



ESA Sea level CCI

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1. Overall Status of the project

The production of the Sea-level CCI ECV products (version 1.0) ended in November 2012. Since the beginning of 2013, two main tasks are conducted in parallel and should be completed by the end of the project (December 2013). These consist of:

- The release of a new Sea-Level ECV product (version V1.1). During summer 2013, efforts have been dedicated to development and validation of new altimeter corrections (orbit solutions, wet troposphere corrections, Envisat and Jason-2 level-2 reprocessing). The Round Robin exercise applied to these new corrections led to significant improvements of the data. At present, the last steps consist of producing, validating and distributing the new ECV products taking into account all these improvements.
- The assessment of the Sea-Level ECV by climate users is still in progress. At the last progress meeting held in Hamburg in June 2013, climate users presented their preliminary results. Additional studies on the sea level closure budget have been initiated by Anny Cazenave (LEGOS). These are based on the comparison between CCI sea level and sum of climatic contributions computed independently. Comparisons between CCI sea level time series and standard sea level products are also performed. Preliminary results have been presented at the ESA Living Planet Symposium in Edinburgh (9-13th September 2013).

2. Description of the generated ECV products

The Sea-Level ECV products (version 1.0) have been produced and disseminated to users in November 2012. Products include monthly gridded time series of sea-level anomalies from 1993 to 2010 included. Climatic indicators are also (e.g., global mean sea level time series and regional trend maps, amplitude and phase of the annual signal, etc.). The products are openly accessible via the sea-level website (<http://www.esa-sealevel-cci.org/>).

3. Main improvements compared to previously existing data sets

The Sea-Level CCI project has allowed significant improvement of the sea level products used for climate change monitoring. Just to quote a few, let us mention the error reduction on the global mean sea level trend based on the ESA missions (ERS, Envisat), now close to the TOPEX/Poseidon and Jason-1/2 trend. Another example is the error reduction on the regional mean sea level trends thanks to the improvements of altimeter corrections (orbit and atmospheric corrections), especially during the first decade of the altimetry operating period during which errors were higher.

Thanks to a systematic formal approach during the validation exercise, the errors of altimetry measurements have been better described, separating spatial and temporal scales in order to fulfil user requirements. However, although a good level of maturity has now been reached and altimetry errors have been reduced, accuracy of current Sea-Level ECV products is not yet at the level required for climate users. For instance the mean sea level uncertainty is still close to 0.5 mm/yr whereas according to GCOS, the 0.3 mm/yr level is requested. A lot of improvements still remain to be done. It is thus an ongoing effort.

4. Major science impacts

Three presentations directly relative to the SL-CCI project have been performed in the ESA Living Planet Symposium (9-13th September 2013) (by M.Ablain, A.Cazenave and J.Fernandez)

Several submitted articles already use or refer to the CCI sea level data (Dieng et al., 2013, Cazenave and Le Cozannet, 2013, Cazenave et al., 2013). Another article specifically dedicated to present CCI sea level products obtained in the phase 1 of the project is in preparation.