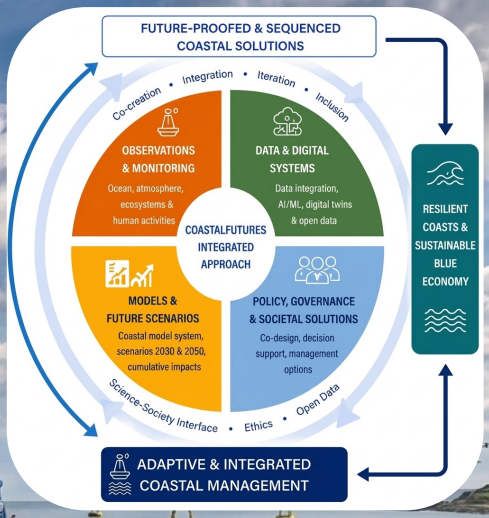
CoastalFutures

Scenarios to Promote Sustainable Futures of Contested Marine Areas

CoastalFutures develops models, scenarios and solutions to support sustainable use of marine and coastal areas under climate change and multiple pressures. Together with stakeholders and decision makers, we design and test pathways for resilient ecosystems, equitable economies and a healthy ocean for future generations.



THE CHALLENGE

Coastal seas are among the most dynamic and vulnerable environments on Earth. They face multiple, interacting pressures:

- Sea-level rise and extreme events
- Loss of biodiversity and habitats
- Pollution and water quality degradation
- Unsustainable use of marine resources
- Competing demands for space and resources

These changes threaten ecosystems, economies and communities. Effective adaptation requires integrated science, long-term perspectives and strong partnerships across sectors and scales.

OUR OBJECTIVES

1. Generate integrated knowledge of coastal systems and future change.
2. Develop and apply predictive models and scenarios for 2030 and 2050.
3. Co-design and test solutions with stakeholders and local communities.
4. Provide science-based decision-support tools for management and policy.
5. Strengthen capacity, data sharing and knowledge co-production across Europe.

OUR APPROACH

CoastalFutures applies a transdisciplinary and systems-based approach that integrates:

- State-of-the-art observations and monitoring (ocean, atmosphere, land, socio-economy)
- Advanced modelling and digital twins
- Scenario co-development and foresight analysis
- Stakeholder engagement and living labs
- Governance analysis and policy co-design
- Open data, FAIR principles and reproducibility

THE PARTNERS

Coordinating entity: Helmholtz-Zentrum hereon

AWI · Technische Universität Braunschweig · UHH · Stiftung Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung · TUHH Technische Universität Hamburg · Leibniz Universität Hannover · IOW Leibniz-Institut für Ostseeforschung Warnemünde · THÜNEN

Associated Partners:

Federal Agency for Nature Conservation · BAW Bundesanstalt für Wasserbau · BSH Bundesamt für Seeschiffahrt und Hydrographie

OUR RESEARCH & INNOVATION AREAS

OCEAN & COASTAL DYNAMICS	BIODIVERSITY & ECO-SYSTEMS	SOCIETY & BLUE ECONOMY	GOVERNANCE & POLICY	CLIMATE ADAPTATION & COASTAL RESILIENCE	DATA & DIGITAL SOLUTIONS
Physical, chemical and biological processes and their changing interactions.	Ecosystem health, biodiversity, habitats and nature-based solutions.	Communities, fisheries, offshore energy, other uses and blue economy transformation.	Institutions, policy frameworks, marine spatial planning and adaptive governance.	Sea-level rise, extreme events, sand & mud management, coastal protection.	Data integration, AI/ML, digital twins and decision-support tools.

EXPECTED IMPACT

SCIENTIFIC IMPACT
Advance understanding of coastal systems and multi-stressor dynamics. Provide open, high-quality data and models for the scientific community.

SOCIETAL IMPACT
Support resilient communities, sustainable livelihoods and the protection of coastal ecosystems.

POLICY IMPACT
Inform EU and national policies (e.g. MSFD, MSPD, Climate Adaptation Strategy) with robust evidence and co-designed solutions.

MANAGEMENT IMPACT
Deliver practical tools and guidance for integrated coastal zone management and climate adaptation.

CLIMATE ADAPTATION IMPACT
Enhance preparedness and reduce risks from sea-level rise, extreme events and environmental change.

WHO WE WORK WITH

Local Communities · Policy Makers · Industry & Blue Economy · NGOS & Civil Society · Researchers & Practitioners

DECISION-SUPPORT & CO-CREATION

We co-create solutions through living labs and stakeholder partnerships to ensure relevance, legitimacy and uptake.

Living Labs & Case Studies · Co-design Workshops · Scenarios & Foresight · Decision-Support Tools · Capacity Building

GEOGRAPHIC FOCUS

North Sea and Baltic Sea with focus on German and European coasts. Case studies capture diverse coastal settings and transboundary linkages



LINK TO THE GLOBAL GOALS

CoastalFutures contributes to the UN Sustainability Goals (SDGs)

PROJECT COORDINATION

Prof. Dr. Corinna Schrum
Dr. Nikoleta Bellou
www.coastalfutures.de

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CoastalFutures

INTERESTED IN CoastalFutures RESEARCH? LET'S CONNECT.

CLIMATE CHANGE

Using the North and Baltic Seas as model systems, CoastalFutures develops transferable climate-impact knowledge to support ecosystem management, fisheries adaptation and climate-smart marine spatial planning under future warming.



Dr. Anna Akimova
anna.akimova@thuenen.de



Dr. Matthias Gröger
matthias.groeger@io-warnemuende.de



Dr. Ha Hagemann
ha.hagemann@hereon.de

Contacts
- On behalf of the project team working on climate change impacts on coastal and marine ecosystems in the North and Baltic Seas -

OFFSHORE WINDFARMS

Using the North and Baltic Seas as model systems, CoastalFutures develops transferable knowledge on offshore wind impacts to support science-based marine spatial planning and sustainable ecosystem management.



Dr. Ute Daewel
ute.daewel@hereon.de



Dr. Anita Gilles
Anita.Gilles@tiho-hannover.de

Contacts
- On behalf of the project team working on offshore wind impacts in the North and Baltic Seas -

SEDIMENT DYNAMICS

Using the German Wadden Sea as a model system, CoastalFutures develops transferable sediment-management approaches to strengthen coastal resilience under rising sea levels.



Dr.-Ing. Christian Jordan
jordan@lufi.uni-hannover.de



Dr. Wenyan Zhang
wenyan.zhang@hereon.de

Contacts
-On behalf of the project team working on sediment dynamics in the German Wadden Sea-

POLICY, STAKEHOLDERS & TRANSFER

Through implemented stakeholder dialogues and accessible science communication, CoastalFutures translates research results into policy-relevant knowledge for sustainable marine governance and management.



Prof. Dr. Corinna Schrum
Corinna.schrum@hereon.de



Dr. Andreas Kannen
andreas.kannen@hereon.de



Dr. Nikoleta Bellou
nikoleta.bellou@hereon.de

Contacts
-On behalf of the project team working on stakeholder dialogues, science communication and policy transfer-

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DAM DEUTSCHE ALLIANZ MEERESFORSCHUNG
Federal Ministry of Research, Technology and Space
Freie Hansestadt Bremen
Hamburg Behörde für Wissenschaft, Forschung, Gleichstellung und Bezirke
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