

Users Newsletter



Yves Ménard, Topex/Poseidon, Jason-1 and OSTM/Jason-2 project scientist at CNES passed away on October 20th after a long and courageous fight against illness. His friends and co-workers remember him with respect and admiration. He will be missed by all. We dedicate this newsletter to his memory. The success of OSTM/Jason-2 is, in part, his.

Quality of the OSTM/Jason-2 altimetry products

This third issue of the Aviso newsletter focuses on the quality of the OSTM/Jason-2 altimetry products. Six months after its launch, the Cal/Val phase has been performed for OGDR and during last OSTST meeting, the distribution of those products to end users has been approved. OGDRs products are processed routinely on EUMETSAT and NOAA sides and then distributed to users.

During the same OSTST meeting, and even if the Cal/Val phase is still ongoing for IGDR products, it has been decided

to distribute those products to the users in front of their very high quality and also taking account the Jason-1 satellite moved to a new ground track on January 26, 2009. To date, about 18 cycles underwent regular Cal/Val analysis, which involved comparing the auxiliary data used in processing (see table). The main differences in the products' precision are due to orbit solution improvements depending on latency. Note that GDR products have been fully validated, unlike O/IGDR products.

Monitoring statistics at Sea Surface Height crossovers using preliminary



(MOE, Medium Orbit Ephemeris) and precise (POE Precise Orbit Ephemeris) orbits from cycle 1 to cycle 17 shows that the OSTM/Jason-2 products are comparable in quality to Jason-1 products regarding performance at Sea Surface Height crossovers, as shown in the figure 1 OSTM/Jason-2 is even more stable than its predecessor.

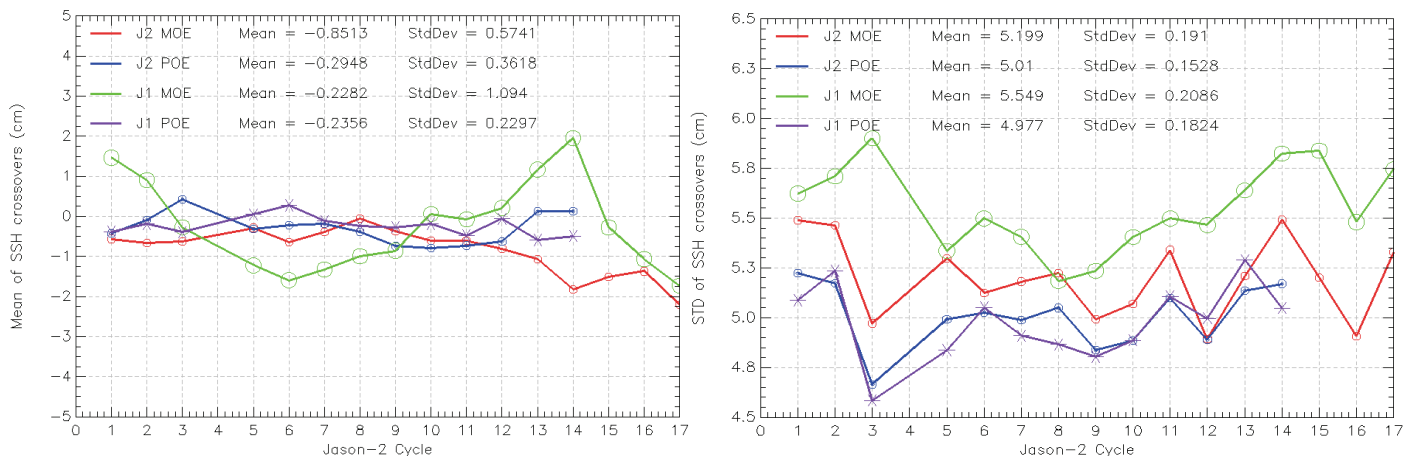


Figure 1: Monitoring of statistics at SSH crossovers: Mean (left) and standard deviation (right)

