

Sustained and effective ocean observations for the Agulhas Current

- A GOOS Co-Design Boundary Current Initiative -

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What is the GOOS Ocean Observing Co-Design Programme?

The **Ocean Observing Co-Design Program** is a flagship Programme for GOOS and the UN Ocean Decade and will develop a more **user-focused co-design** process to create a truly integrated, responsive ocean observing system.

How do we define Co-Design?

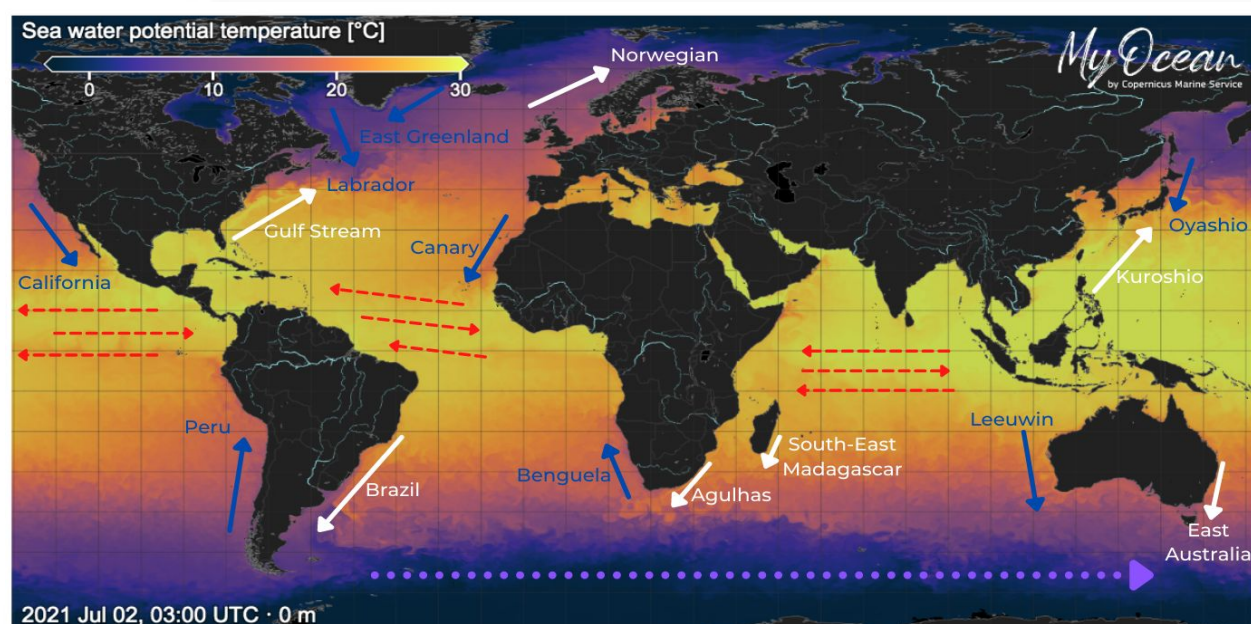
Here we define co-design as a **continuous process**, a collaborative and iterative effort involving all stakeholders - users, observing system implementers, data managers, and modeling/assessment, and/or service providers.

What are the Exemplar Projects about?

Co-Design Exemplar Projects that aim to lift our observing capacity to address key societal issues [read more], whilst developing the infrastructure, multi-disciplinary links and process for co-design. The first set of Co-Design Exemplars include:



What are Boundary Currents?



Boundary Currents are associated with major ocean currents and their dynamics are determined by coastlines, and fall into two distinct categories:

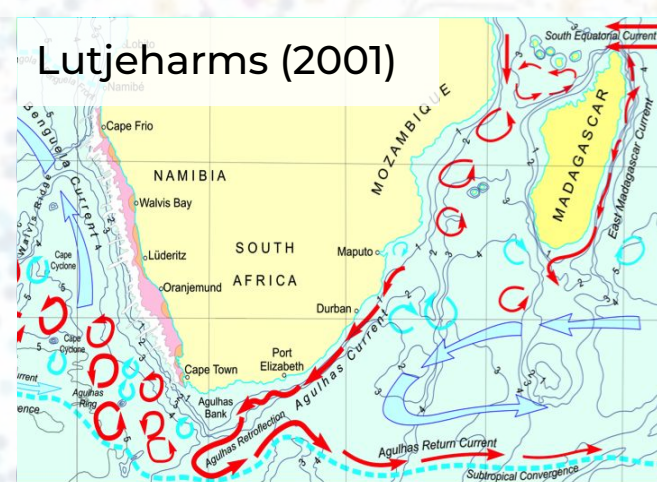
- **Western boundary currents** in white - carry warm salty water away from the equator and drives our climatic system.
- **Eastern boundary currents** in blue - carry cold water to the equator and are rich in upwelling and fisheries.

Why the Agulhas Current?

The Agulhas Current **carries warmer, salty water** from the Indian Ocean into the Atlantic and Southern Oceans¹. It is one of the most

understudied boundary currents and directly influences **regional weather systems**, and impacts the **fisheries** and **aquaculture** of South Africa². Boundary currents around southern

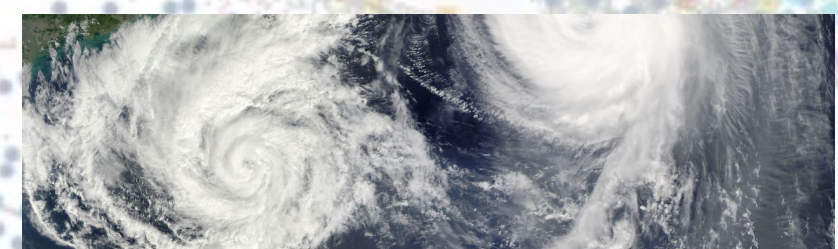
Africa contribute and significantly impact a **multi-million dollar fisheries industry**.



Impact Areas:

Boundary Currents directly impact other societally relevant issues particularly

- **Tropical Cyclones**
- **Marine Heatwaves**
- **Marine Life**
- **The Carbon Cycle**
- **Tourism**



Anticipated Benefits:

- Safety of life at sea
- Efficient shipping
- Offshore renewable energy
- Weather and climate
- Conservation and fisheries
- Pollution

CO-DESIGNING AN EFFECTIVE, RESPONSIVE, SUSTAINED, AND REGIONALLY SIGNIFICANT, OCEAN OBSERVING SYSTEM WILL BRING US CLOSER TO THE OCEAN WE NEED FOR THE FUTURE WE WANT AND INFORM THE DEVELOPMENT OF OCEAN OBSERVING SYSTEMS IN OTHER UNDERSTUDIED BOUNDARY CURRENTS.

How will we do this?

Determine lessons learned of other Boundary Current ocean observing systems

Determine the value chain, from the observations through to end users

Engage with stakeholders, funders, government departments and communities

Design an ocean observing system, its products and services with stakeholders

References: <https://glossary.ametsoc.org> | ¹Morris et al, 2019 (DOI: 10.1029/2019JC015090) | ²Beal et al, 2011 (DOI: 10.1038/nature09983) | Lutjeharms 2001 (DOI: 10.1016/B978-012374473-9.00365-9)