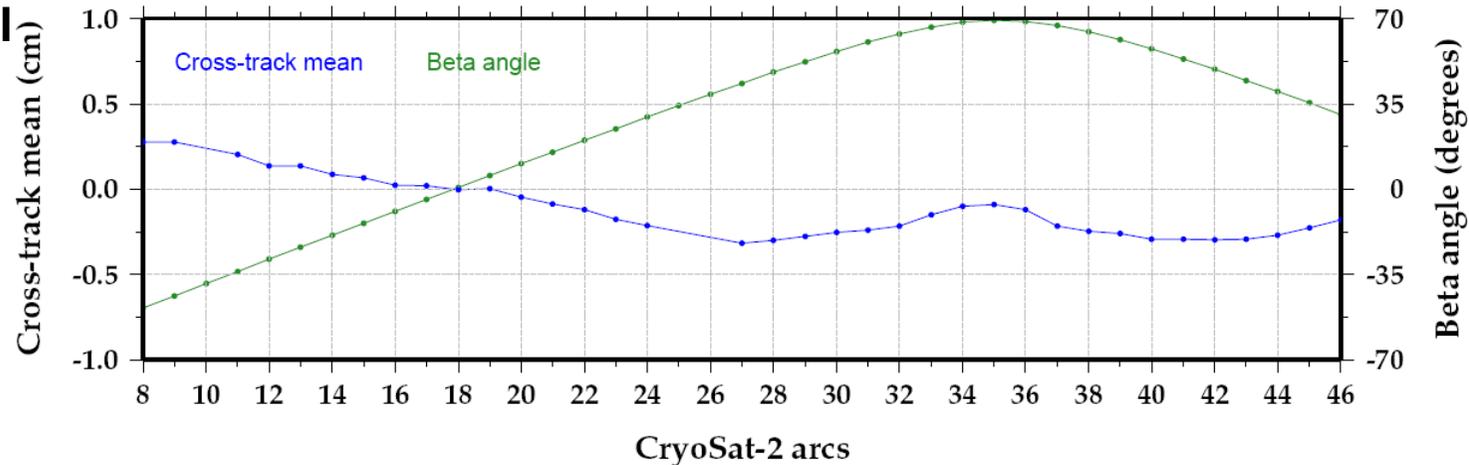
CryoSat-2 CNES GDR & ESOC V1 orbits comparison (2/2)

■ Mean of cross/along-track differences relative to the GDR solution

◆ 480-day signal

SRP modeling differences between GDR and ESOC V1 orbits ?

◆ Along-track ~1-cm bias between the two solutions.