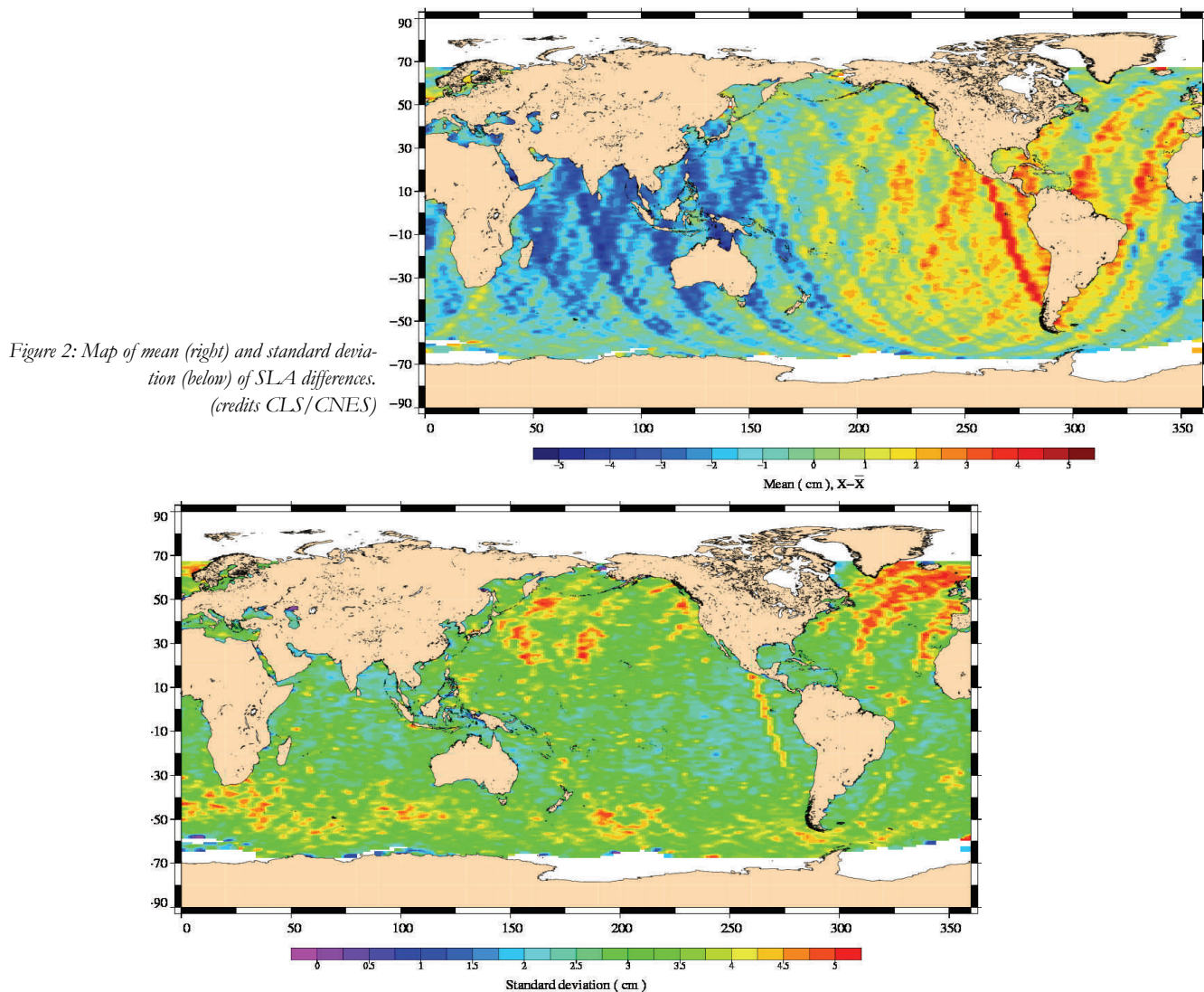


Figure 2: Map of mean (right) and standard deviation (below) of SLA differences. (credits CLS/CNES)

Differences in uncorrected Sea Level Anomalies (Sea Level Anomaly = Orbit – Ku-Band range – Mean Sea surface) between Jason-1 and OSTM/Jason-2 over the entire period (cycle 1 to cycle 17) show geographically correlated biases (figure 2)

These geographically correlated biases are clearly related to orbit errors. We can observe these in the following figures

comparing SLAs between Jason-1 and OSTM/Jason-2 with different orbit solutions (MOE, POE (CNES) and POE (GSFC)). The OSTM/Jason-2 MOE is better than the one of Jason-1 while the POE solutions are comparable (figure 3)

Cycle by cycle monitoring of global SLA statistics (figure 4) shows that the global bias between Jason-1 and OSTM/Jason-2 is quite stable, around -8.27 cm

(+/- 1.5 mm) when using the model wet tropospheric correction. This bias is slightly reduced using radiometer wet tropospheric correction.

