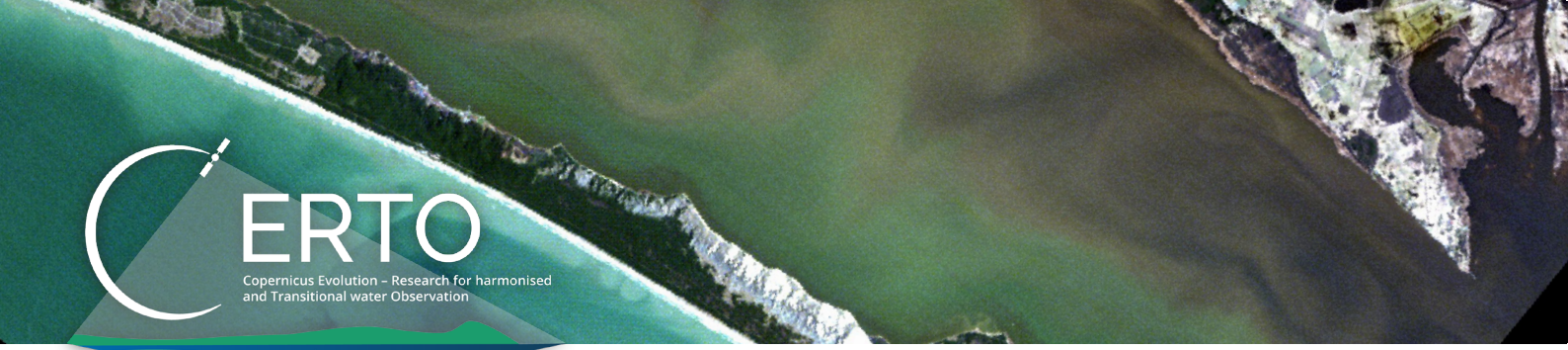


CERTO
Copernicus Evolution – Research for harmonised and Transitional water Observation

Curonian Lagoon case study

The Curonian Lagoon is a large, shallow predominantly freshwater ecosystem separated from the Baltic Sea by a thin spit of land. With a mean depth of 3.8 metres and surface area of 1,584 km^2, the lagoon receives major inflows from the Nemunas River. This provides vital water, nutrients, and unfortunately persistent pollution.

Cyanobacterial blooms frequently dominate the hypereutrophic lagoon in summer months. Fishing has traditionally underpinned the local economy, along with growing tourism, ports, and agriculture.

As with many transitional waters, preserving the Curonian amid intensifying human pressures requires effective, evidence-based management. Monitoring water quality is key for sustaining biodiversity, safe recreation, and livelihoods tied to this dynamic ecosystem.

CERTO in the Curonian Lagoon

CERTO has advanced water quality monitoring and knowledge of the Curonian Lagoon by combining fieldwork and satellite data with different spatial and spectral resolutions.

In situ water quality data provided validation for satellite-derived products, giving insights into phytoplankton biomass, suspended solids, and overall aquatic health. Tailored CERTO indicators help support EU policy and monitoring needs, including phytoplankton bloom biomass and bloom maps and a Social-Ecological System Vulnerability Index.

Multi-source satellite data enabled the estimation of phytoplankton seasonal and spatial dynamics concentration. These products contribute to the knowledge and safeguarding of the lagoon functionality services.

The project also supports monitoring operations for the evaluation of Good Environmental Status as well as the enhancement of eutrophication indices and phytoplankton phenology.

> *"CERTO's indicators empower our researchers to develop enhanced solutions for safeguarding the Curonian Lagoon based on invaluable insights into historical and current conditions."*
>
> *Diana Vaiciute, Klaipeda University*

