**Two Decades of Global and Regional Sea Level Observation from the ESA Climate Change Initiative Sea Level Project**

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Sea level is a very sensitive index of climate change and variability. Changes in the sea level integrate the ocean warming, mountain glaciers and ice sheet melting. Understanding the sea level variability and changes relies on an accurate monitoring of the sea level variable at climate scales, in addition to a good knowledge of the ocean variability and of the exchanges between ocean, land, cryosphere, and atmosphere. That is why Sea Level is one of the Essential Climate Variables (ECV) selected in the frame of the ESA Climate Change Initiative (CCI) programme. This programme provides long-term satellite-based products for climate (ECV products), that are required by the climate research community. This program has just completed its first phase (Oct. 2010 to Dec. 2013) and a 3-year long second phase will start in February 2014. The objectives of the second phase are similar: to involve the climate research community to refine their needs and collect their feedbacks on product quality, to develop, test and select the best algorithms and standards to generate an updated climate time series and to produce and validate the Sea Level ECV product.

This will better answer the climate user needs by improving the quality of the Sea Level products and maintain a sustain service for an up-to-date production. We will first summarize the main achievements of the ESA CCI Sea Level Project. On the one hand, the major steps required to produce the 18 years climate time series (delivered in Sept. 2012) are briefly described: collect and refine the user requirements, development of adapted algorithms for climate applications and specification of the production system. On the other hand, the product characteristics are described as well as the results from product validation, performed by several groups of the ocean and climate modeling community. At last, the work plan and key challenges of the second phase of the project are described.