CoastPredict

Observing and Predicting the Global Coastal Ocean

A PROGRAMME under the UN DECADE OF OCEAN SCIENCE FOR SUSTAINABLE DEVELOPMENT

https://www.coastspredict.org/

Revolutionising Global Coastal Ocean observing and forecasting, co-designing the needed infrastructure and offering open and free access to coastal information

CoastPredict

Observing and Predicting the Global Coastal Ocean

Lead Contacts: **Nadia Pinardi** nadia.pinardi@unibo.it
Villy Kourafalou vkourafalou@miami.edu
Joaquin Tintore jtintore@socib.es

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

Synergistic Partners: **GOOS, OceanPredict/ForeSea, Ocean Visions/GEOS, Ocean Practices/IODE, CEOS/COAST/BluePlanet,...**

CoastPredict: what is the Global Coastal Ocean concept?

TRANSFORMATIVE: CoastPredict will **re-define the Global Coastal Ocean**

PROPOSED STARTING DEFINITION:

The **coastal ocean** - that area, extending **inshore** from the estuarine mouths to river catchments affected by saltwater, to the urban settlements on the one side and on the other side to the **offshore**, from the surf zone to the continental shelf and slope where waters of continental origins meet open ocean currents.

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

OceanPredict
Advancing the science of ocean prediction

CoastPredict High Level Objectives

1. A predicted global coastal ocean;
2. Upgrade to a fit-for-purpose oceanographic information infrastructure;
3. Co-design and implementation of an integrated coastal ocean observing and forecasting system adhering to best practices and standards, designed as a global framework and implemented locally.

CoastPredict Main Decade OUTCOMES

1. Integrated knowledge of the **global coastal ocean from events to climate** (*advancing Knowledge*);
2. The design and implementation of an **integrated river/estuarine/coastal/open ocean observing and modelling multidisciplinary** system (*integrated observing and predicting*);
3. **Improved coastal marine forecasting and extended range predictive capabilities for the coastal zone** (*accurate predictions from hours to centuries ahead*);
4. **The development of methods for trusted data/information exchange and interoperability** across the value chain and adopt these as best practices (*open and free access to coastal information*);
5. **Innovative and sustainable applications for coastal solutions/services** that directly benefit local populations, including well-being and human health (*solutions*);
6. **Increased equitable education and capacity** for observing and forecasting in the global coastal ocean (*capacity building*).
7. **Strong engagement of Early Career Ocean Professionals and promotion of education**, training and research under principles of diversity, equity and inclusion (*education, no-one left behind*)

CoastPredict co-design with UN programs: GOOS

The Global Ocean Observing System

Observing Together

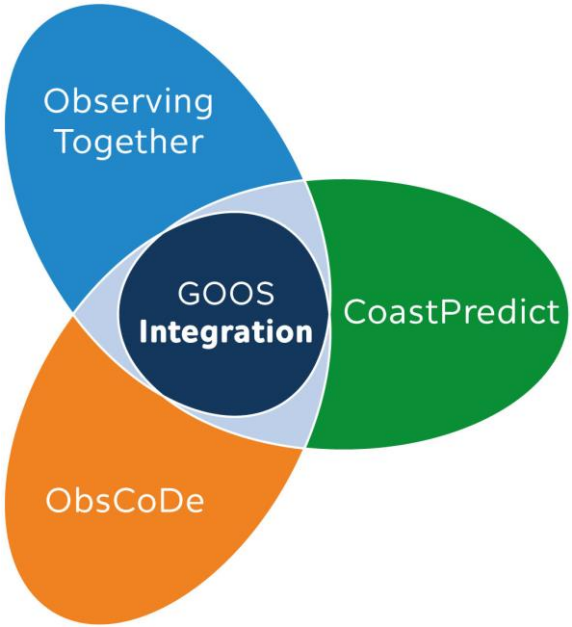
Transforming ocean data access and availability by connecting ocean observers and the communities they serve through enhanced support to both new and existing community-scale projects.

observing_together@goosocean.org

Ocean Observing Co-design

Building the process, infrastructure and tools for co-design, creating an international capacity to evolve a truly integrated ocean observing system, matching agile observing and modelling capability with requirements.

oceanobs_co-design@goosocean.org



CoastPredict

Redefining the concept of the global coastal ocean, transforming the science of observing and predicting the coast.

leads: Nadia Pinardi, Villy Kourafalou, Joaquín Tintoré

coastpredict.org

OceanPredict
Advancing the science of ocean prediction

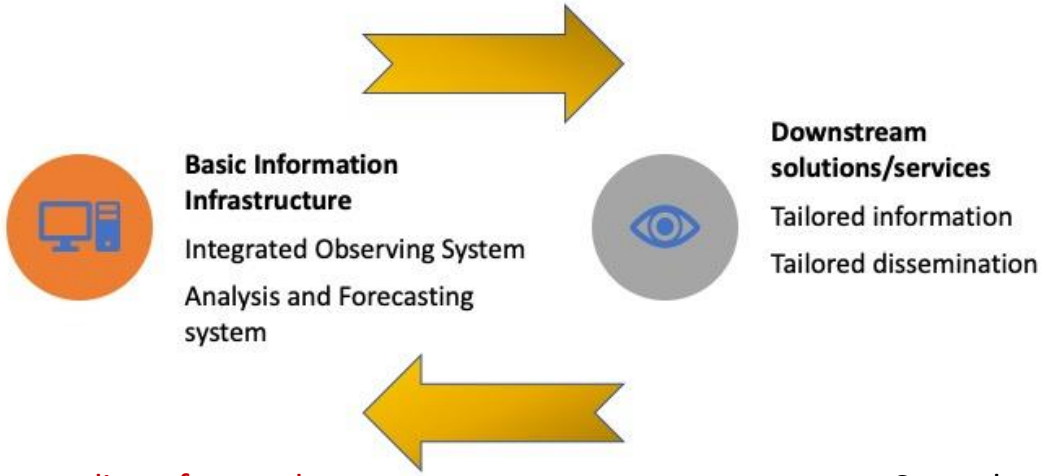
What is the transformative science in Coastpredict?

- **Re-defining the concept of the Global Coastal Ocean**
- **Innovative multidisciplinary observational technologies and fit for purpose observing system in the Global Coastal Ocean,**
- **Innovative numerical modelling, data assimilation and data science tools** (including Coastal Earth System Modelling);
- **Coastal solutions/services**
- **A virtual information/digital infrastructure**
- **A new Global Coastal Ocean Network**

CoastPredict and ForeSea collaboration

- COSS-TT is an important collaborator of CoastPredict
- CoastPredict is co-designed with GOOS and will contribute to the coastal to open-sea infrastructure framework *(open and free access, best practices)*
- CoastPredict will add value to ForeSea solutions and products by extending to inland waters and urban coastal environments
- ForeSea will benefit from the CoastPredict network that includes island nations and under-resourced coastal nations
- CoastPredict and ForeSea will co-develop frameworks needed to solidify the Operational Oceanography value chain in both coastal and basin/global settings

ForeSea benefit: Coastpredict contribution to the value chain



- Scientific understanding of coastal processes giving rise to Research-to-Operation-to-Research developments
- Integrated open-coastal observing
- Improved (accuracy and time lead) and impact-based coastal forecasts
- Best Practices for the Coastal areas

- Coastal areas solutions for Disaster Risk Reduction
- Solutions for Climate change mitigation and adaptation
- Capacity Building