

# The South African National Oceans & Coastal Information Management System (OCIMS):

## A Co-Designed Path from Data Production to Actionable Insights

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<sup>3</sup>The Council for Scientific and Industrial Research



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# OCIMS: Vision and Objectives



- **Improve ocean protection and management** and promote the development of an environmentally conscious ocean economy through the **sharing of knowledge and data across** the public and private sector.
- **Encourage** across-government **collaborations**, communities of practices and partnerships.
- Develop a **fit-for-purpose operational system** through continued consultations between developers and stakeholders.
- Remain **locally relevant** and **globally cognizant**.



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# OCIMS: Decision Support Tools


- 8 **fit-for-purpose** Decision Support Tools (DeSTs)



**Coastal Viewer**  
Coastal Viewer is a web-based tool that allows users to view and download coastal data from various custodians and perform basic spatial queries.


Contact us to contribute data.

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**Marine Spatial Planning**  
Marine Spatial Planning is a decision support tool for marine spatial planning activities in terms of the Marine Spatial Planning Act (Act no. 16 of 2018).

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**Aquaculture and Fisheries**  
A satellite remote sensing product that allows users to monitor algal blooms and other marine phenomena.

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**Coastal Flood Hazard**  
Coastal Flood Hazard is a bathtub-based flood model that allows users to assess flood risk for coastal areas.

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**Water Quality**  
Water quality results from a point-source sampling initiative. To contribute to this initiative, please contact us.

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**Operations at Sea**  
Use of ocean models and sea state parameters.

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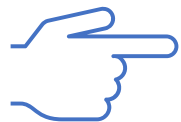
**Integrated Vessel Tracking**  
This tool is access controlled. It allows users to track vessels in the marine environment.

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**Top Predator**  
Archival data repository for marine and coastal data.

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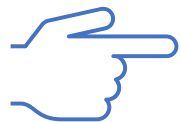
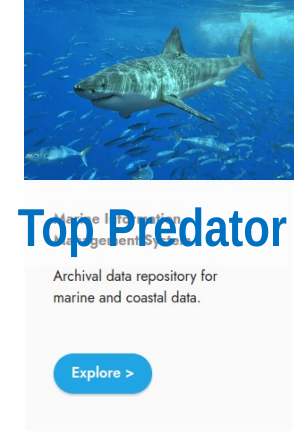
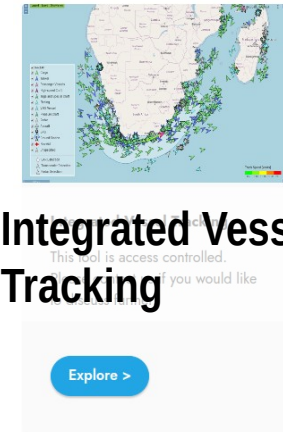
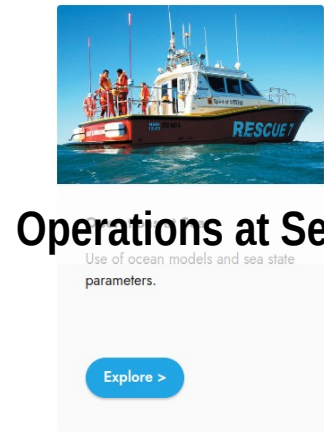
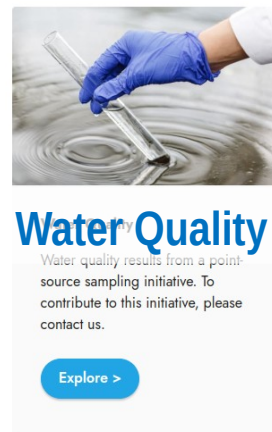
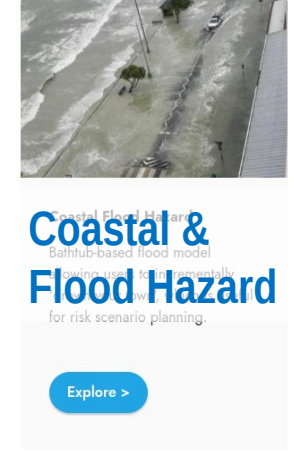
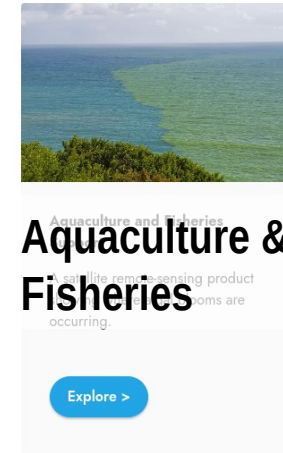
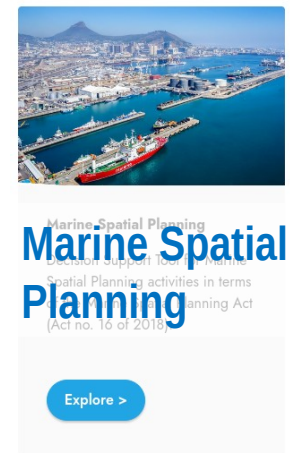
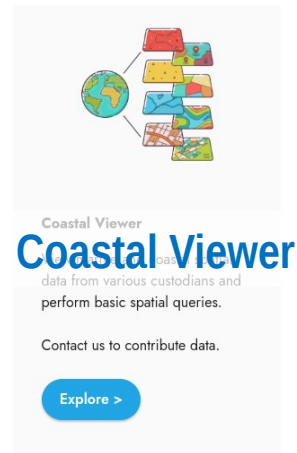
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# OCIMS: Decision Support Tools

