



## **SSALTO/DUACS: recent changes and improvements**

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During the last 20 years, altimeter Level 3 (along-track cross-calibrated SLA) and Level 4 products (merging multiple sensors as maps or time series) were developed in parallel with L2 (a.k.a GDR) processing improvements. Directly usable and easier to manipulate, L3/4 products are now vastly used in the user community. They contribute to various studies in different fields that cover the ocean, from climate and meteorological phenomena, to geophysics and biology.

The quality and precision of these products were periodically improved, taking advantage of new missions and datasets of opportunity, advanced altimeter technology, improved L2 processing, but also from a better understanding of the ocean stemming from the analysis of past records. Moreover, as applications become more and more diversified, L3/L4 products are evolving to better fit users' needs.

### **Ongoing Improvements to secure multi-mission products**

During 2012, the DUACS system was significantly modified to take into account important changes in the altimeter constellation. In early 2012, Jason-1 and Envisat, two older satellites of the altimeter constellation, have been impacted by severe anomalies. Jason-1 measurements were unavailable for few weeks in February and then March/April 2012. It was finally moved on its "end of life" geodetic orbit and reintegrated in the DUACS system in late April 2012. Additionally, in early April 2012, the communication links with the Envisat satellite were suddenly lost, inducing unavailability of the measurements since this date. In the same time, efforts were done to integrate the Cryosat-2 mission into the system. Initially aimed at ice observation, the mission provides opportunity data on ocean as well. System and algorithm upgrades are being worked on to use this additional dataset in the multi-satellite system by mid-2012. The efforts to secure the multi-mission products will continue in 2013 with the integration of AltiKa and Sentinel3 data.

### **Improved altimeter data processing**

In order to improve the quality and precision of the products, work is on going to implement new algorithms and new processing of the altimeter data. An important improvement will be the use of a new reference period, taking into account the 20 years of altimeter data now available. This will lead to more pertinent sea level anomalies. The absolute topography will not be impacted.

In parallel, effort will be done to improve the precision of the product at climatic scales as well as mesoscales. Additionally, the mapping process will also be improved, with amongst others, the use of reprocessed correlation scales and adjusted altimeter errors.

A full reprocessing of the 20 years of altimeter data is on going. This reprocessing will take into account all the recent improvement in order to generate a consistent altimeter data set. The altimeter standards will be updated with the more accurate standards and the inter-calibration process, allowing to reduce the bias between the different missions, will be improved, taking into account the global MSL consistency. The DT products will be updated for late 2013.