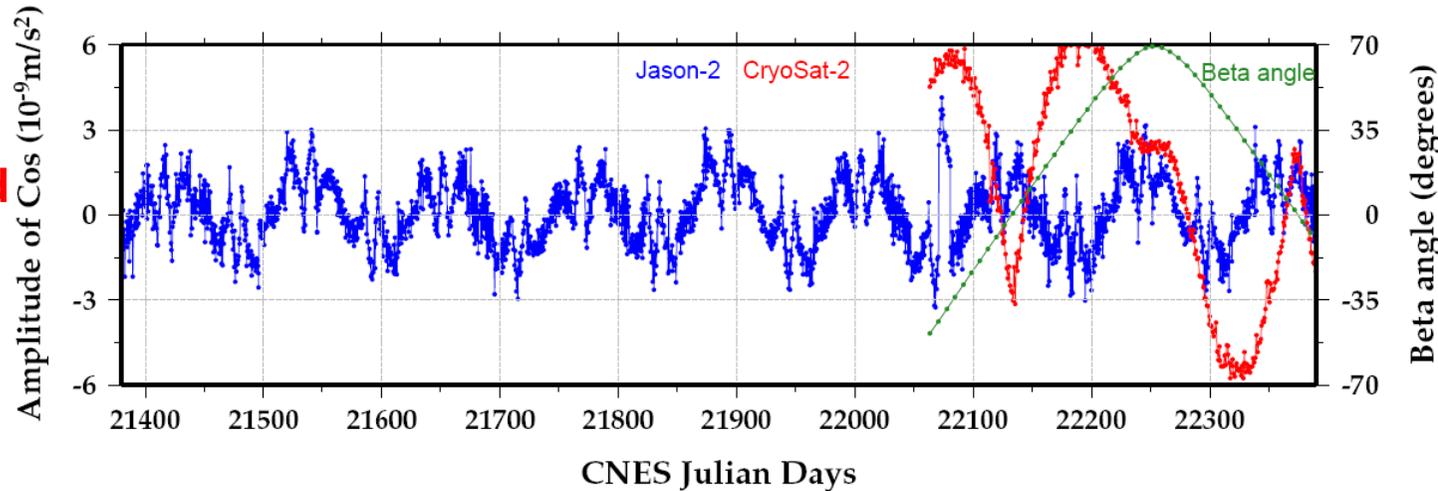


One-cycle-per-revolution empirical accelerations

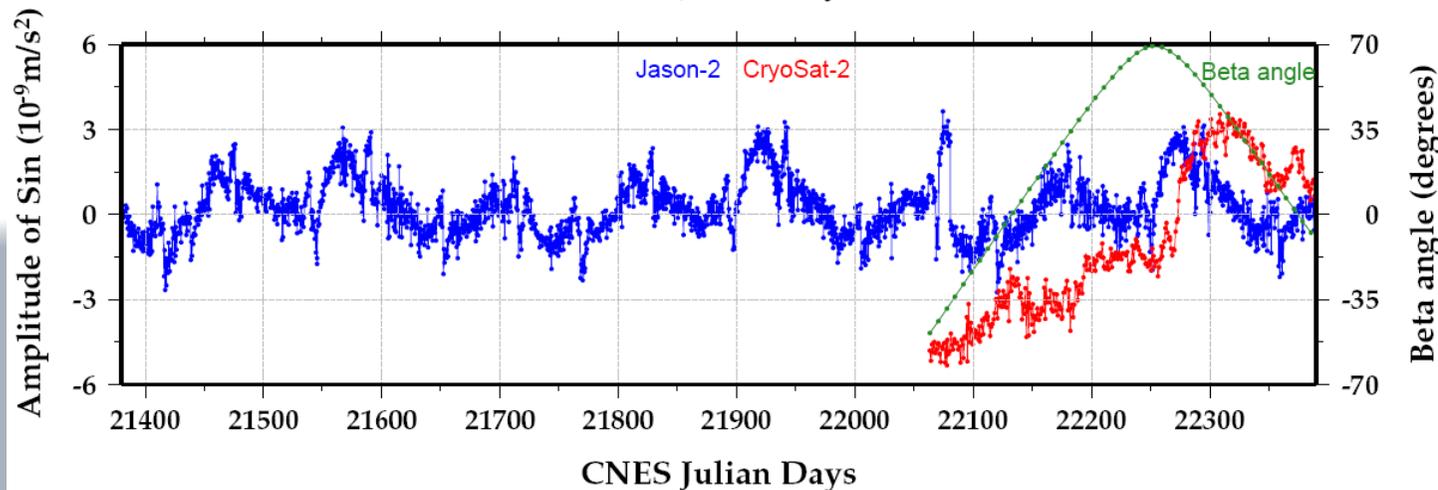
■ Along-track amplitudes

- ◆ Cosine term

More mismodeled dynamics on C2 (SRP forces model errors).