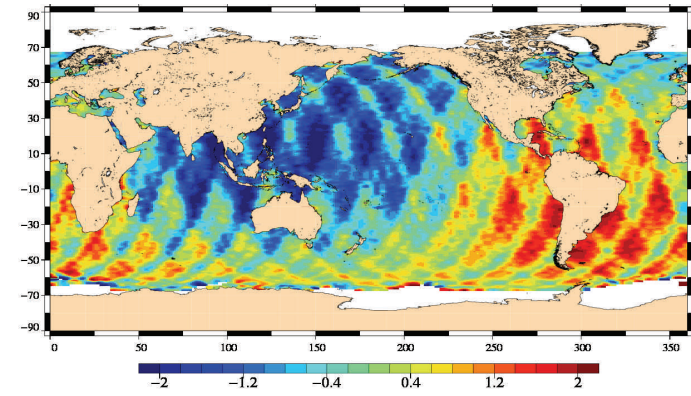
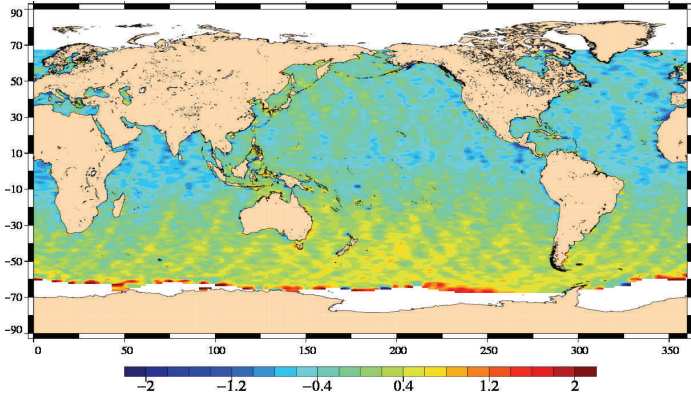
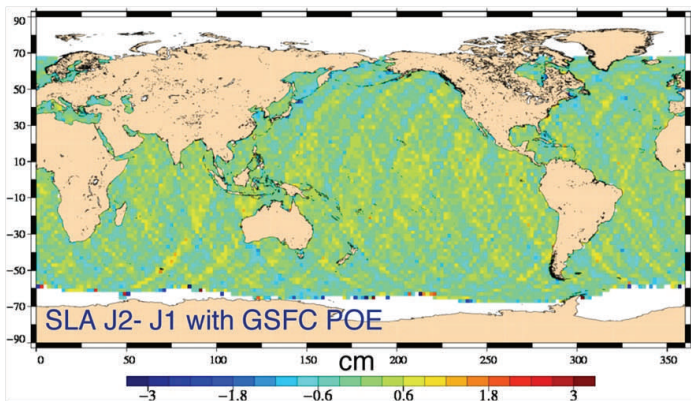


Figure 3:
Map of mean Jason-1 - OSTM/Jason-2 SLA differences (CNES MOE orbits, IGDR)



Map of mean Jason-1 - OSTM/Jason-2 SLA differences (CNES POE orbits)



Map of mean Jason-2 - OSTM/Jason-1 SLA differences (GSFC POE orbits). Beware that the sign is reversed with respect to the two previous figures

