



**Ocean Observing Co-Design**

by The Global Ocean Observing System



**2021**  
**2030** United Nations Decade  
of Ocean Science  
for Sustainable Development

# GOOS CO-DESIGN PROJECT

## Boundary Currents

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# GLOBAL OCEAN OBSERVING SYSTEM

Today

**86** countries  
**8700 +** observing  
platforms  
**170** satellites  
**13** global networks  
**100,000** observations  
per day

*"Weather forecasting systems will run off the rails if they don't have the surface pressure information over the ocean"*  
- Lars Peter Riishojgaard, Director of the Earth System Branch WMO



\*Depicting ocean observations over 1 year

# GOOS CO-DESIGN EXEMPLARS



Ocean Carbon Cycle



Tropical Cyclones



Marine Life



Marine Heatwaves



Boundary Current



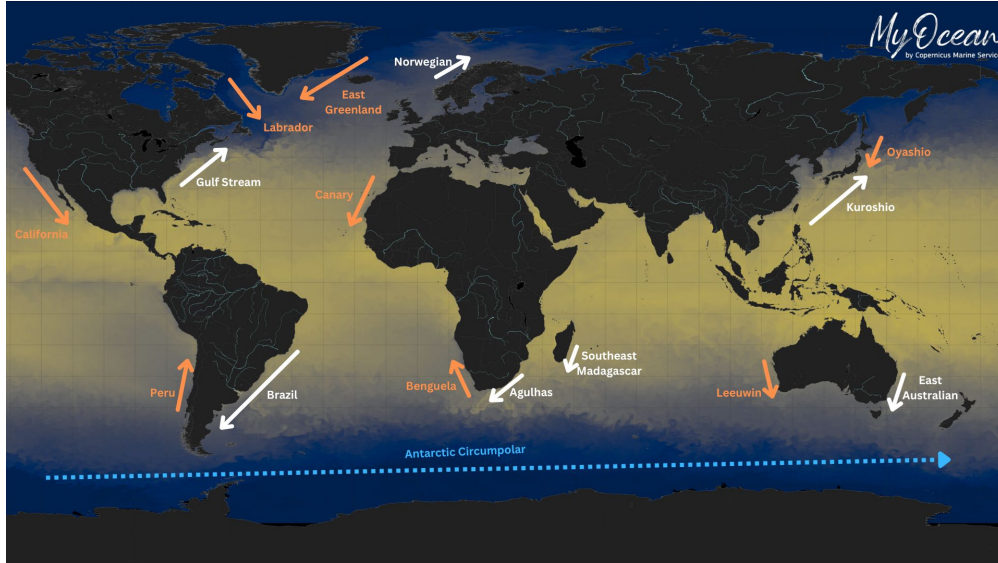
Storm Surge

# — BOUNDARY CURRENTS



Highly energetic currents that border and connect ocean basins transporting heat, salt and nutrients.

Boundary current variability and prediction is critical to **short-term and seasonal weather forecasts, climate adaptation, regional fisheries and food security and blue economies.**



## DELIVERABLES

- Enhanced operational ocean **modelling capability** for the region
- Improved short-term and seasonal **weather forecasts**
- **Product blueprints** for ocean industries
- Integrated boundary current **observing system strategy** for key users
- Report on **economic value** of a boundary current monitoring system

# — BOUNDARY CURRENTS

Pilot Regions: **Understudied** - Agulhas Current,  
**Lessons learnt** - Gulf Stream and Kuroshio



**Core coordination and function [1 FTE]**

**User Engagement [ \$ 200 K** user engagement to co-develop needs through focused workshops ]

**Value assessment [1 FTE** for OSSE analysis, **\$ 100 K** for economic analysis]

## Observing System

### Gaps

- Inventory of pilot BC observing capabilities
- Scope observations with observing networks and regional systems
- Assess gaps in data pathways (RT/DM\*)

1 FTE + \$ 20K workshop

## Prediction System

### Gaps

- Engage/create regional operational modeling facility
- Assess assimilation and model bias
- Design for OSSE's with partner SynObs
- Cross community workshop

Modelling partner(s) + hardware (\$ 50 K)

## Products & Services

### Gaps

- Identify regional products
- Identify delivery needs (e.g. apps, web portals)
- Identify data flow for products
- Develop test products

1 FTE + \$ 50K

## Pilot implementation

### Gaps

- Cross border cooperation
- Pilot study deployment and implementation
- Continuous assessment with stakeholders and across value chain

Order of: \$ 35 million with annual maintenance

## VALUE FOR:

Weather services

Regional fisheries

Ocean Industries, e.g. shipping

Marine resource management

Other Exemplar projects

## Key partners include:

Observing: Argo, SOT, GLOSS, DBCP, OceanGliders, Saildrone, SOFAR Ocean, OceanOPS, OOPC BSTT

Modeling and Forecasting: SAWS, DFFE, SAEON, NOAA, ETOOFS, ECMWF, Mercator, UK Met, SynObs Decade Project

# GOOS CO-DESIGN Boundary Current



Boundary Current



Tropical Cyclones



Marine Heatwaves

Please get in touch!

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# ADVERTISEMENT

## Argo Training Workshop - TBC

Week of 12-15 June or 19-23 June 2023  
(two-three day workshop)  
Cape Town, South Africa

- Argo float types
- Physical handling of Argo floats
- Deployment of Argo floats - various methods
- Argo data access
- Argo data visualisation

