TOWARDS AN OPERATIONAL USE OF HY-2A IN SSALTO/DUACS: EVALUATION OF THE ALTIMETER PERFORMANCES USING NSOAS S-IGDR DATA

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OSTST 2012 CalVal status

HY-2A official products do not have the accuracy of Jason like mission, but…

- **The altimeter system show promising performances**
- **HY-2A can complement the sampling of current missions**
- **It can provide valuable information on the ocean mesoscale variability particularly in regions of strong ocean variability**

With adapted evolutions on the processing of the altimeter data, **HY-2A could provide very promising results concerning the observation of the sea level**

SSH differences	Number of crossover points		Standard deviation	
	HY-2A	*Jason-2*	*HY-2A*	*Jason-2*
Global	12914	31481	11.2 cm	8.9 cm
Lat<50°, Bathy<-1000m, Ocean Var.<20cm	6136	13817	10.0 cm	6.5 cm

SLA standard deviation	HY-2A	Jason-2
Global	13.6 cm	11.8 cm
Lat<50°, Bathy<-1000m, Ocean Var.<20cm	11.9 cm	10.3 cm

HY-2A RS-IGDR
a processing chain implemented on CNES side

Thanks to CNES/NSOAS agreement on Hy-2A, both agencies have decided to collaborate closely on the altimetry product and to improve the quality. A new interface has been set-up and a processing prototype developed based on the retracking used on Jason-2 mission (MLE4):

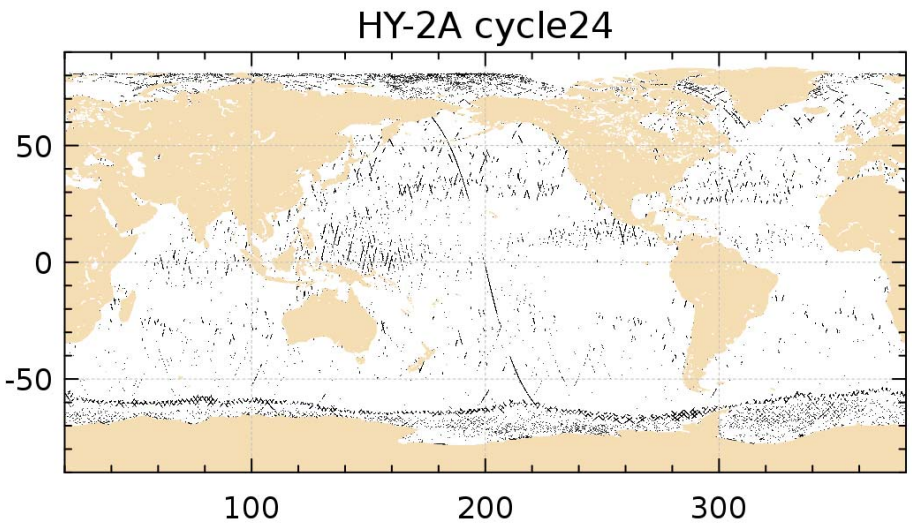
- A dedicated interface (S-IGDR products), including all instrumental parameters required for retracking has been implemented (PTR and LPF are still to be provided).
- RS-IGDR prototype is data driven prototype developed by CNES.
- RS-IGDR prototype has been validated on one test cycle (cycle 24)

In routine (near future) :

- NSOAS delivers S-IGDRs products within 2 days
- CNES process those S-IGDRs products and generate RS-IGDRs products in netcdf format, send back those products to NSOAS within one day (no products dissemination to users on CNES side).
- CNES perform an indepth analysis of RS-IGDRs products and ingest the corresponding products inside DUACS system