- ◆ Sine term

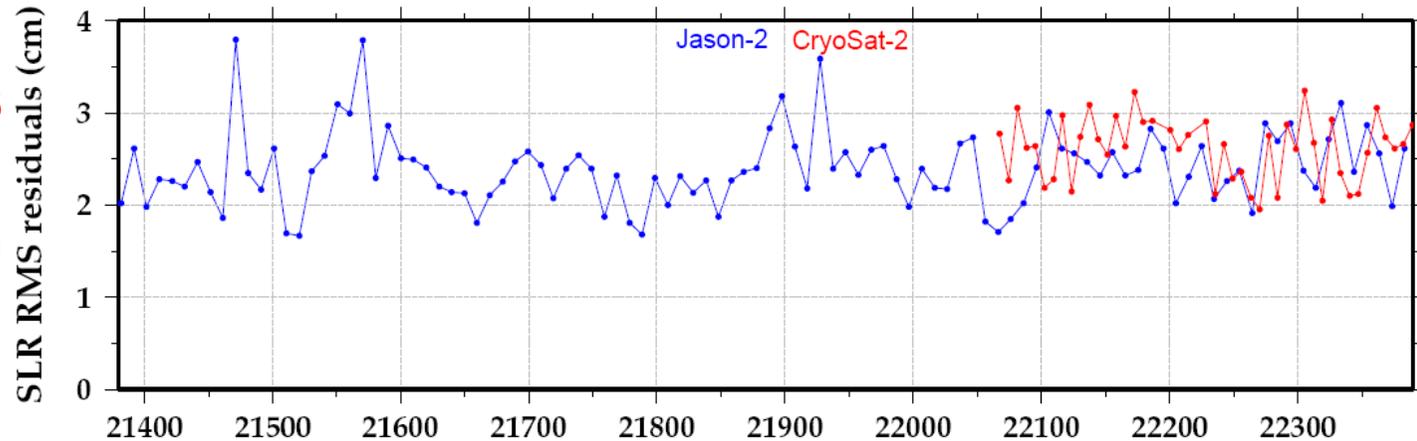


SLR validation of CryoSat-2 & Jason-2 DORIS-only orbits

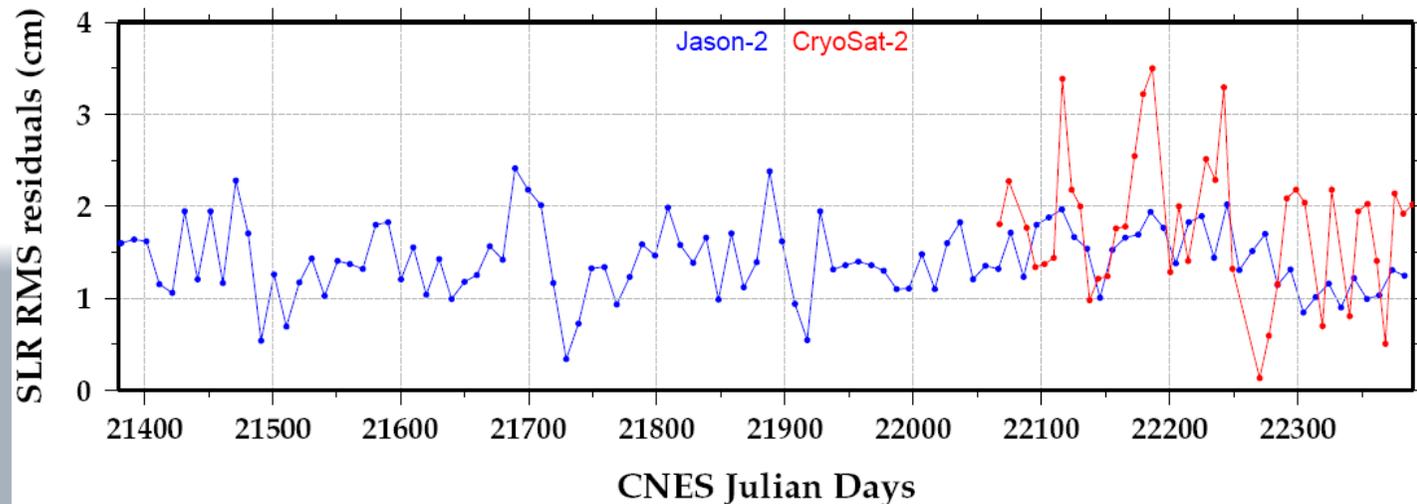
■ RMS of SLR residuals on reference stations (7080Fort 7090Yarr 7105Wash 7810Zimm 7839Graz)

- ◆ All elevations

Similar SLR RMS residuals stability between C2 and J2.



