European Research Area for Climate Services

ECLISEA

European advances on CLImate Services for Coasts and SEAs

The portal: a European coastal climate web atlas

Work Package 5 - Deliverable 5.B

Authors: *Insa Meinke, Xin Liu, Ralf Weisse, Felipe Fernández, Agnes Tellez-Arenas*

***Deliverable Leade**r: UC-IHC*
Participants: *HZG, UC-IHC, BRGM.*
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WP Leader: Insa Meinke (HZG)

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Glossary

SSD: Sea Surface Dynamics
IPCC: Intergovernmental Panel on Climate Change

1. Introduction

The prototype is developed to access, analyze and contextualize decision relevant information for coastal climate services. As the literature review in WP1 shows (Kodeih et al., 2018), there is a high demand on the information about sea level related variables at a pan-European scale, e.g., storm surges, sea level variability and change, and regional projections. Furthermore, detailed local information is requested, and the contextualization of the ongoing storm surge activity is increasingly asked for (e.g., Meinke, 2017; Weisse et al., 2020). From the experiences in collaborating with decision-makers and other stakeholders, we propose a concept of contextualizing real-time data with long-term statistics to make such information publically available in near real-time. This concept has been tested with tide gauges along the German coasts and implemented in two web tools, namely the Storm Surge Monitor and the Sea Level Monitor. The tools focus on the near real-time contextualization of the current state of the variables against the background of long-term variability and change, aiming to provide an up-to-date and continuous piece of coastal climate services.

In addition to the real time decision support tools, a Geospatial Viewer has been designed to provide access and visualization to the relevant data products generated in other Work Packages (WP1-4).

2. Storm Surge Monitor

The HZG Storm Surge Monitor provides information about changes in the storm surge climate at the German coasts over the past decades and shows if and to what extent the current season is unusual when compared to previous seasons. For this purpose, both real-time and long-term historical tide gauge observations are needed. By contextualizing real-time data with long-term statistics, the Storm Surge Monitor provides automated near real-time assessments of the course and severity of the ongoing storm surge season and its single events. It also evaluates the seasonal anomalies and systematic changes in storm surge activity. The Storm Surge Monitor was developed for several frequently considered indicators such as the height, frequency, duration, or intensity of storm surges. Information on these indicators is presented freely online and in a user-friendly way with figures, texts and interpretations. Moreover, to ensure fast information delivery, the Storm Surge Monitor is automatically updated four times a day.

The following link provides access to the storm surge monitor:

www.stormsurge-monitor.eu

3. Sea Level Monitor

The same concept has been applied and demonstrated in another web tool, the Sea Level Monitor, which focuses on the localized information of sea level variability and change. The HZG Sea Level Monitor provides information about the sea level rise at the German coasts. It shows how much and how fast the sea level has risen in the past, and if there is evidence of a systematic acceleration or if the current rise already meets the IPCC scenarios. To connect with the Storm Surge Monitor, it also analyzes the possible impact of future mean sea level rise on storm surges under difference IPCC scenarios. The Sea Level Monitor enables us to update the statistics and to detect the changes at the earliest possible stage. It is automatically updated on yearly basis to make sure the latest information is accessible.

The following link provides access to the sea level monitor:

www.sealevel-monitor.eu

4. ECLISEA Geospatial Viewer

The ECLISEA Geospatial Viewer provides a friendly access to all products generated and stored at the infrastructure in support to coastal climate services (WP5.A).

Due to the large number of products, the Web application provides a filter based on:

- Type of data: Impacts or Sea Surface Dynamics (SSD)
- Scenario: RCP4.5 or RCP8.5
- Time period: 2026-2045 or 2081-2100
- And for the SSDs: ocean waves or ocean levels

Once the user provides the area of interest, the Geospatial viewer populates a table with all the variables. This table includes several options:

- Visualize the products metadata (name, spatial and temporal resolution, etc)
- Activate the variables for spatial visualization purposes
- Access the catalogue and interoperability protocols
- Visualize a graph of the variables

The following link provides access to the ECLISEA Geospatial Viewer:

https://eclisea.ihcantabria.com/

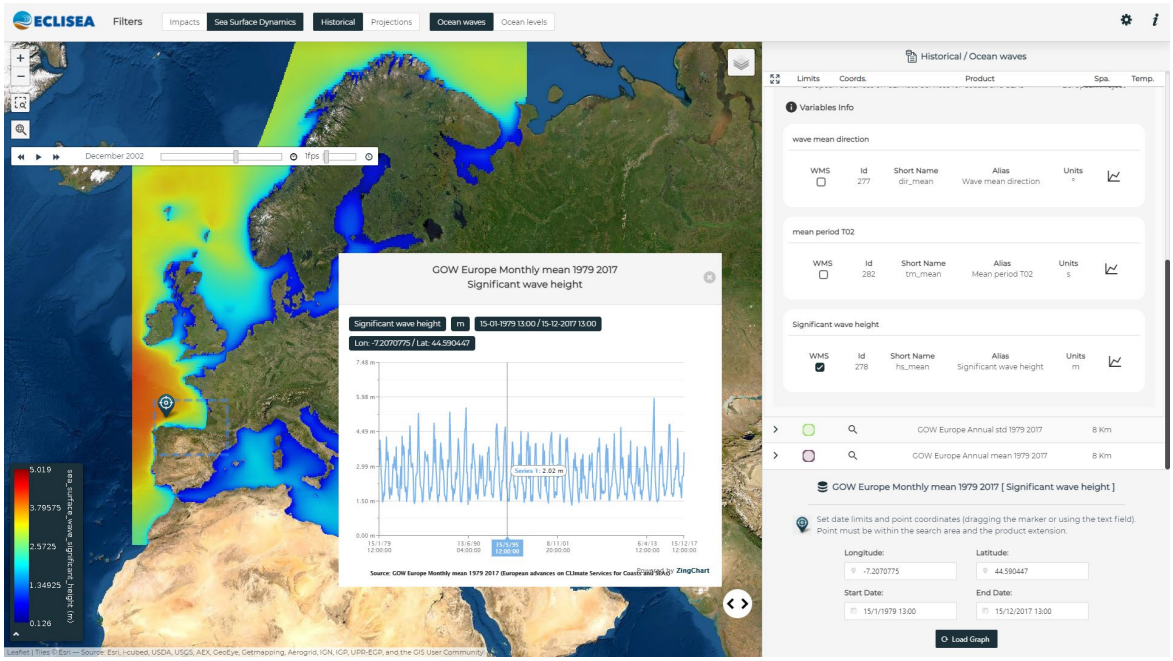

Figure 4.1: ECLISEA app. Historical Sea Surface Dynamics visualization

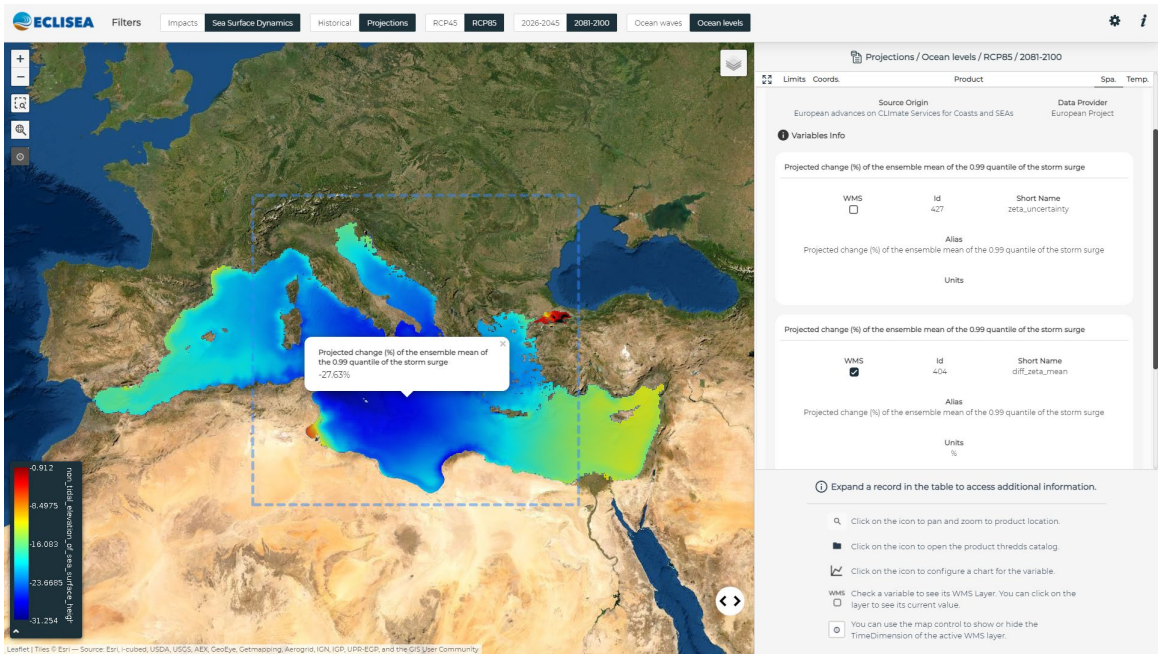

Figure 4.2: ECLISEA app. Projections of Sea Surface Dynamics visualization

5. Outlook

The prototypes have demonstrated a way to make real-time data and products from ECLISE project more meaningful and accessible to the public as well as a way to deliver more up-to-date information. The concept is transferable to other coastal regions that are under threat of coastal hazards by including a network of tide gauges or using model outputs. We propose that the concept can also be used to other variables, and can be developed further to include attribution.

6. REFERENCES

Kodeih, S., et al.,: Climate information needs from multi-sector stakeholders, Deliverable 1.B, Work Package 1, Project ECLISEA, http://www.ecliseaproject.eu/wp-content/uploads/2019/2008/d2011.b_report_stakeholder-needs_final_20180629.pdf, 2018.

Meinke, I.: Stakeholder-based evaluation categories for regional climate services – a case study at the German Baltic Sea coast, Adv. Sci. Res., 14, 279-291, doi: 10.5194/asr-14-279-2017, 2017.

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