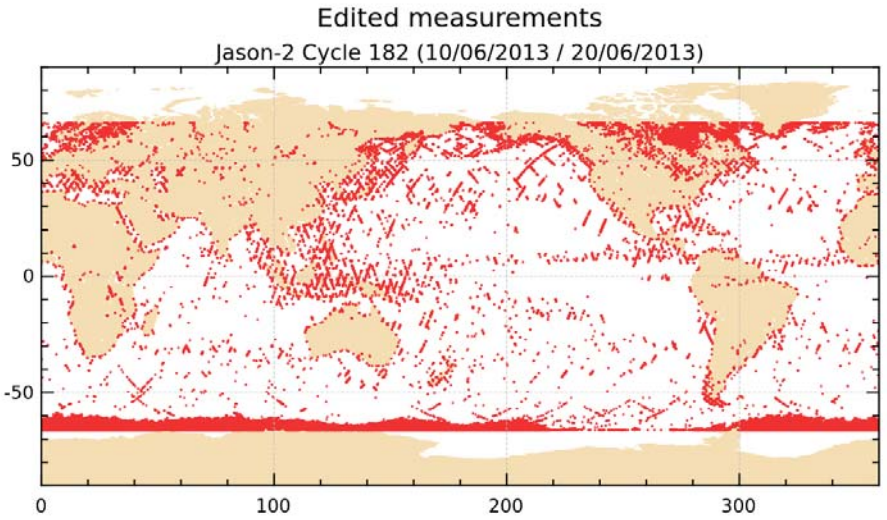
HY-2A RS-IGDR
Assessment over cycle 24 : Data editing

4% of the data are discarded which is close to the metric obtained on other missions.



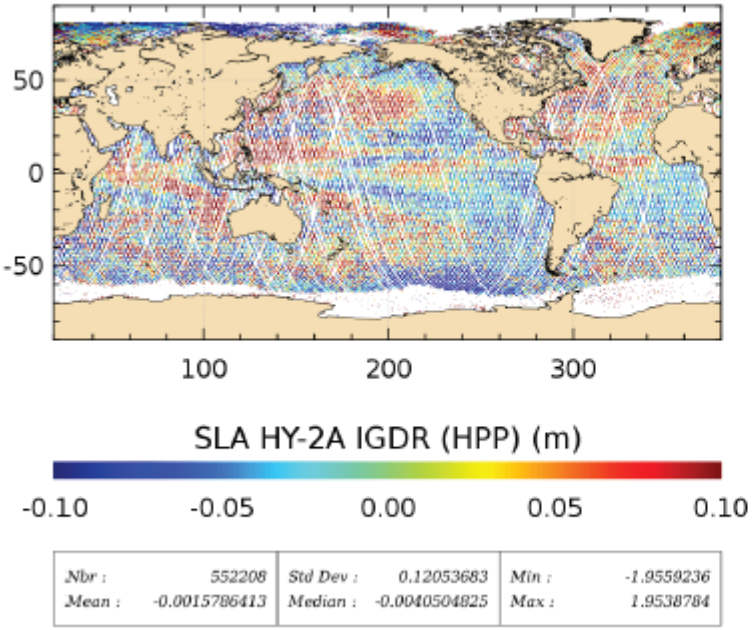
Edited by thresholds

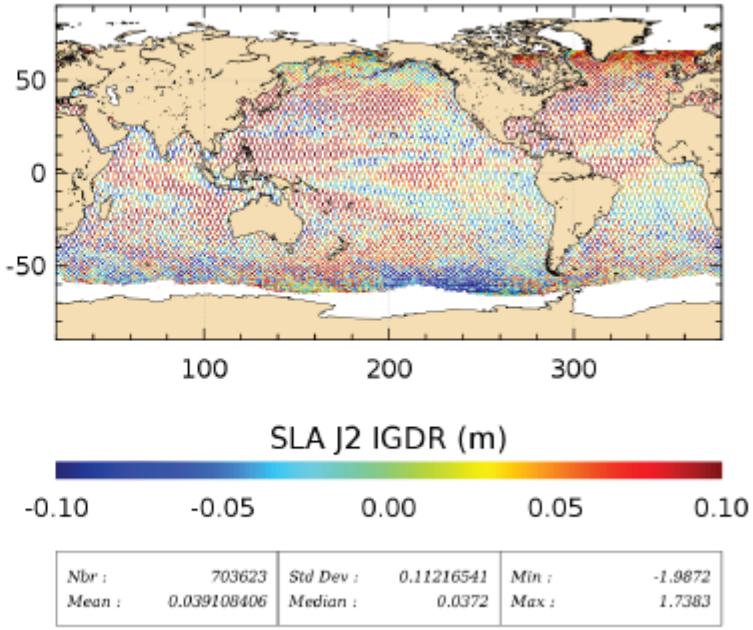
Nbr :	*27214*	*Std Dev :*	*0*	*Min :*	*1*
Mean :	*1*	*Median :*	*1*	*Max :*	*1*