- 8 **fit-for-purpose** Decision Support Tools (DeSTs)
- Operational DeSTs: Integrated Vessel Tracking, Fisheries and Aquaculture and Operations at Sea. These are very **data intensive** and require **constant data feeds**.



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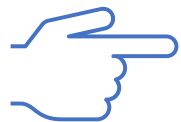
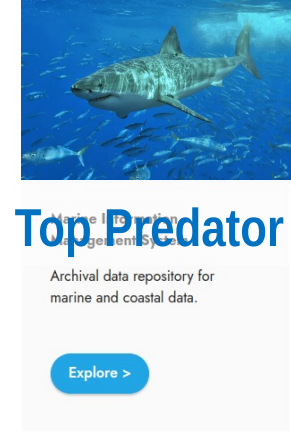
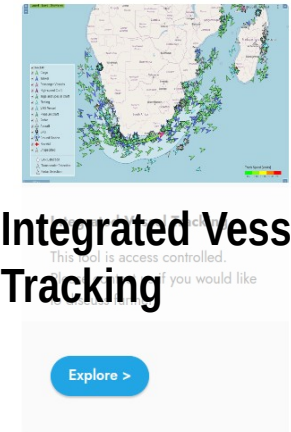
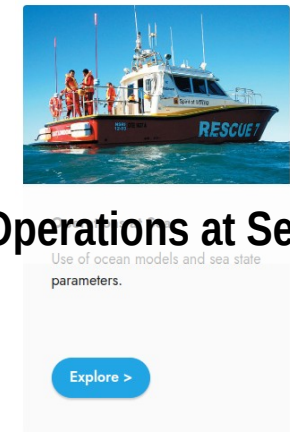
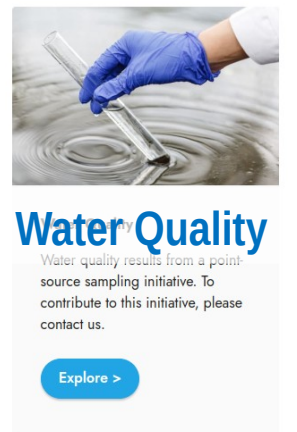
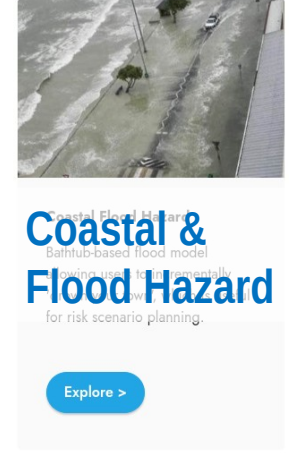
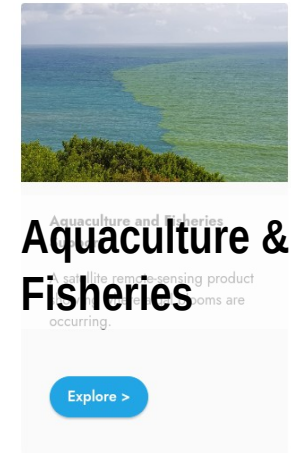
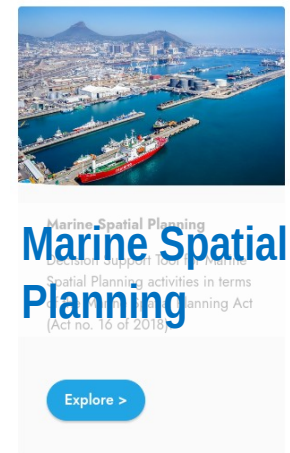
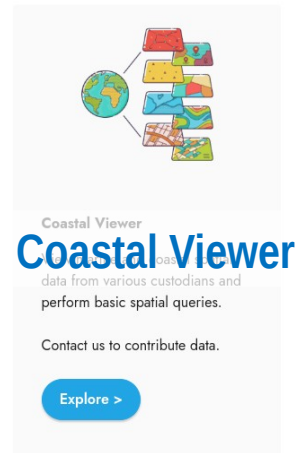
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- Operational DeSTs: Integrated Vessel Tracking, Fisheries and Aquaculture and Operations at Sea. These are very **data intensive** and require **constant data feeds**.
- Other DeSTs are more static and GIS-like with **data layers updated** when new data becomes available.