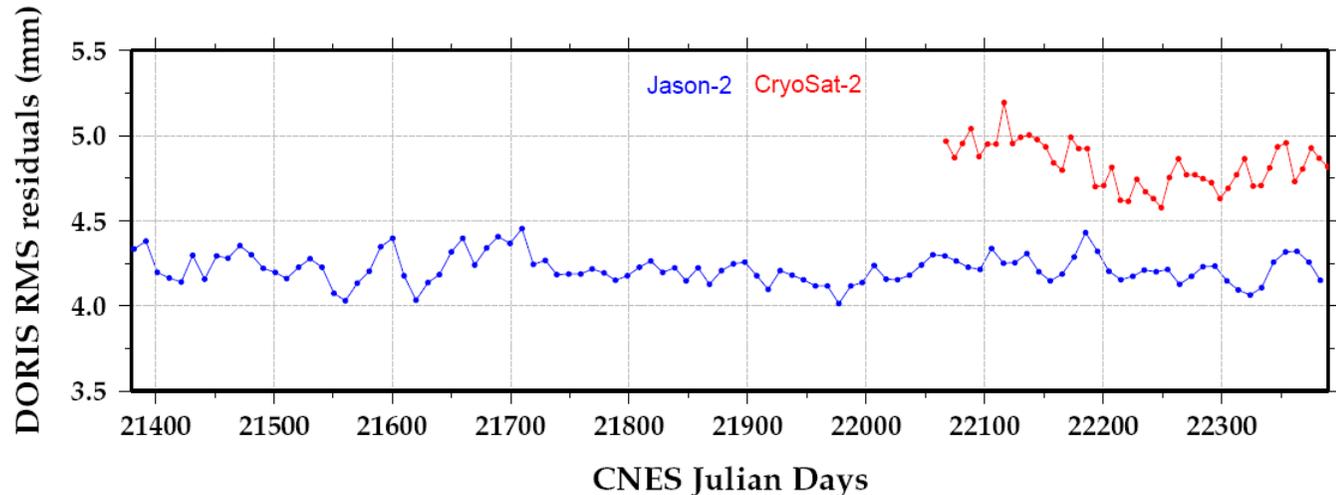
- ◆ Above 70°
- ~1-cm J2 and ~2-cm C2 radial orbit accuracy.**



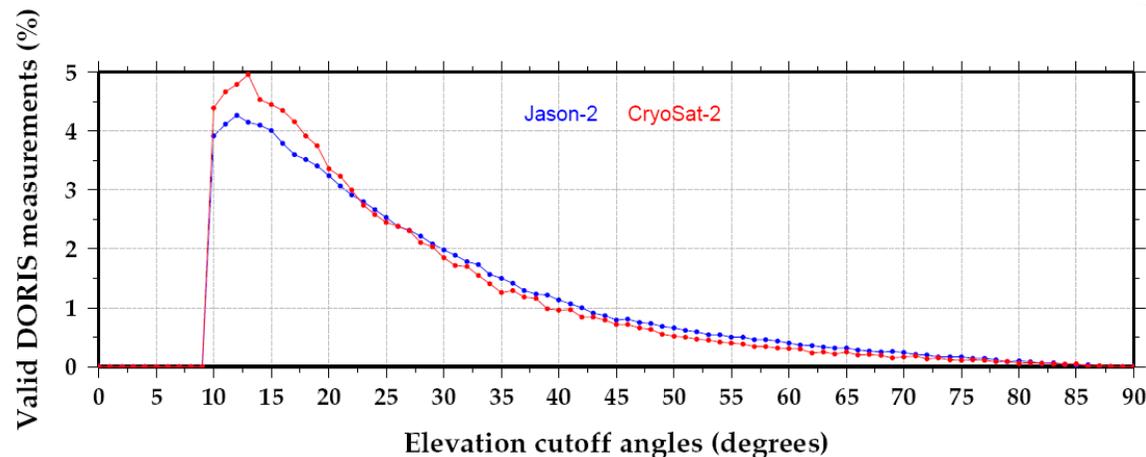
Post-fit residuals on the GDR orbits (1/2)

