

Deliverable D3.3

Description

D3.3 : Trends decontaminated for decadal variability available

A deliverable of: T3.4.

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We present below the decontaminated trends for decadal variability by use of two models produced as part of D3.2. For detailed information regarding the derivation of each model see the accompanying reports by Kjaer (2005) and Fenoglio-Marc and Suselj (2005) A brief description of the models follows:

Near-global model (Kjaer, 2005)

Tide gauge data have been tied to open ocean sea level through a robust regression to a combination of two hydrodynamic models incorporating altimetric data, namely SODA (Simple Ocean Data Assimilation – run at the University of Hawaii) and MICOM (Miami Isopycnic Coordinate Ocean Model – run at the Nansen Environmental and Remote Sensing Center in Bergen, Norway). Both models cover the period 1950-2000. The first four EOFs from 12 long tide-gauges extending back to the beginning of the previous century were used as the basis of a regression with the combined model dataset for the period 1950-2000. The resulting spatial patterns were then extrapolated back in time on the basis of the EOFs. The resulting time-series are produced with 2.5 year spacing, the values are computed using 5 years of data centered in the 2.5 year point. The period covered was 1900-2000.

Mediterranean model (Fenoglio-Marc and Suselj, 2005)

This model is based on the estimation of annual thermosteric heights computed from the annual water temperatures available in 1x1 grid for depths up to 700 metres. The source of the temperature data was the World Ocean Atlas (2001) covering the interval 1955-2003. The interdecadal model was computed by low passing the detrended thermosteric heights at each grid point. Time-series are produced with 2.5 year spacing, the values are computed using 5 years of data centered in the 2.5 year point. The period covered was 1957.5-2002.5.

Decontaminated Trends.

a) pre-processing of the tide-gauge data

To coincide with the temporal resolution of both the near-global and Mediterranean models of sea level variability (D3.2), the tide gauge data were averaged as 5 year means at 2.5 year intervals from 1900 to 2000. Trends from the RLR tide gauge dataset were initially estimated, the tide gauge data were then decontaminated (Tide gauge - Model Data) and the trends recalculated.

b) The data output

There are two files, the first file “Trends_with Model.txt” contains the global coverage of tide gauge trends (before and after the tide gauge data were decontaminated) with the exception of the Mediterranean Sea. The model used is the near-global model (Kjaer, 2005). The file only contains decontaminated tide gauge stations that coincide within the model grid point. There was no attempt to extrapolate the remaining tide gauges to be decontaminated.

The second file “Med_Trends_with Model_v2.txt” contains only the tide gauges in Mediterranean Sea region. Here the Mediterranean model (Fenoglio-Marc and Suselj, 2005) was used spanning the period from 1957.5 to 2002.5. The asterisk indicates tide gauges where the closest available model grid point was used.

Each file contains: 9 columns

Column	1: Name of tide gauge station
Column	2-3: Longitude, Latitude
Column	4: Original trend (mm/year), N.B. : 5 year means at 2.5 year intervals
Column	5: Standard deviation of trend
Column	6: Decontaminated trend (Tide gauge - Model Data)
Column	7: Standard deviation of decontaminated trends
Column	8: Trend difference between the original trend and the decontaminated trend
Column	9. The time series period used.

References

- Kjaer, (2005). Documentation for empirical model of inter- decadal sea level variations – Milestone 3.3. ESEAS-RI WP3.3 Report.
- Fenoglio-Marc and Suselj, (2005). ESEAS-RI WP3.3: Report on interdecadal model for Mediterranean Sea.