Predicting the Global Coastal Ocean:

a UN Ocean Decade Programme

https://www.coastpredict.org/

Why do we need Coastpredict?

OceanObs'19 Conference Statement

We, the participants of the decadal OceanObs'19 Conference, hear the call from maritime stakeholders, operational resource management agencies, and researchers from private and public organizations about the importance of more complete and sustained observations in the ocean globally. Information about the ocean is needed to advance the understanding of the ocean system, strengthen security and safety at sea, mitigate the risk of disasters including those related to a changing climate, reduce pollution and harmful debris, and inform efforts to conserve life in the sea for the benefit of future generations. It is required to design and support policy options that sustain ocean-related human benefits.

- Advance the frontiers of ocean observing capabilities from the coast to the deep ocean, all aspects of the marine biome, disease vectors, pollutants, and exchanges of energy, chemicals and biology at the boundaries between the ocean and air, seafloor, land, ice, freshwater, and human populated areas;
- Improve the uptake of ocean data in models for understanding and forecasting of the Earth system;

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Check for updates

Marine Heatwave, Harmful Algae Blooms and an Extensive Fish Kill Event During 2013 in South Australia

Understanding the value and limits of nature-based solutions to climate change and other global challenges

Understand and implement early warning systems

Sea Level rise and coastal erosion
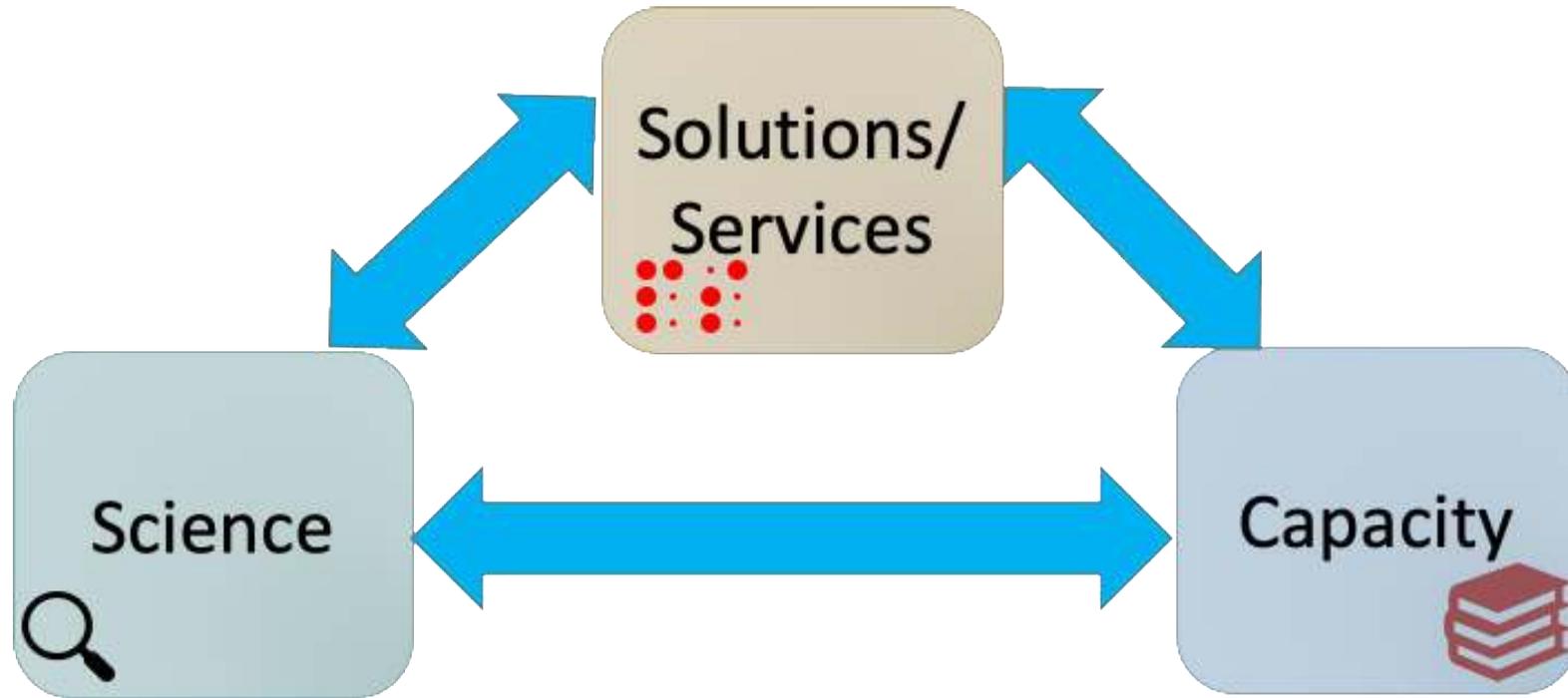
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Reach where the people live

The Challenge: reach capacity for the Sustainable Development Goal targets in the Global Coastal Ocean

The Goals require to develop a **systematic approach** to identifying, assessing and reducing the **risks of disasters, increase the protection of the marine environment while still exploiting marine resources**.

Predicting the Global Coastal Ocean
UN Decade Programme in a **nutshell**

The three pillars around which the programme is built

The basic concept of a Global Coastal Ocean has been defined
about a decade ago in five Volumes of The Sea
(Vol. 10 to 14, Harvard Univ. Press)

What is the 'Coastal ocean'?

PROPOSED DEFINITION:

*the coastal ocean - that area, extending **inshore** from the estuarine mouths to river catchments affected by saltwaters and **offshore** from the surf zone to the continental shelf and slope where waters of continental origins meet open ocean currents.*

Main Decade
OUTCOMES of Coastpredict

MAIN: A predicted coastal ocean where society understands and can respond to changing ocean conditions

1. Integrated knowledge of the global coastal ocean from **events** to CLIMATE;

2. Integration of coastal and open ocean **observing and modelling** systems;

3. Improved, **multidisciplinary and extended range predictive capabilities for the coastal zone;**

4. Innovative and sustainable applications for coastal solutions/services.

Potential "Themes" for projects/studies of different duration during the Decade

1. Characterization of the ***Global Coastal Ocean physical-sedimentary-biological-chemical dynamics***.

2. The ***Global Coastal Ocean Observing System*** and the data assimilation/fusion (satellite and in situ) for assessments and predictions

3. ***Early warning systems and impact-based forecasting*** in the Global Coastal Ocean

4. Promote the ***inclusive participation of the coastal communities in the design and implementation of solutions,*** irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status

5. Connect the "predicted coastal ocean" outcomes to ***sustainable seafood production and responsible consumption in the global coastal ocean***.

What will it be the "transformative science" in Coastpredict?

1) Coastpredict will use innovative observational technologies, innovative numerical modelling and data assimilation, big data analysis tools to set ocean best practices for coastal predictions, the frontiers of multidisciplinary ocean science;

2) Coastpredict will advance science and propose solutions that will improve citizen welfare, protect marine natural environments and property, advance sustainable economic developments of the coasts

3) Coastpredict will produce an organizational change in the Global Coastal ocean communities, coordinating them across the oceans forming an internationally coordinated STAKEHOLDER GROUP capable of establishing a fruitful relationship with Unesco, UN agencies and other international organizations