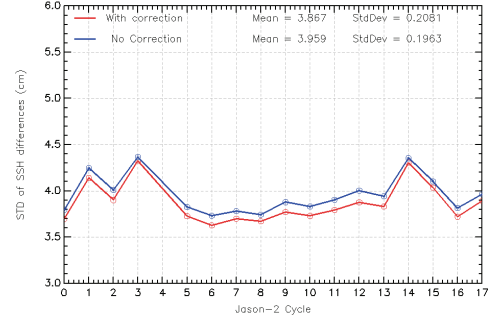
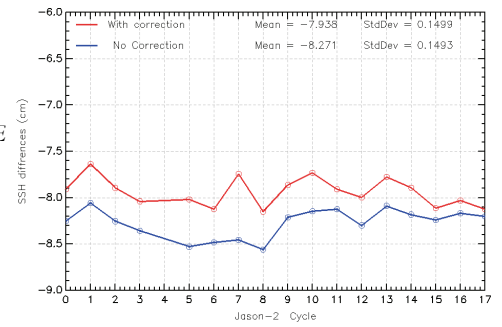


Figure 4: Monitoring of mean (top) and standard deviation (bottom) of SLA from IGDR OSTM/Jason-2 and Jason-1 using radiometer wet tropospheric correction.

Access to OSTM/Jason-2 data

The Real time OGDR products have been available to all users since December 15th 2008 on the Eumetsat & NOAA sites.

IGDR products have been available to all users since mid January via the AVISO web site.

GDR products will be available to PIs by February, and to all users at the end of the Cal/Val phase (second half of 2009).

More information and access to data:

AVISO:

<http://www.aviso.oceanobs.com>

EUMETSAT:

<http://www.eumetsat.int>

NOAA:

<http://www.class.ngdc.noaa.gov/> (data)

<http://www.osd.noaa.gov/ostm/> (information)

Differences between OSTM/Jason-2 OGDRs, IGDRs and GDRs. From OSTM/Jason-2 products handbook.

Auxiliary Data	Affected Parameter	OGDR	IGDR	GDR
Orbit	Satellite altitude, Doppler correction, ...	DORIS Navigator	Preliminary (DORIS +Laser MOE)	Precise (DORIS+Laser +GPS POE)
Meteorological Fields	Dry/wet tropospheric corrections, U/V wind vector, Surface pressure, Inverted barometer correction, ...	Predicted	Analyzed	
Pole Location	Pole tide height	Predicted		Analyzed
Mog2D	HF ocean dealiasing correction	Not available	Preliminary	Precise
GIM	Ionospheric correction	Not available	Available	
Radiometer antenna temperature coefficient	Wet tropospheric correction, Sigma0 rain attenuation, ...	Preliminary		Precise (accounting for radiometer calibration)

Jason-1 orbit change

The Jason-1 satellite will be moved to a new ground track on January 26, 2009 at the end of repeat cycle 259, after more than 7 years of service on the nominal ground track. The OSTM/Jason-2 satellite will continue the long-term climate data record on the primary Topex/Jason-1/OSTM/Jason-2 ground track. Several manoeuvres will be performed, beginning on January 26, 2009, with the transfer to the interleaved orbit completed by February 9, 2009.

