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ESA Sea level CCI

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People involved in this issue:		
Written by (*):	Y Faugère (CLS)	Date + Initials:(visa or ref)
Checked by (*):	G Timms (Logica)	Date + Initial:(visa ou ref)
Approved by (*):	G Larnicol (CLS)	Date + Initial:(visa ou ref)
Application authorized by (*):	ESA	Date + Initial:(visa ou ref)

**In the opposite box: Last and First name of the person*

Distribution:		
Company	**Names**	**Contact Details**
ESA	J. Benveniste B. Lucas	Jerome.Benveniste@esa.int Bruno.Manuel.Lucas@esa.int
CLS	G. Larnicol, Y. Faugere, M. Ablain	glarnicol@cls.fr; yfaugere@cls.fr; mablain@cls.fr
DTU Space	O. Andersen, P. Knudsen	oa@space.dtu.dk, pk@space.dtu.dk
ECMWF	M. Balmaseda	Magdalena.Balmaseda@ecmwf.int
GFZ	T. Schöne, S. Rudenko	tschoene@gfz-potsdam.de, rudenko@gfz-potsdam.de
IsardSAT	M. Roca	Monica.Roca@isardSAT.cat
LEGOS	A. Cazenave	anny.cazenave@legos.obs-mip.fr
Logica	G. Timms, G. Busswell, E. Pechorro	gary.timms@logica.com; geoff.busswell@logica.com
NERSC	J. Johannessen	johnny.johannessen@nersc.no
UoH	D. Stammer	detlef.stammer@zmaw.de
NOC	P. Cipollini	cipo@noc.soton.ac.uk
FCUP	J. Fernandes	mjfernan@fc.up.pt

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1. Executive Summary

1.1. Scope

The Sea Level CCI responds directly to the GCOS requirements for the Sea level ECV (Product O.2 in GCOS-107) through the generation and validation of multi-mission ECV products from the altimeters on TOPEX/Poseidon and Jason series, as well as ERS1/2, Envisat and GFO. To achieve this global objective, the specific objectives for the Sea Level CCI are:

- To involve the Climate research community to improve the understanding of their needs;
- To develop, test and select the best algorithms and standards in order to produce high quality sea level products for climate applications;
- To assess and collect information on the quality and error characteristics of the Sea Level ECV product through the involvement of independent climate research groups;
- To provide a complete specification of the operational production system that should be developed during the phase 2 of the ESA CCI programme.

1.2. Overall Project Status

The SLCCI project is now entering its final phase. The algorithm development and selection tasks have been completed in May 2012, and in Sept 2012 the team successfully completed and released the first version of the SLCCI ECV products in advance of the two significant meetings; "20 Years of Progress in Radar Altimetry" symposium and ESA's CCI Colocation & Mid Term Review. A first assessment showed the significant improvements of the sea level record, approaching the requested quality for climate study applications. Notably, the uncertainty of the global mean sea level derived from ERS-1 / ERS-2 / Envisat using the new CCI standards has decreased to the mm/year level. Following the production of the ECV products, the team will focus on the Task 4 activities (validation) as the main focus for the project during the final year. In parallel of the planned tasks, additional activities have been agreed with ESA in order to improve the SLCCI V1 product.

Finally, work has continued on System Engineering activities including an active support to ESA's leadership of the Systems Engineering Working Group (SEWG).

2. Project Status

2.1. Progress in Last Quarter

In this last quarter the project team has first worked on finalising the generation of the ECV products. The Sea Level ECV is a multi-satellite merged product from 18 years of altimetry data from seven missions. The production of the Phase 1 SLCCI ECV products is now completed and available on the SLCCI web site. In order to facilitate the access to the data we have set up a service desk to allow the distribution of the product and the support to users. We have since then received several requests from the international community.

Since then specific effort has focused on the promotion of SLCCI project and products. The project was presented at the "20 Years of Progress in Radar Altimetry" symposium and at the AGU meeting in San Francisco. The 'call to media' at this symposium generated positive interest for the results of the project, with as an example, an article appearing on the BBC News website (front page, science section). Finally the third newsletter has been written and was distributed at the AGU meeting.

Finally the production of the ECV products has allowed the Task 4 activities (validation) to begin, and these will be the main focus for the project during the project's final year. This transition from development/production to validation tasks was highlighted at the 2nd Annual review held on the 18-19th of October. In this phase of the project we will maintain a close collaboration between the climate modelling and Earth Observation activities.

In the System Engineering group, the team have remained active in the System Engineering Working Group and have continued to support ESA in their leadership of the engineering community. The team attended and gave a presentation in the system engineering session at the CCI Co-location meeting. At the CCI Mid Term Review meeting, the team collaborated and gave a joint presentation with other system engineers and the data standards working group.

2.2. Future Activity in coming 3-6 months

The SLCCI ECV products will be validated in 2012-2013 as part of the WP4 task. These products will be validated by two approaches. First a direct comparison between the new ECV and the V0 reference product (Aviso) will be performed using the RRDP infrastructure developed in this project. Then, an assessment of the product quality will be performed through an assimilation exercise and through comparisons with climate and ocean model output products. Despite its relatively good maturity, the sea level ECV is not really used by the climate models for their validation. The ESA CCI program represents a very good opportunity to enhance closer links between the modelling and observation communities. A validation meeting will be organized in June 2013, followed by the promotion of the ECV products through the web site, scientific articles and international meetings.

The systems engineering team will be respond to any required actions following feedback from the review of the System Specification Document and will continue to interact with the System Engineering Working Group.

In parallel with the planned tasks, additional activities have been agreed with ESA in order to improve the SLCCI V1 product. These activities, including new algorithm developments, selection and SLCCI V2 product generation are to be planned to be performed in 2013.