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# OCIMS: Co-Design Pathway

- Stakeholder Engagement via dedicated **Technology Advisory Groups (TAG)** for each decision support tool.



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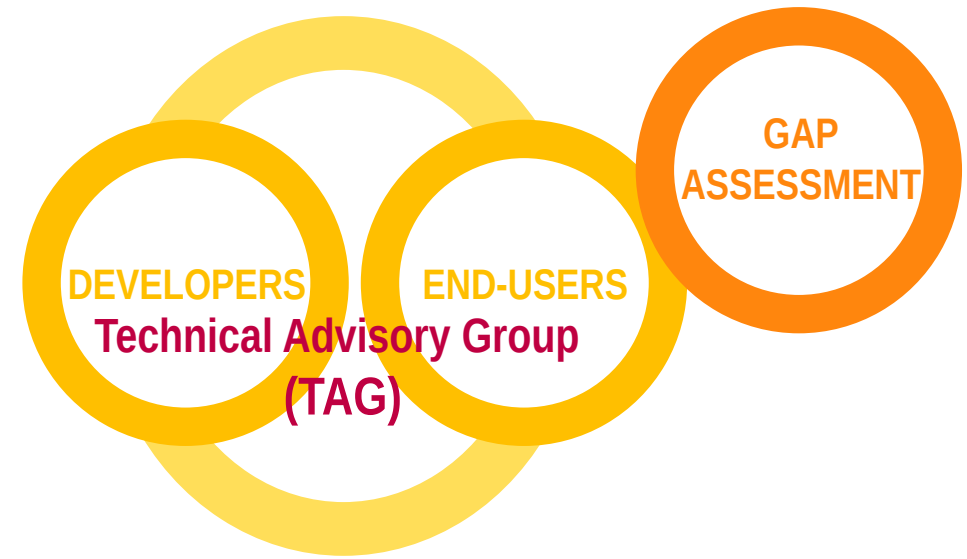