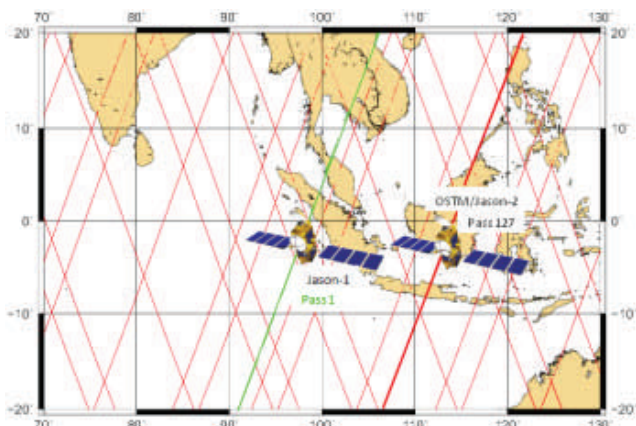
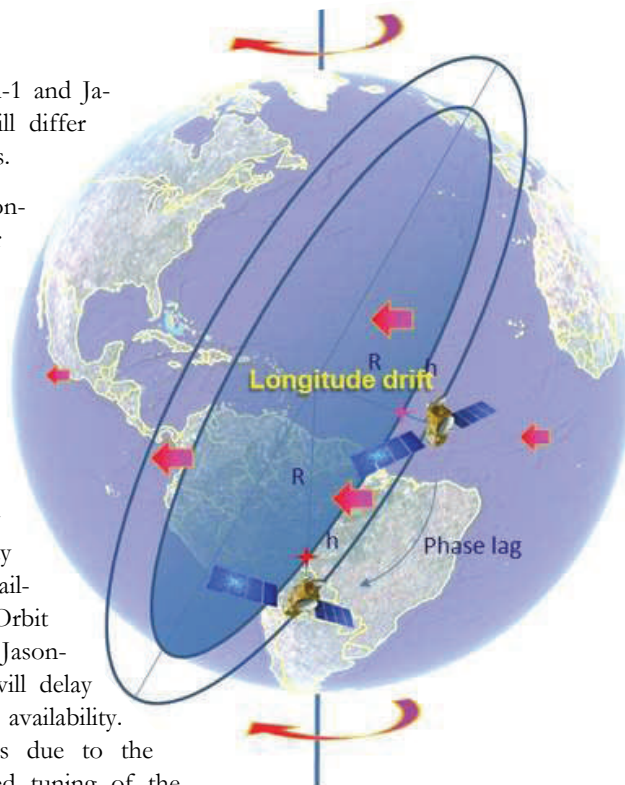
The Jason-1 satellite will be moved to the same interleaved orbit as that used by Topex from 2002-2005 but with a time lag of approximately 5 days with regard to Jason-2. In other words, the

start time of the Jason-1 and Jason-2 repeat cycles will differ by approximately 5 days.

This new tandem configuration is better suited to real-time applications.

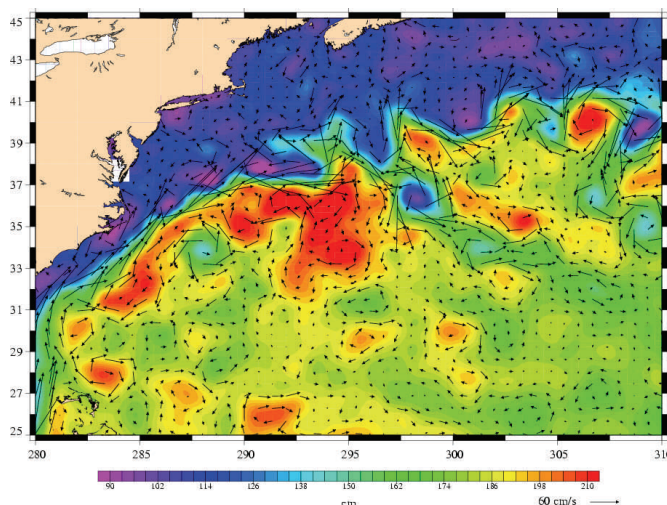
The first Jason-1 repeat cycle on the new interleaved ground track will be numbered repeat cycle 262. After moving to the new ground track there may be some delay in the availability of the Precise Orbit Ephemeris (POE) for Jason-1, which as a result will delay

GDR availability. This is due to the required tuning of the POE orbit determination strategy and models (e.g. Doris USO correction model).



Simulation of Jason-1 - Jason-2 interleaved tandem

First SSALTO/DUACS merged Absolute Dynamic Topography map produced using Jason-2 instead of Jason-1 as reference mission (credits CLS/CNES)



Events

- **December 15, 2008:** Distribution of first OSTM/Jason-2 OGDR data to users
- **January 20, 2009:** Distribution of first OSTM/Jason-2 IGDR data to users
- **January 26, 2009:** First manoeuvres to change Jason-1's orbit
- **Early February, 2009:** Distribution of first OSTM/Jason-2 GDR data to PIs
- **February 9, 2009:** Jason-1 on the interleaved orbit
- **June 2009:** End of OSTM/Jason-2 Cal/Val phase for GDRs
- **June 22-24, 2009:** OST/ST meeting (Seattle, USA)
- **Second half of 2009:** Distribution of first OSTM/Jason-2 GDR data to users

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