

# SSALTO/CALVAL first Jason-1 Performance assessment Jason-1 / TOPEX/Poseidon cross-calibration

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## OBJECTIVES

- Quality assessment of Jason-1 data
- Long-term monitoring of altimeter radiometer parameters and geophysical corrections
- Assessment of algorithm performances and improvements
- Cross-calibration of Jason-1, TOPEX/Poseidon, ENVISAT measurements

## TOOLS

- Missing measurements, data coverage
  - Repeat-track analysis, Statistical monitoring (biases and drifts determination)
  - Data copies
  - Spectral analysis, ocean signals evaluation
  - Crossover analysis, performances evaluation
  - SSB, time lag, time error
- Most of these tools are routinely processed in the SSALTO/CMA Verification steps (see the CMA/Verification poster)

## ROUTINE PROCESSING

- SSALTO/CALVAL activities and studies are routinely performed to assess the Jason-1 data quality using IGDR data during the verification phase and GDR error
- Quality assessment reports are produced on a one cycle basis, and associated to the IGDR/GDR dissemination
- Since the Jason-1 launch, SSALTO/CALVAL processing has been extensively used to carefully check the data and about 10 cycle reports have been produced on consolidated data



## IGDR Update

In order to compare the Jason-1 and TOPEX performances and to perform the cross-calibration between the two types of data, both IGDRs have been updated as follows:

### TOPEX IGDR updates:

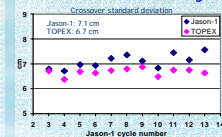
- CNES MOE orbit
- Jason-1 geophysical corrections (Got99 tide, Inverse Barometer, polar tide)
- BM4 SSB
- 15 mm added to TOPEX range (idem GDRM)
- Wallops Range calibration

### Jason-1 IGDR updates:

- 4-parameter SSB estimated over 10 cycles

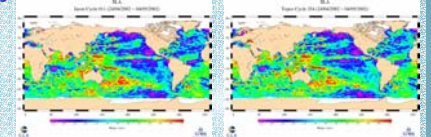
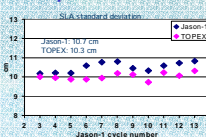
## First Jason-1 Performance Assessment

### Crossover analysis



Jason-1 crossover variance at crossovers (AT<10 days) seems comparable to that of TOPEX (same period). However, higher values of Jason-1 may be explained by geophysical corrections not already tuned (Ionosphere correction, Sea State Bias, ...). Crossover and SLA results are obtained using 4-parameter SSB for both Jason-1 and TOPEX.

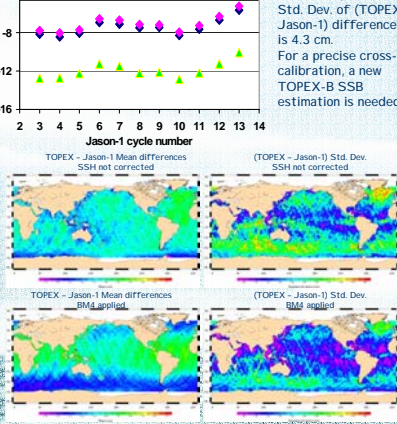
### Repeat-track analysis



## SSH cross-calibration

- TOPEX - Jason-1 SSH differences
- Without any correction, Mean = 7.47 cm Std = 0.82 cm
- only non parametric SSB, Mean = 7.09 cm Std = 0.83 cm
- BM4 SSB applied, Mean = 11.95 cm Std = 0.83 cm

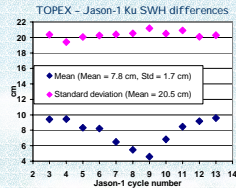
The impact of SSB is clearly evidenced. With the BM4 correction, the mean Std. Dev. of (TOPEX - Jason-1) differences is 4.3 cm. For a precise cross-calibration, a new TOPEX-B SSB estimation is needed.



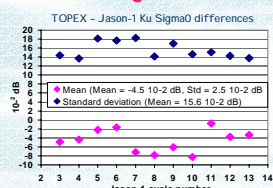
## Jason-1 / TOPEX Cross-calibration



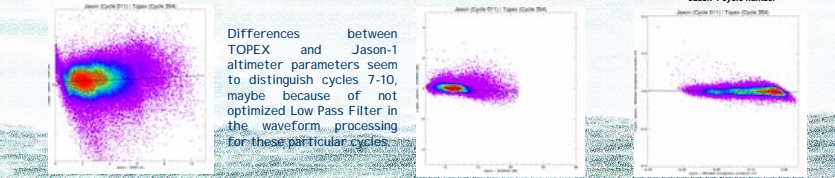
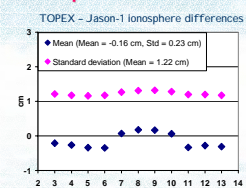
### SWH



### Sigma0



### Ionosphere correction



## JMR / TMR comparisons

Jumps in the (TMR-JMR) differences have been identified as the consequence of yaw maneuvers. This impacts the cross-calibration. Differences are particularly noted for low Wet PD values. JMR calibration needs further refinement. The TMR correction applied to Jason-1 leads to slightly better performances at crossovers than the JMR.