HY-2A RS-IGDR
Assessment over cycle 24 : Sea Surface Height

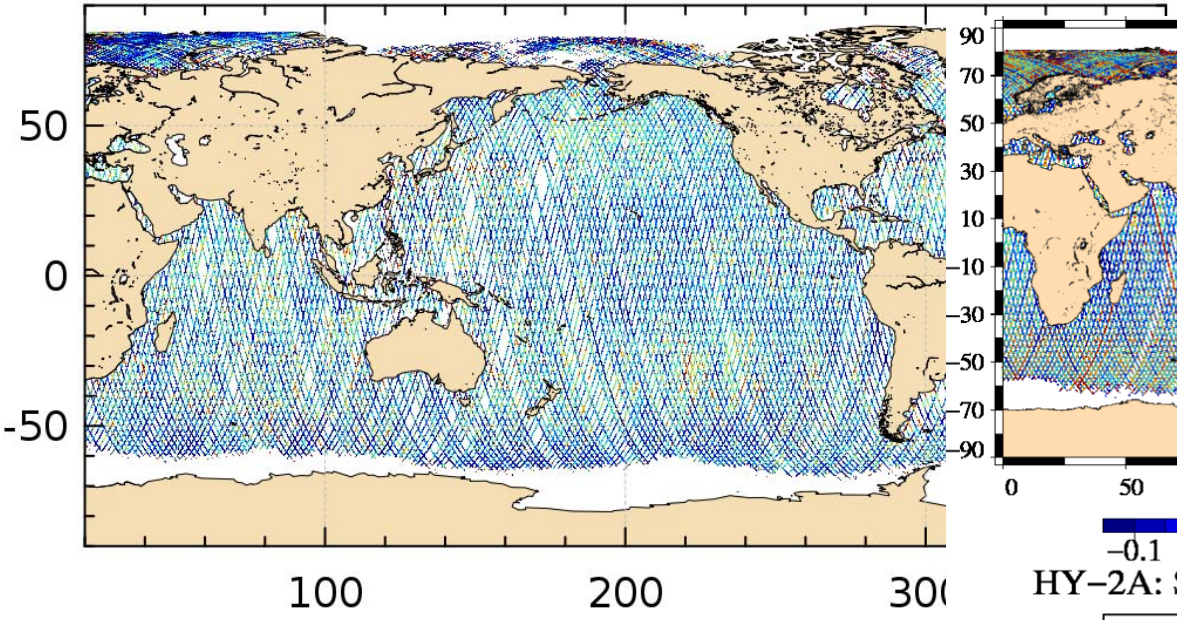
Below maps display the HY-2A CNES RS-IGDR sea surface height anomalies compared to Jason-2. Both mission provides very similar signals.