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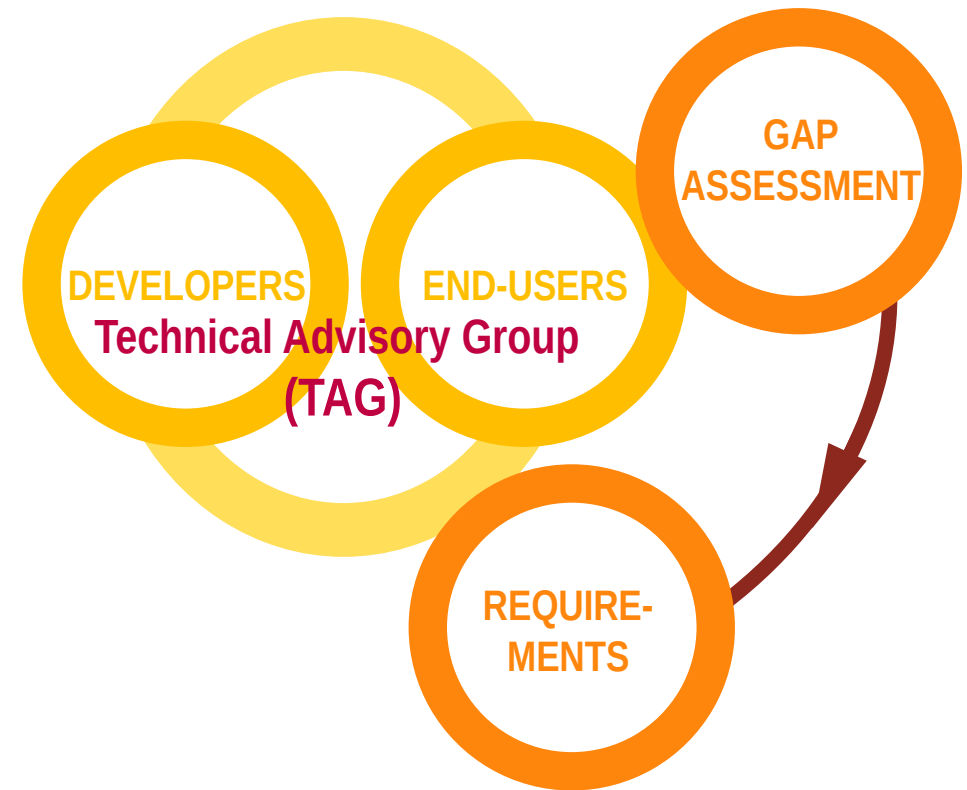
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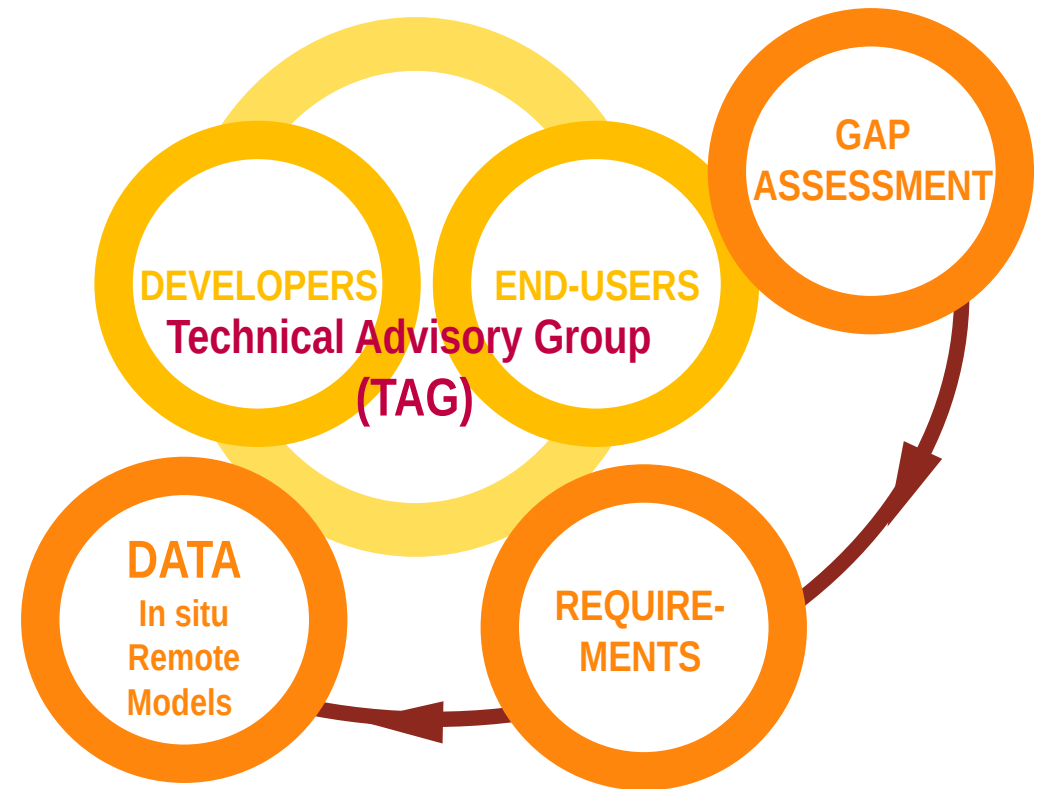
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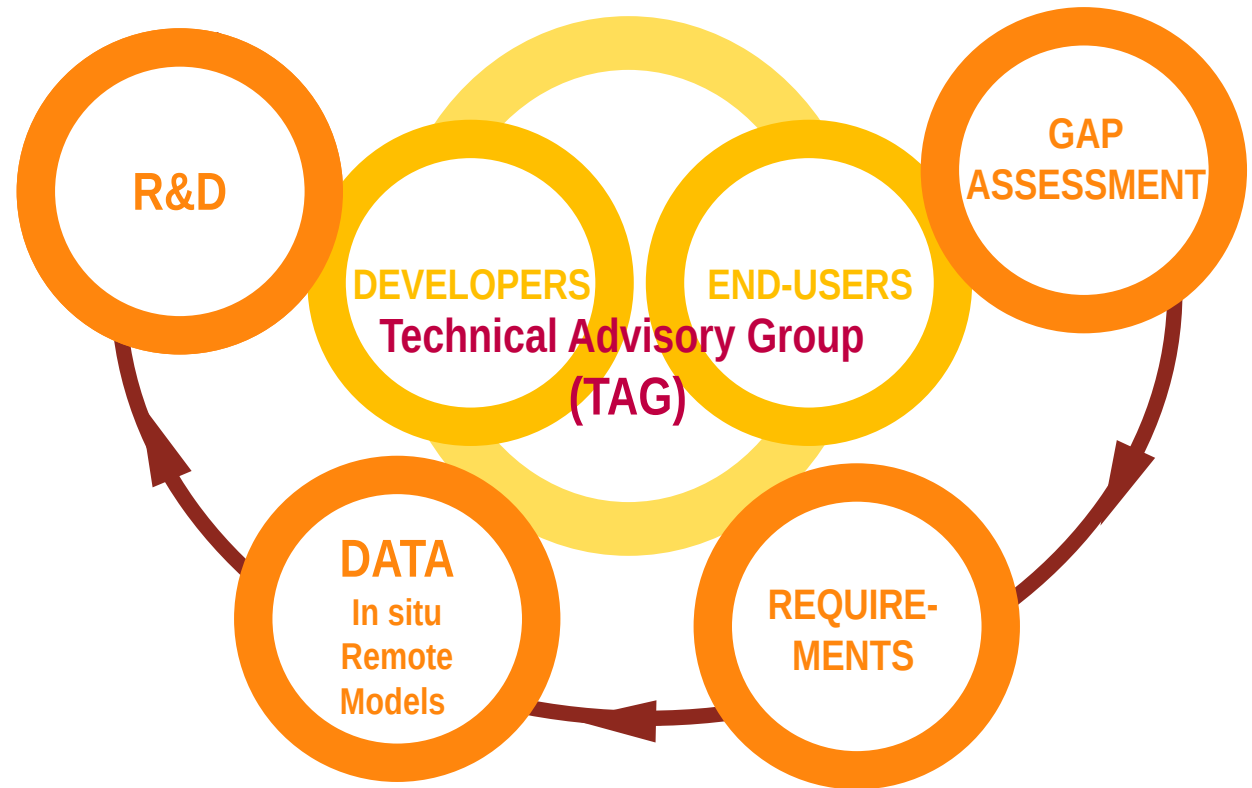


