

ISOLUME project

IndicatorS Of changing Lightcapes in Underwater Marine Ecosystems

Changing Marine Lightscapes Joint Action

Marine light environments are changing in two fundamental ways: coastal and ocean waters are darkening due to increased land-based runoff, sediment, and algal growth, while also brightening at night from artificial light sources.

ISOLUME investigates both phenomena, analysing how light intensity, timing, location, and spectral composition have shifted over decades to centuries across marine, estuarine, and freshwater systems throughout Europe. Using historical data, remote sensing, and modelling, the project maps these changes across multiple European case studies and assesses their ecological consequences. ISOLUME spans disciplines from physical oceanography to environmental law, and works toward integrating lightscape changes into EU monitoring frameworks.



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Findings will support a **policy framework that introduces spectral light quality as a recognised indicator of ocean health.** By establishing standardised monitoring approaches for lightscape changes, the project delivers the scientific foundation needed to close a long-standing research gap and to strengthen marine environmental legislation.

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Dr. Bronwyn Cahill, Leibniz Institute for Baltic Sea Research (IOW), is the ISOLUME project coordinator.

The project consortium includes 11 partners:

- Leibniz Institute for Baltic Sea Research (IOW)
- University of Plymouth
- Plymouth Marine Laboratory
- Norwegian Institute for Water Research (NIVA)
- University of Bergen
- Institute of Oceanology, Polish Academy of Sciences
- University of Galway
- Forschungsverbund Berlin e.V.
- Brandenburg University of Applied Sciences
- University of Greifswald, Institute for Energy, Environmental and Maritime Law
- University of Malta, Department of Geosciences



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