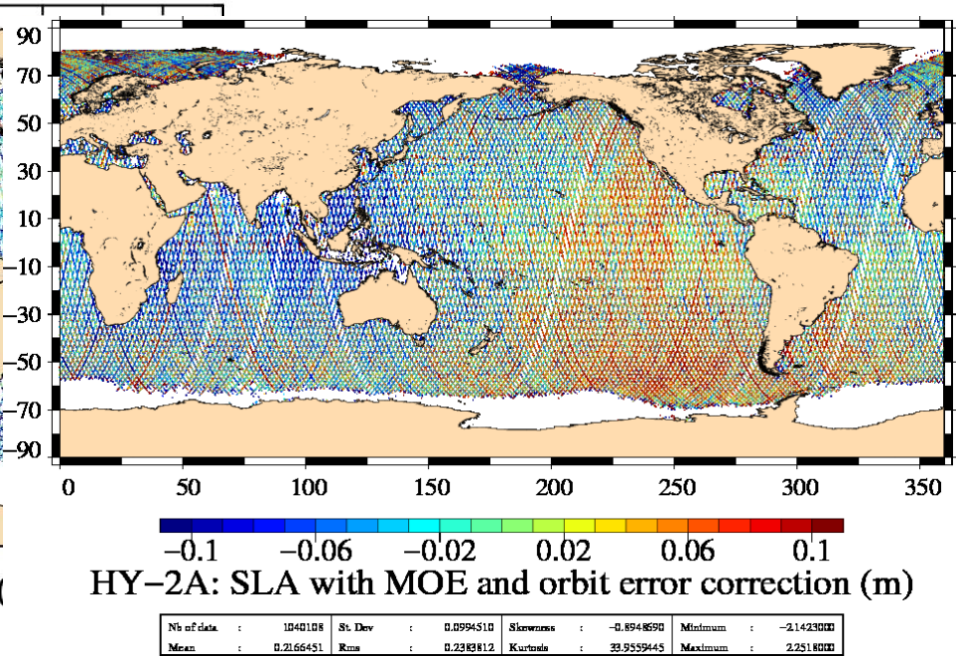


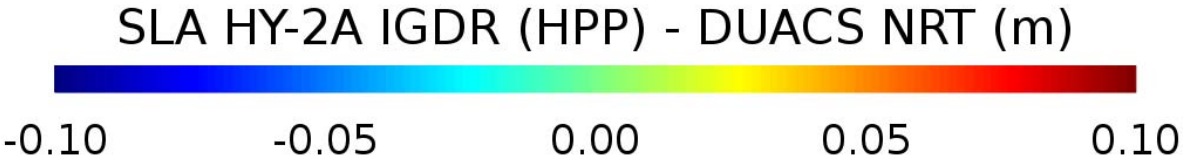


HY-2A RS-IGDR
Assessment over cycle 24 : Sea Surface Height

A comparison to DUACS multi mission maps does not display large geographical patterns which is a clear indication of the high level data quality of RS-IGDR HY-2A data. Which is again largely different from IGDRs products







Nbr :	*547284*	*Std Dev :*	*0.064765789*	*Min :*	*-2.0250236*
Mean :	*-0.039991019*	*Median :*	*-0.039134119*	*Max :*	*1.8135587*

HY-2A RS-IGDR
Assessment over cycle 24 : Sea Surface Height

CNES RS-IGDR SLA stdev is of the order of Jason-2. It is much lower than the one obtained with IGDR products.

The same is observed on the Xover points.

CNES RS-IGDR results

Ecart-type de SLA	HY-2A	Jason-2
Global	12.1 cm	11,2 cm
Selection (Lat/Bat/VarOce)	9.7 cm	9,6 cm

Native IGDR results

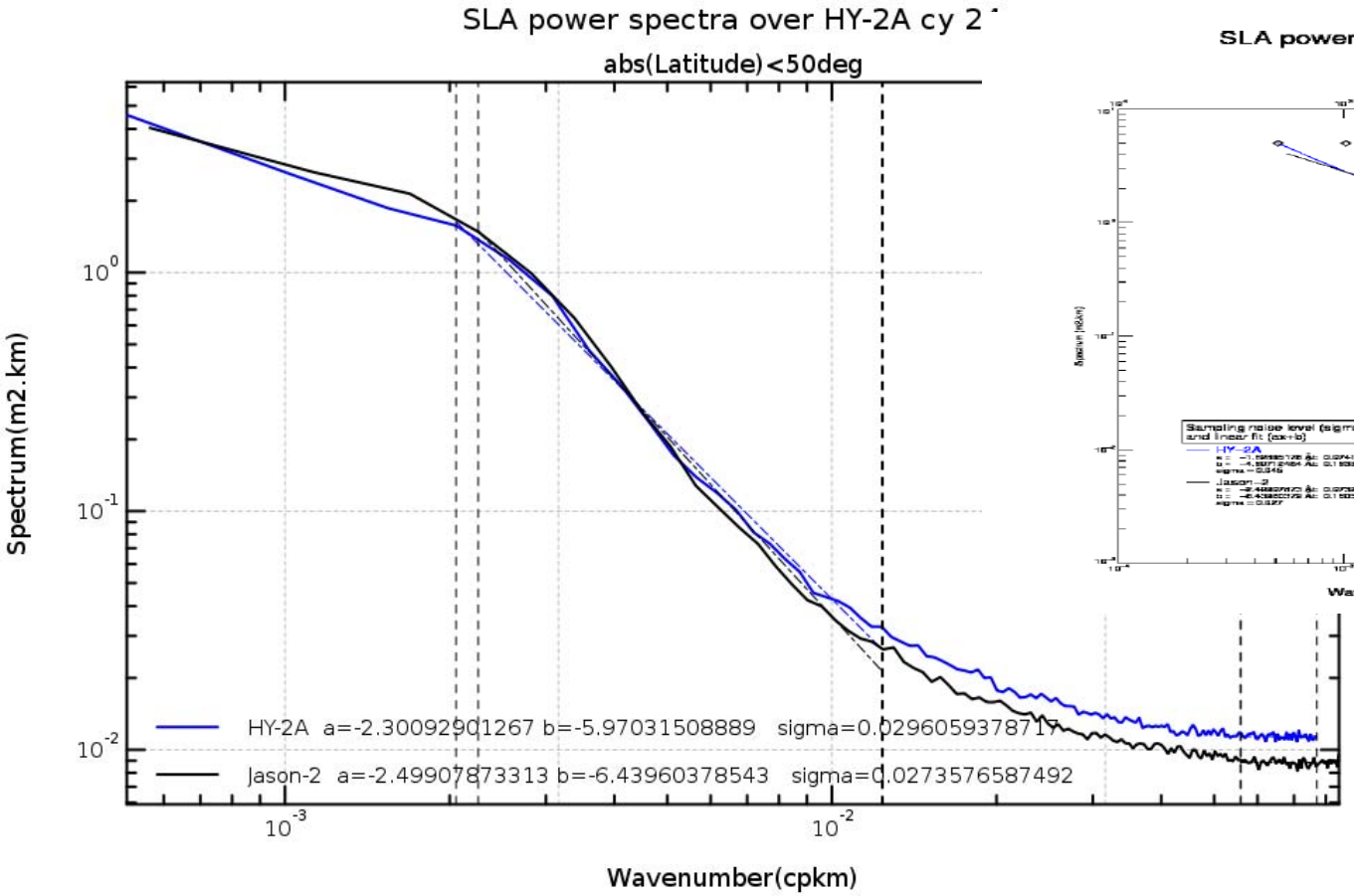
SLA standard deviation	HY-2A	Jason-2
Global	13,4 cm	11,1 cm
Selection (Lat/Bat/VarOce)	11,2 cm	9,6 cm