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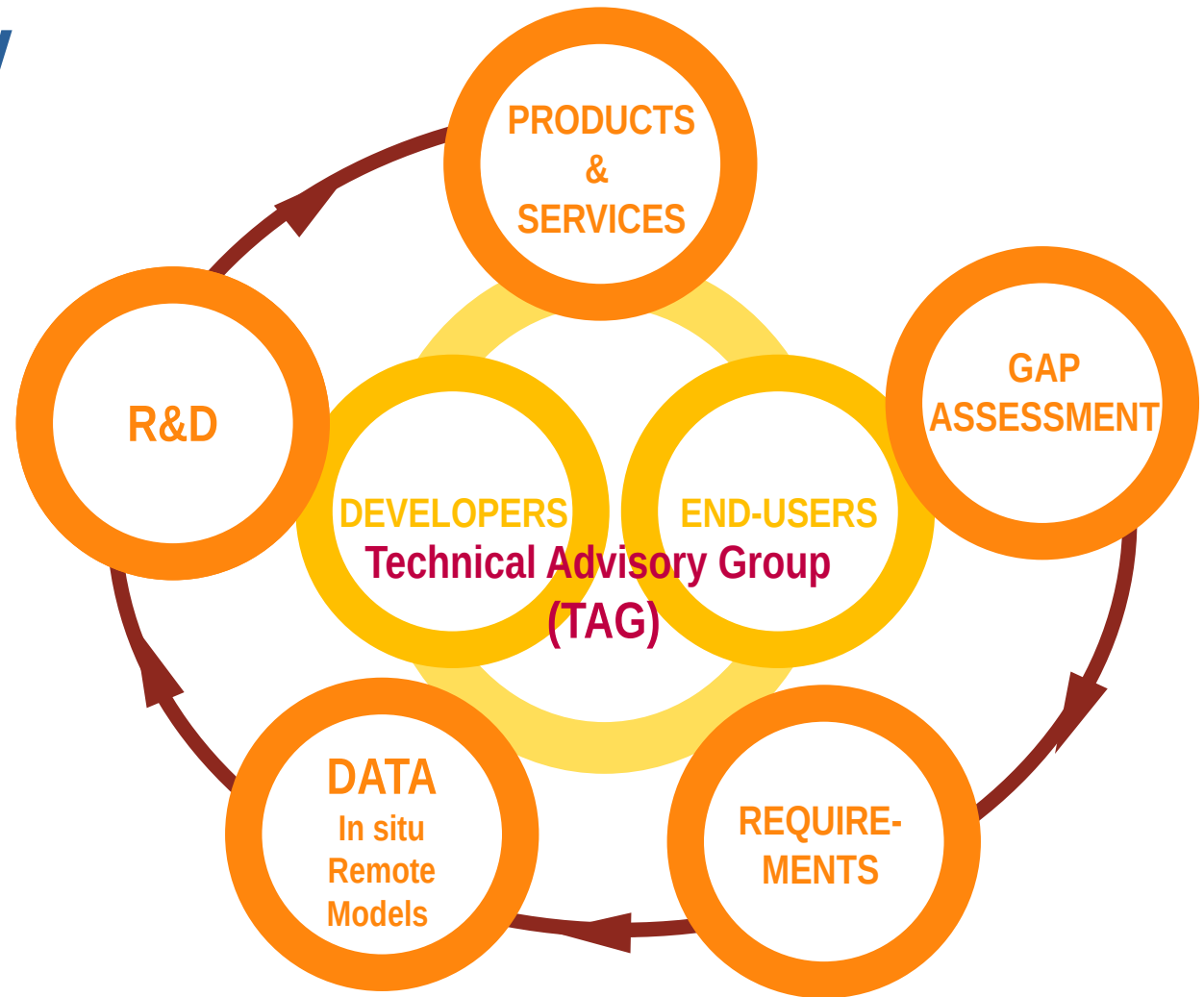
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- **Fit-for-purpose** knowledge products



