

CE2COAST

Downscaling Climate and Ocean Change to Services: Thresholds and Opportunities

DURATION
1/05/2020 - 31/12/2022

BUDGET
250 000 €

PROJECT DESCRIPTION

Global change will have significant impacts at regional and coastal scales on marine systems, dependent socioeconomic systems, ocean services and can strongly interact with regional pressures. A capacity to understand and predict these impacts on regional seas and coasts is essential for developing robust strategies for adaptation and mitigation.

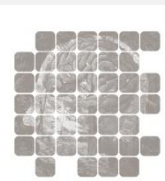
Objectives:

1. Generate and analyse customised regional observational datasets to deliver empirical understanding of the state, variability and trends of ocean and coastal service pressures.
2. Deliver downscaled simulations of oceanic response to climate change at basin to regional/coastal scales.
3. Investigate the added value of improved downscaled projections for determining future pressure (stressor) changes relevant for key ocean services.
4. Co-produce research strategies with stakeholders and communicate new project knowledge to relevant management, regulatory, industrial and societal organisations.
5. To enhance the European Marine Research dimension.

Hypotheses:

1. Current state-of-the-art dynamical downscaling ocean models can provide improved scientific understanding and more realistic/accurate local projections of ocean service pressures for European regional seas and coastal areas on timescales of near-term to end-of-century climate change (next 30-80 years).
2. A co-production approach, incorporating stakeholder input and local observations into climate science, can provide improved and better-focused knowledge and management of ocean pressures and services at appropriate scales in European seas, and facilitate scientific dissemination.

At the core of the project is the coordinated assemblage and analysis of observational and modelling data to deliver state, trends and variability of pressures on ocean services resulting from ocean and coastal climate and biogeochemical change at the European and global scale. We will deliver Earth System Model simulations from the CMIP archive that will be downscaled for hindcasting and projecting physical and biogeochemical fields in the regional and coastal ocean providing past/future states and climate change signals. CE2COAST delivers transnational added value through strategically combining national expertise across oceanography, marine biogeochemistry and ecology, data and database management, earth system, marine and ecosystem modelling and science policy communication. The primary novelty of the project will be an observation-driven synthesis of downscaling methodology to provide better process resolution and system representations that are tailored to regional/coastal domains and their associated pressures/services. It will compile and analyse new targeted, fit-for-purpose marine observations datasets from existing and new project observations of ocean climate, biogeochemistry and relevant ecological indicators.



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The proof-of-concept approach, where the sensitivity of ocean service pressure projections to scaling, will enable Europe to prioritise research efforts towards delivering crucial new science-based knowledge of high relevance for adaptation, protection and investment in bioeconomies. To inform adaptation policy to ocean and coastal change, we will deliver key new knowledge to end-users through dissemination activities. We will integrate stakeholder clusters in project-long decision making for co-production of relevant science products for specific scientific, management, regulatory, industrial and ocean service applicable assessments to deliver an integrated European evaluation of marine health. It will contribute knowledge crucial to reducing economic, scientific and social disparity across Europe. We will encourage knowledge transfer through common goals with a focus on JPI Climate and Oceans, IPCC, UN SDGs, MSP, CFP, MSFD, WFD and the Arctic Council.

CE2COAST will deliver information on the physical and biogeochemical state, ecosystem services for all of the European Shelf Seas, the Arctic and NE Atlantic Ocean, the Humboldt region and, with external collaborators are extended to cover Southern Australia, the Great Barrier Reef and the East China Sea. Downscaled scenarios will be realized and compared with global climate projections (CMIP6) and recommendations in terms of downscaling procedures will be made. Annual stakeholder meetings are organized during which the CE2COAST project results are presented and end-user needs considered.

CONTACT INFORMATION

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LINKS

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