Differences de SSH	Nbre de points	.	Ecart-type	.
	HY-2A	Jason-2	HY-2A	Jason-2
Global	5485	10123	8.9 cm	7.0 cm
Global avec EO			7.8 cm	
Selection (Lat/Bat/VarOce)	2635	4647	6.2 cm	5.5 cm
Selection (Lat/Bat/VarOce) avec EO			5.9 cm	

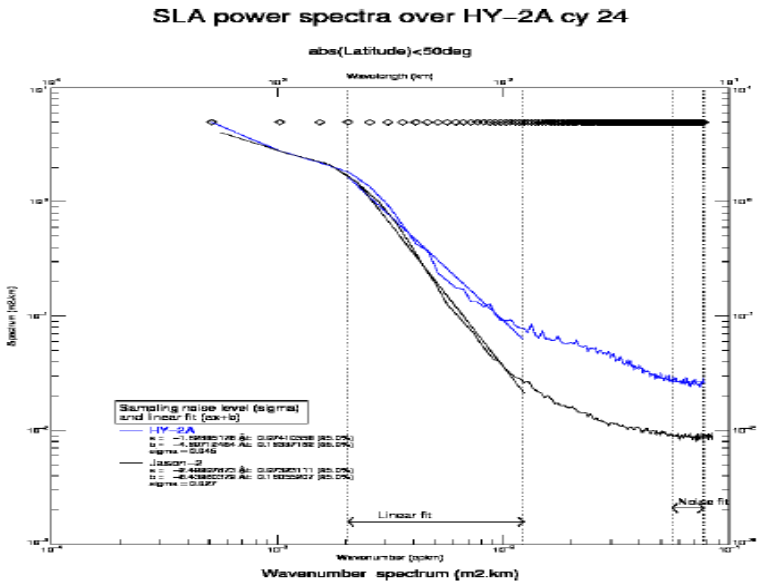
HY-2A RS-IGDR
Assessment over cycle 24 : Sea Surface Height

We have computed the spectral analysis of the SSH on both HY-2A and JA2. The results on RS-IGDRs products (left) are very good and close to the one from JA2. It was not the case for IGDRs products as seen on the below figures