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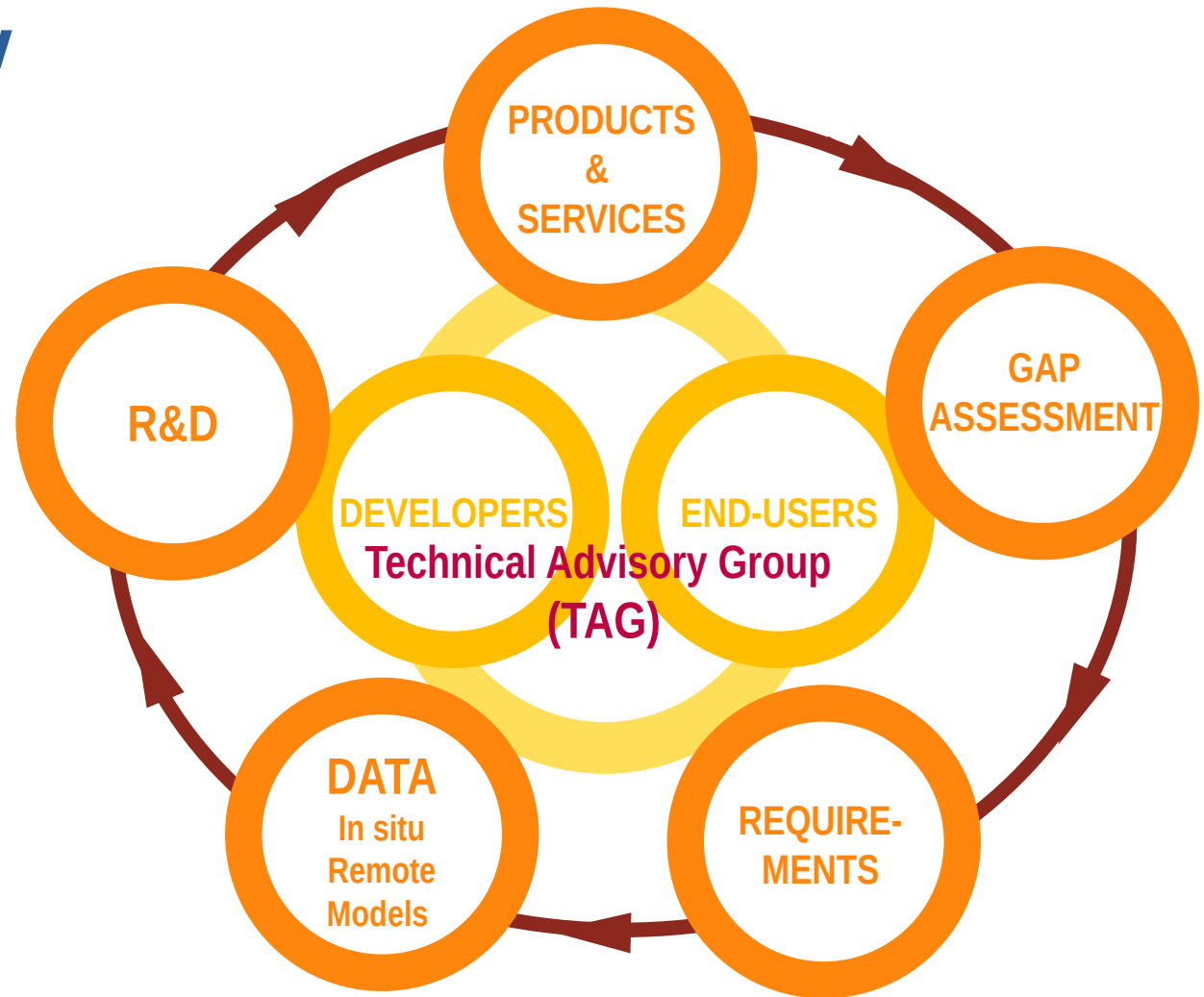
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- **Research and development** to extract knowledge from the data
- **Fit-for-purpose** knowledge products
- Iterative!



