Agulhas Current Observing System Design Workshop

Cape Town, South Africa
Timing: Monday 9 - Thursday 12 September, 2024
Location: 4 Alexander Rd, Bantry Bay, Cape Town, 8001, South Africa, https://www.presidenthotel.co.za/

Website: https://goosocean.org/event/4196;
https://www.oceanexpert.org/event/4196#overview

PURPOSE

Bring together the intermediary[1] user community to capture key gaps in a backbone observing system of the Agulhas Current. This system is defined as the minimum requirements for observations that need to be available and define what it would capture. The output of this workshop will be a report that highlights gaps, a list of EOV/ECV needed to resolve these and a draft system design. Discussions will also determine how add ons to the backbone can help to better assess Tropical Cyclones, Marine Heatwaves and Fisheries impacts in the region.

OUTCOME

- Additional Stakeholder mapping
- Report w/ backbone observing system

OBJECTIVE

- Understand - Boundary Current systems incl. their status of effectively implemented observing systems, the stakeholders reliant on such and which of these systems remain undersampled / under-represented
- Co-Design - effective fit-for-purpose ocean observing (and operational forecasting) system for the pilot region(s) with stakeholders, implementers and government agencies
- Report - out in the form of best practices and other means
- Collaborate - locally, regionally and globally!

[1]Intermediary users are intermediaries to the End Users, entities that integrate the ocean observing data into forecasts, assessments, or other products and services for delivery of information products and services to the end users.

IN ADVANCE

Information supplied prior to meeting

- Boundary Currents Task Team:
    - East Australian Current
    - Kuroshio Current
    - California Current
    - Gulf Stream
    - Mediterranean Sea
- Boundary Currents Task Team Paper
- Online survey in preparation for the workshop. Deadline: Wednesday, 4 September 2024

Timetable Overview

Time	Monday, Sep. 9th	Tuesday, Sep. 10th	Wednesday, Sep. 11th	Thursday, Sep. 12th
8:00 - 9:00	*Registration on-site*			
9:00 - 12:00 (3h)	Welcome Introductory presentation	Multi platform approach and other technology opportunities	Lessons learned and setting priorities	Welcome Importance of the Agulhas Current Value of observation
	Coffee break [10:15 - 10:45]			
	The Agulhas Current	Data infrastructure	Defining EOV/ECV for the Backbone	Backbone observing system
12:00 - 13:30	**Lunch break** (self provided)			**Adjourn**
13:30 - 16:30 (3h)	Societal Impacts	Use and impact of observations in modeling and forecasting framework	Designing a draft system	ECOP Networking Lunch [12-14]
	Coffee break [15:00-15:30]	**Adjourn with coffee** [15:00]	**Adjourn with coffee** [15:00]	
	Societal Impacts	Poster Session [16:00 - 18:00]		
16:30	**Adjourn**			

MONDAY, September 9th

1. Welcome by *local host* [9:00 - 9:15]

STAGE I: Defining existing efforts in the Agulhas Current Observing System

2. Introductory presentation [9:15 - 10:15]

Aim: Provide context for the workshop and overview of the week. This will include a short introduction into the co-design program and the exemplar pilot area. It will provide an overview why it is important to study the Agulhas Current, the value of this system on global and regional scale, introducing the societal impacts (rainfall, etc), stakeholder mapping, and resource and infrastructure limitations.

2.1 The Co-Design Program and this workshop - Ann-Christine Zinkann [10 min]
2.2 The Agulhas Current - Tammy Morris [20 min]
2.3 Feedback of survey results - Jordan van Stavel [5 min]

Q&A [25 min]

COFFEE BREAK [10:15 - 10:45]

3. The Agulhas Current [10:45 - 12:00]
Aims: This session will focus on a short overview on what aspects of the Agulhas current are well observed and understood, what infrastructure is already present in the region, to help start discussions on the gaps for a backbone observing system. The focus of this is to understand and provide an outline of key aspects we need to understand in the Agulhas Current.

CURRENT STATUS IN THE AGULHAS CURRENT [30 min]
3.1 Ocean Observations infrastructure - Tammy Morris [10 min]
3.2 Regional models - Issufo Halo [10 min]

Discussion [25 min]
- What are potential opportunities to leverage in terms of infrastructure?
- How well is remote sensing constraining processes and anomalies?
- What are the physical aspects that would require enhanced (in situ) observing density to be better controlled and forecasted in real time? (short-term and medium-term)

ACTION: Run a word cloud / input assessment on gaps

LUNCH [12 - 13:30 PM]

STAGE II: Determining societal needs and impacts

4. Societal Impacts [13:30 - 14:30]
Aim: This session will aim to give an overview of the societal areas that boundary currents influence, highlight ongoing work and the gaps.

4.1 Tropical Cyclones - Lebogang Makgati [8 min]
4.2 Storm Surge / Extreme waves / Rip Currents - Lebogang Makgati [8 min]
4.3 Early warning systems - Neville Sweijd [8 min]
4.4 Marine Heatwaves - AJ Smit [8 min]

Discussion [25 min]

COFFEE BREAK [14:30 - 15:00]

4. Societal Impacts continued [15:00 - 16:30]

4.5 Search and Rescue - Capt Pretty Molefe [8 min]
4.6 MPA - Caroline Sejeng [8 min]
4.7 Shipping and port authorities - TBC [8 min]

Discussion [30 min]

ACTION: Run a word cloud / input assessment on gaps

End of day Wrap up [30 min]

ADJOURN - 16:30

TUESDAY, September 10th

9. Multi platform approach and other technology opportunities [9:00 - 10:15]
Aim: Give an overview of the various observing platforms and strengths/weaknesses

7.1 Overview of observing platforms - Robert Todd [20 min]
7.2 Opportunities for cost effective platforms - Patrick Gorringe [8 min]
- Strengths and weaknesses
- Multi platform approach benefits

7.3 FVON - Cooper Van Vranken [5 min]
7.4 Fisheries industry - Robert Landman [10 min]

Discussion [30 min]

COFFEE BREAK [10:15 - 10:45]

5. Data infrastructure [10:45 - 12:00]
Aim: Local infrastructure and repositories where data is housed. FAIR / Data need to go out and be shared internationally otherwise they become useless.