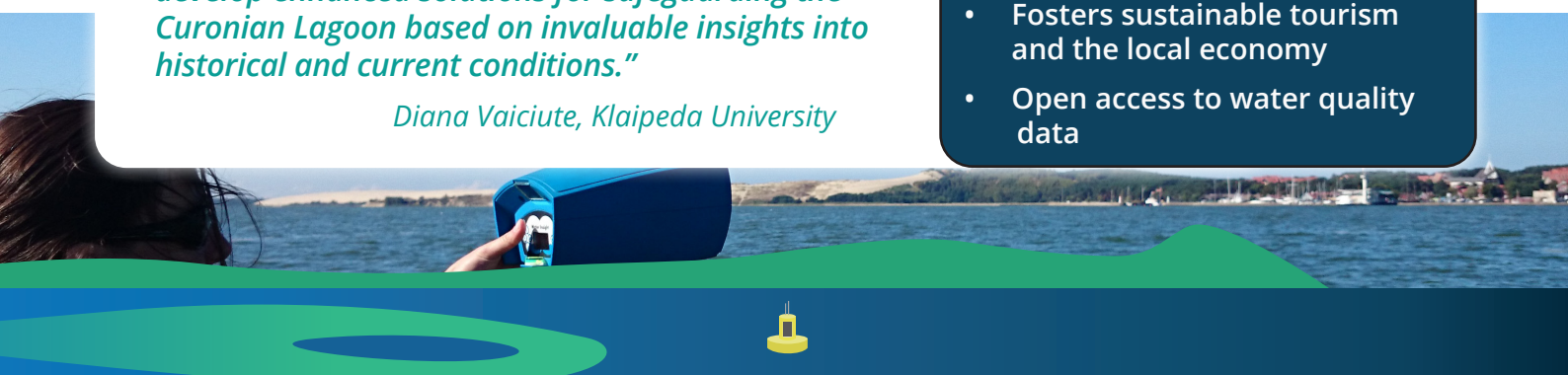
Benefits

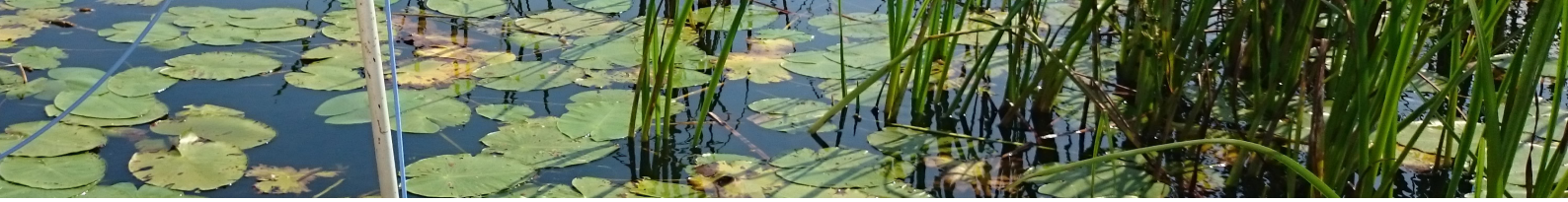
For regulatory authorities:

- Open access to near-real-time satellite data
- High resolution satellite-based products and indicators reducing the need for *in situ* monitoring
- Early detection of harmful elements, such as potentially toxic algal blooms
- Enhance recreation through water resource management
- Ensure clean, safe waters to sustain growing tourism
- Inform policy decisions for sustainable development

For local residents:

- Protection of the natural environment
- Fosters sustainable tourism and the local economy
- Open access to water quality data





What is CERTO?

CERTO (Copernicus Evolution - Research for harmonised and Transitional water Observation) is an EU Horizon-2020 project that aims to improve water quality monitoring in support of EU directives. The project brings together industry, monitoring agencies, and scientists to develop innovative cross-cutting indicators that can be applied to coastal, transitional, and inland waters. By integrating *in situ* sampling, satellite data, and historical records, CERTO advances water quality data collection and interpretation across diverse aquatic environments.

Advancing water quality monitoring

The CERTO project has advanced water quality monitoring through innovative use of water colour data from the Copernicus satellites. By categorising water types based on optical signatures, CERTO has significantly improved water quality assessment. This approach, currently being used across six European estuaries, has the potential to extend globally, creating a comprehensive network of water monitoring.

CERTO is progressing water quality monitoring by offering near-real-time and on-request data through its portal. It meets the immediate needs of researchers and stakeholders while enriching the pool of assessment tools with new indicators for more accurate and precise evaluations. CERTO contributes to scientific inquiry through shared insights in publications, continually informing and enhancing practices in water quality monitoring.

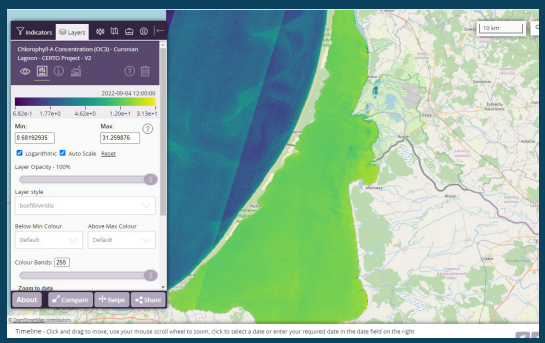
PRISMA satellite true colour image of the Curonian Lagoon.

The CERTO data portal

CERTO has created a prototype system, designed to integrate seamlessly with existing Copernicus services. This innovative system demonstrates the potential to enhance and expand Copernicus services and their broader impact.

CERTO data can be accessed through a dedicated data visualisation portal, providing up-to-date information and crucial insights into water quality. This offers near-real-time data in an easy to access format.

Whether you're conducting scholarly research, supporting environmental initiatives, or seeking knowledge about the state of local water systems, the portal is a valuable resource that enables active participation in water quality monitoring and conservation efforts.



The CERTO data visualisation portal: https://engage.certo-project.org/data/

CERTO

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