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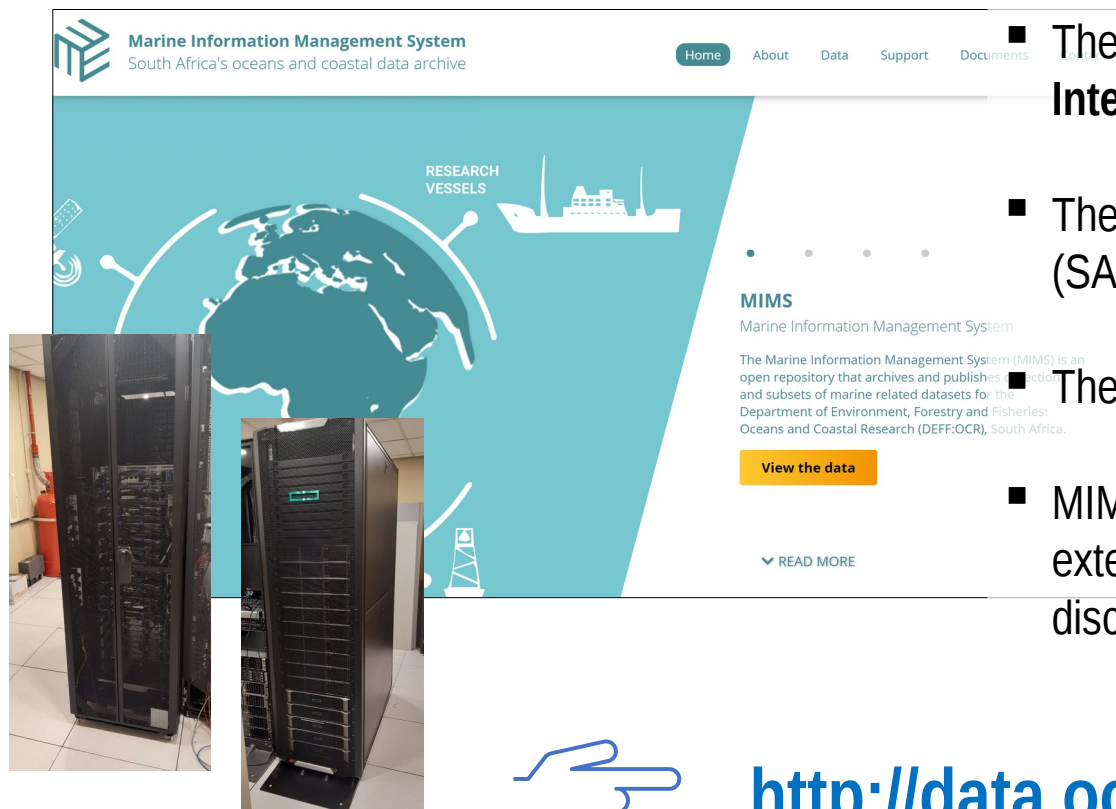
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# Marine Information Management System (MIMS)



- The South African node for ocean data and an accredited data unit of the **Intergovernmental Oceanographic Commission of UNESCO**.
- The repository for the **Southern African Data Centre for Oceanography (SADCO)** historical data archives
- The **AfrObis Node for sub-Saharan Africa**.
- MIMS is an **inter-operable** system which shares its Metadata with external repositories (SAEON, GEOSS, IODE, AfrOBIS) to maximise discoverability.



<http://data.ocean.gov.za>



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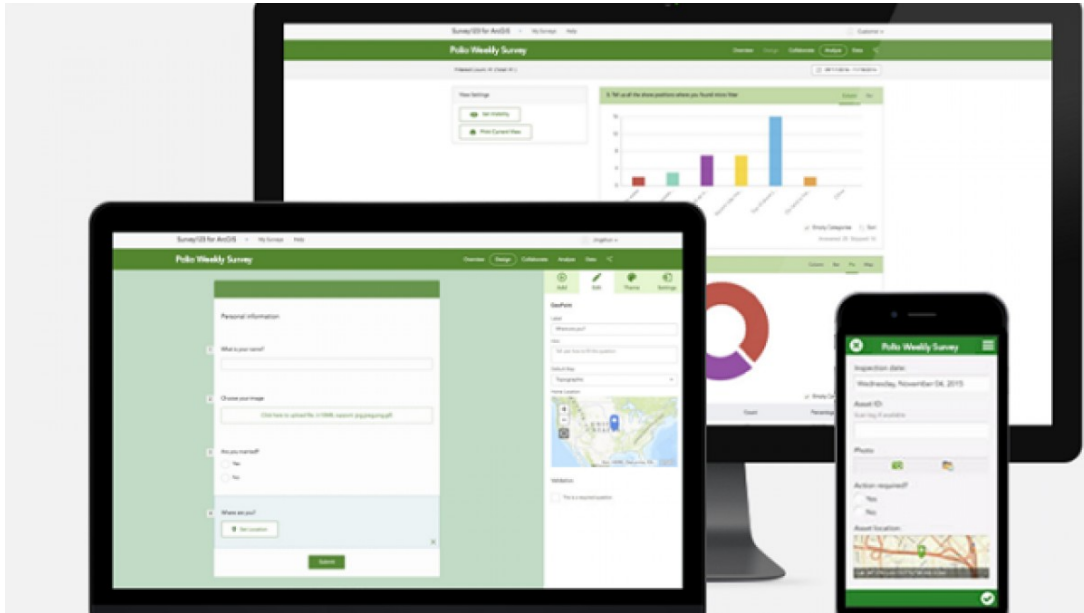
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# Facilitating data flow through apps



