



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. Sea level integrates the ocean warming, mountain glaciers and ice sheet melting. Understanding the sea level variability and changes implies an accurate monitoring of the sea level variable at climate scales, in addition to understanding the ocean variability and 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) program. This program aims at providing long-term satellite-based products for climate (ECV products), that should be used by the climate research community. This program has just completed its first phase (Oct. 2010 to Dec. 2013) and will start in February 2014 the second phase of 3 years. The objective 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 firstly present 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.