Introduction

Almost 7 years of Envisat and Jason-1 altimetric measurements are available on a common period in GDR. The cross calibration of these two datasets are routinely performed at the CLS Space Oceanography Division in the frame of the CNES Segment Sol Altimétrique et Orbitographie (SASALT) and ESA French Processing and Archiving Center (F-PAC) activities. This paper presents the main Envisat/Jason-1 cross calibration results.

Data

Since 2008, most Jason-1 products are available in GDR b version from the beginning of the mission and until May 2008. The Envisat products are produced in GDR b version since October 2005. In order to have the most homogeneous dataset possible, updates on the first part of the Envisat series were also implemented.

USO anomaly: In February 2006, the RA-2 Ultra Stable Oscillator (USO) clock frequency underwent, for an unknown reason, a strong change of behavior. The anomaly consists in a bias, superposed with an oscillating signal with an orbital period. Auxiliary files are distributed since mid 2006 allowing the users to correct the range from this anomaly. The anomaly periods are detailed beside.

Loss of the S-Band: On the 17 January 2008, a drop of the RA 2-band transmission power occurred. There is thus no more dual frequency altimeter both in Side A and Side B.

Envisat/Jason SSH differences at 10-day dual crossovers

10-day Envisat/Jason-1 dual crossovers have been computed. Mean differences between the two missions are computed in several periods of time and several configurations of SSH. Systematic differences are visible on the Envisat/Jason-1 SSH differences at crossovers.

Impact of the coming Envisat reprocessing on the MSL

- The cycle by cycle mean of Envisat-Jason-1 differences are plotted. The mean difference between Envisat and Jason-1 Ku-band Sigma0 is -2.9 dB. This mean difference has increased by 0.075 dB between cycles 48 and 129 which corresponds to 0.04 dB/year. • EN/J1 difference decreased by 4.10^-2 dB with Jason-1 GDRC

Long term monitoring of altimeter parameters

- The cycle by cycle mean of Envisat-Jason SSH differences are plotted. These differences are quite stable. Envisat SWH is 15 cm higher than Jason-1 SWH

References

• Envisat and Jason-1 Cyclic and yearly quality assessment and cross calibration reports


Hybrid products

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Good stability of SWH and Sigma0

- Using the radiometer correction instead of the model increases the inconsistency. This is expected when the same model is used on both satellite, the difference cancels a part of the model errors

- Using the GIM correction instead of the dual frequency ionosphere correction has an impact around the equator.

- Using the E5a004 model instead of the G0T00 model increases the inconsistency around South Africa and Australia for example.

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Similar performances for both satellites

- The reprocessing WLL impact the MSL trend. Some impacts were anticipated and lead to the current MSL presented here: • Envisat and Jason-1 MSL trend close (at the cm/year level) from 2004 onwards

- However, some impact are not well known and cumulated impacts are hard to quantify but:
  - the change of PTR processing might have a non negligible impact
  - the new orbit will also change trends as well as the asc/desc discrepancies

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