■ RMS of DORIS post-fit residuals (ADFB, ARFB, CIDB, KRVB, YEMB excluded from RMS computation)

- ◆ *10-seconds* phase increments DORIS residuals **somewhat ~1 mm higher on C2 than on J2.**

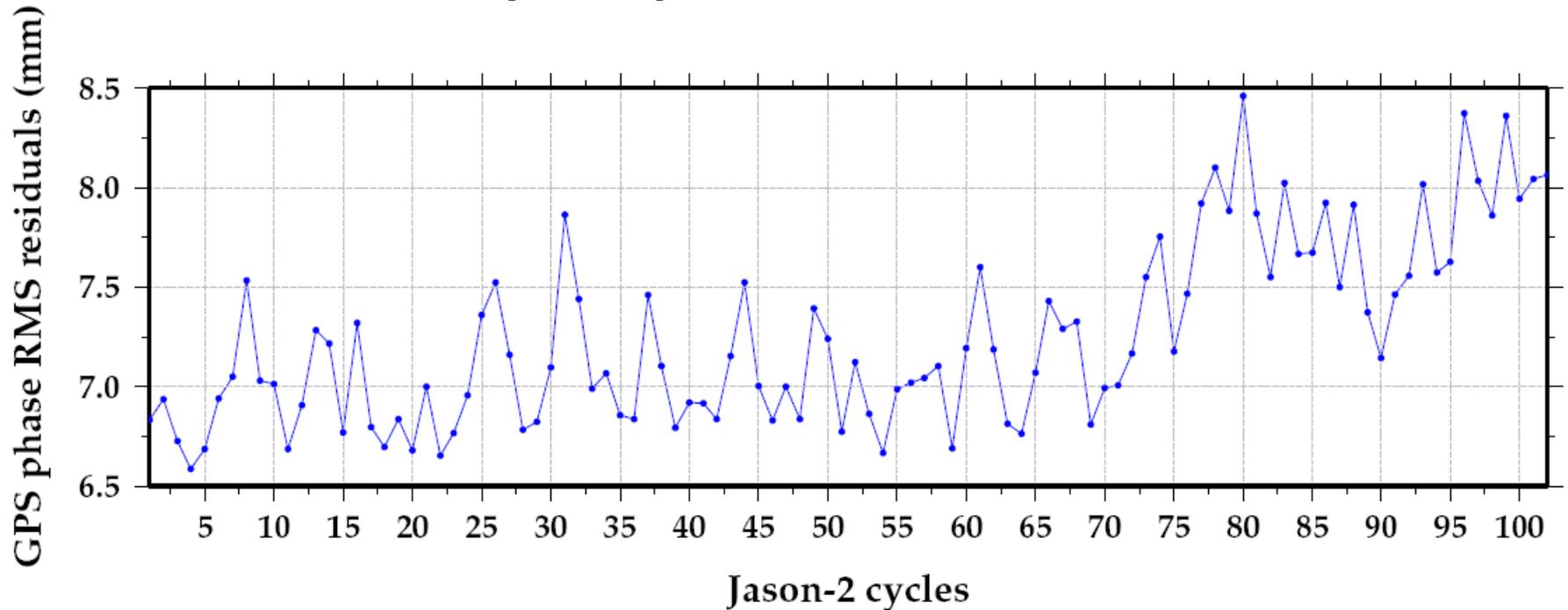


More tracking at low elevation angles for C2 (more sensitive to tropospheric model errors).



Post-fit residuals on the GDR orbits (2/2)

■ RMS of Jason-2 GPS phase post-fit residuals



◆ Slight increase after the receiver software change (cycle 53).



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Backup slides



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Post-fit residuals on Cryosat-2 & Jason-2 GDR orbits

■ RMS of SLR post-fit residuals on reference stations