7.1 Marine Information Management System (MIMS) - Tshikana Rasehlomi [10 min]
7.2 WMO GTS - TBC
7.3 Global Observing Network Data Repositories - Kevin O'Brien [10 min]

Discussion [45 min]
- Are there any data infrastructure gaps already known?
- Are other data collected in the region that are not currently openly available?

LUNCH [12 - 13:30 PM]

Use and impact of observations in modeling and forecasting framework (operational) [13:30 - 15:00]
Aim: To enhance understanding of how observations are used in model validation, prediction and forecast systems.

6.1 SOMISANA - Jenny Veitch [5 min]
6.2 LACCE - Cristina Russo [5 min]
6.3 Eddy detection algorithms - Sheveenah Sunnassee-Taukoor [5 min]
6.4 SAWS Marine Operational Models - Lebogang Makhati [5 min]

6.5 GLORYS Copernicus - Elisabeth Remy [10 min]

Assessment impacts of observations

6.6 OSE/OSSE/FSOI Studies - Andy Moore [10 min]

6.7 OSE Example: SynObs - Elisabeth Remy [5 min]

Discussion [45min]

ADJOURN [COFFEE] - 15:00

POSTER SESSION IN THE SAME VENUE [16:00-18:00]

WEDNESDAY, September 11th

STAGE III: Determining the Backbone Observing System

**This system is defined as the minimum requirements for observations that need to be available and define what it would capture.*

5. Lessons learned and setting priorities [9:00 - 10:15]

Aim: Stocktaking of the gaps listed in Session 1 and boundary current task team recommendations for observations and modeling and prediction. This session will provide information and recommendation to guide the afternoon discussion on defining the backbone system.

5.1 EOV/ECV Concept introduction - Belén Martín Míguez [10 min]

5.2 Lessons learned in methodology and design from other BC systems [15 min]

- Gulf Stream - Robert Todd
- South China Sea - Weidong Yu
- East Australian Current - Bernadette Sloyan

5.3 BSTT recommendations from paper - Nadia K. Ayoub [15 min]

Discussion [35 min]

What are the key processes we need to understand and proposed priority gaps for backbone observing system:

- Accurately representing the mesoscale circulation (Agulhas + eddies + shelf-scale flow) in models seems like a (the) key baseline goal

- Air-sea interactions
- Shelf edge upwelling
- Retroflections zone

COFFEE BREAK [10:15 - 10:45]

6. Defining EOV/ECV for the Backbone [10:45 - 12:15]

Aims: Interactive working session on the **platform agnostic** needs of a backbone observing system based on 3-4 priorities set in session 5.

Materials
- Map of the area with existent observing infrastructure
- Map showing impact areas (e.g., TC, MHW)
- List of observing gaps (from day 1)
- Matrix to capture EOV/ECV needs

BREAKOUT 1	**BREAKOUT 2**
FOCUS: EOV/ECV variables observed for each process and defining scale GOAL: Define what variables (EOV/ECV) need to be observed to assess key priority processes	

LUNCH [12:15 - 13:30 PM]

6. Designing a draft system [13:30 - 15:00]

6.1 Readout - 30 min
6.2 Start of design - 60 min

BREAKOUT 1	**BREAKOUT 2**
FOCUS: Start discussions around depth for each EOV/ECV, potential platforms and draft design GOAL: What depths need to be observed (Surface, subsurface etc.), what platforms combination would be able to observe set EOV/ECV and put dots on a map	

Materials
- Map of the area with existent observing infrastructure
- Map showing impact areas (e.g., TC, MHW)
- List of observing gaps (from day 1)

- Matrix to capture EOV/ECV needs

ADJOURN [COFFEE] - 15:00

THURSDAY, September 11th

Welcome [9:00 - 9:10]

Importance of the Agulhas Current [9:10 - 9:40]
Aim: Provide context why it is important to study the Agulhas Current properly - the value of this system on global and regional impacts, introducing the societal impacts (rainfall, etc), stakeholder mapping, and what the current observing system covers and resource limitations are to inform the workshop outcomes.

- The Agulhas Current - Tammy Morris [10 min]
- Societal impacts - Ann-Christine Zinkann [15 min]
- Q&A

Value of observation [9:40 -10:15]

- IMOS Value assessment of ocean observations - TBC [10 min]
- Economic assessments - ocean accounts - Nicole du Plessis [10 min]
- Q&A

COFFEE BREAK [10:15 - 10:45]

Present draft observing system design for the Agulhas current [10:45 - 12:00]
- Review of the workshop [5 min]
- Draft Backbone observing system design - Robert Todd [15 min]

Discussion
Leading questions:

- How does the design fit with South African government department / funding agency priorities and mandates?
- Is the design one your government department / funding agency sees valuable to support, either through personnel, equipment or funding.
- How can we strengthen existing or create new collaborations with stakeholders and end users.

ADJOURN - 12:00

ECOP NETWORKING LUNCH [12:00 - 14:00]