CNES RS-IGDR results



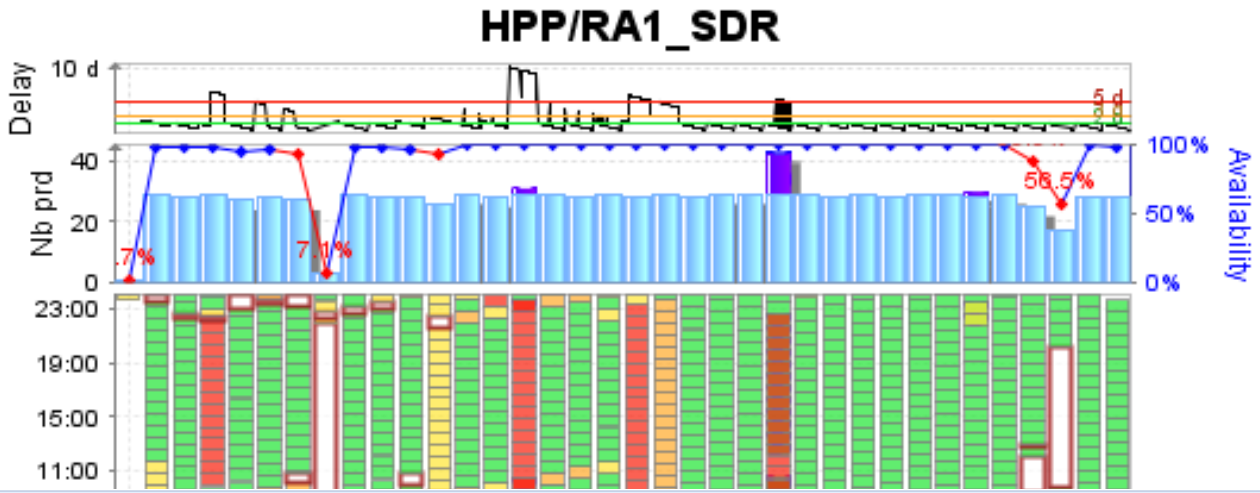
Native IGDR results



HY-2A RS-IGDR
Current status (data circulation, coverage, production)

RS-IGDRs processing prototype has been developed and validated, transfer into operations is ongoing.
Delivery of inputs products is in place and monitored routinely by SSALTO team.

We expect to start the routine RS-IGDRs processing by end October



De : lyg [mailto:lyg@mail.nsoas.gov.cn]
Envoyé : mercredi 9 octobre 2013 03:09
À : Lachiver Jean-Michel
Cc : 林明森; 张有广; 彭海龙; 贾永君; 孙从容
Objet : Notice: Gap in last delivery

Dear Jean-Michel,

There is a gap(cycle-53, pass-176, pass-204 to 213) in last delivery, because the receiving system didn't work well twice. We will redowload these missing data from satellite, and we will reprocess all these data.

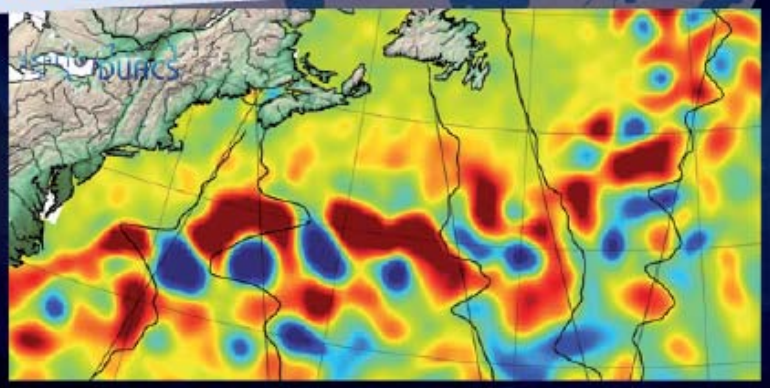
Best Regards,
Youguo

HY-2A RS-IGDR
Integration inside DUACS

cnes
De l'Espace pour la Terre

Hy-2A, a new contributor to multi-mission system

Coming soon in SSALTO/DUACS !



Produced by AVISO/DUACS - © CNES/CLS 2013

This figure shows Sea Level Anomalies of Hy-2A, the Chinese mission launched in August 2011.

SLA are calculated by CNES Hy-2A Processing Prototype and filtered at 70 km on a few Hy-2A passes during cycle 24 (August 2012). It underlines the quality of Hy-2A SLA and its potential benefits in the SSALTO/DUACS multi-mission system.

Hy-2A **will** complement the sampling of current missions and **will** provide valuable information on the ocean mesoscale variability, particularly in regions of strong ocean activity.

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