- Data captured during patrols using smartphones, tablets and/or laptops
- Immediately received in the database and stored on DFFE GIS cloud
- The data Apps are GIS-based but no GIS knowledge is required.
- Data immediately available for visualization
- Data can later be archived on MIMS or pushed through OCIMS DeSTs

**The apps can be used at no costs to the user**



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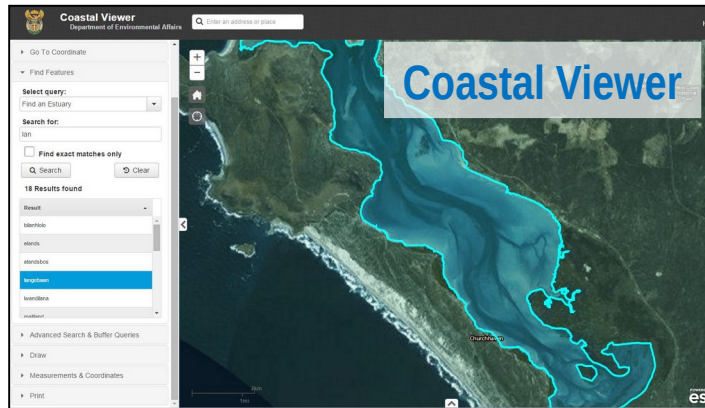
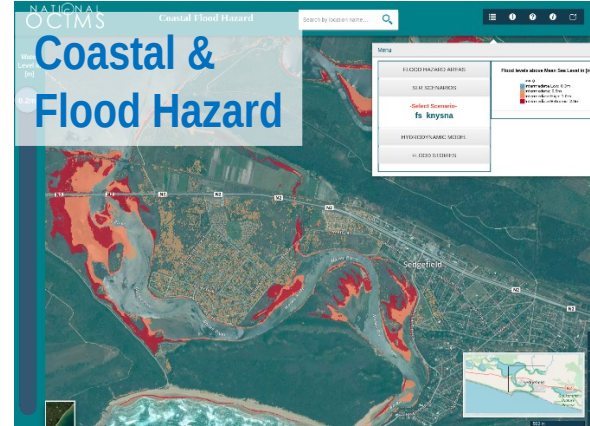
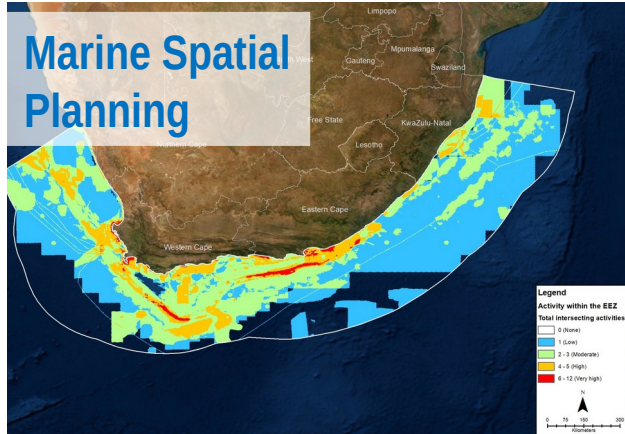


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# GIS-based Decision Support Tools



## Coastal Viewer

View marine and coastal spatial data from various custodians and perform basic spatial queries.

Contact us to contribute data.

[Explore >](#)



## Marine Spatial Planning

Decision Support Tool for Marine Spatial Planning activities in terms of the Marine Spatial Planning Act (Act no. 16 of 2018).

[Explore >](#)



## Coastal Flood Hazard

Bathtub-based flood model allowing users to incrementally 'drown your town', which is useful for risk scenario planning.

[Explore >](#)

Provide access to layers with basic interactivity for non-experts. Users cannot edit/manipulate data (controlled environment).

## Users:

- Coastal Municipalities
- Coastal Provinces
- Town planners
- Disaster managers
- Environmental practitioners
- Developers



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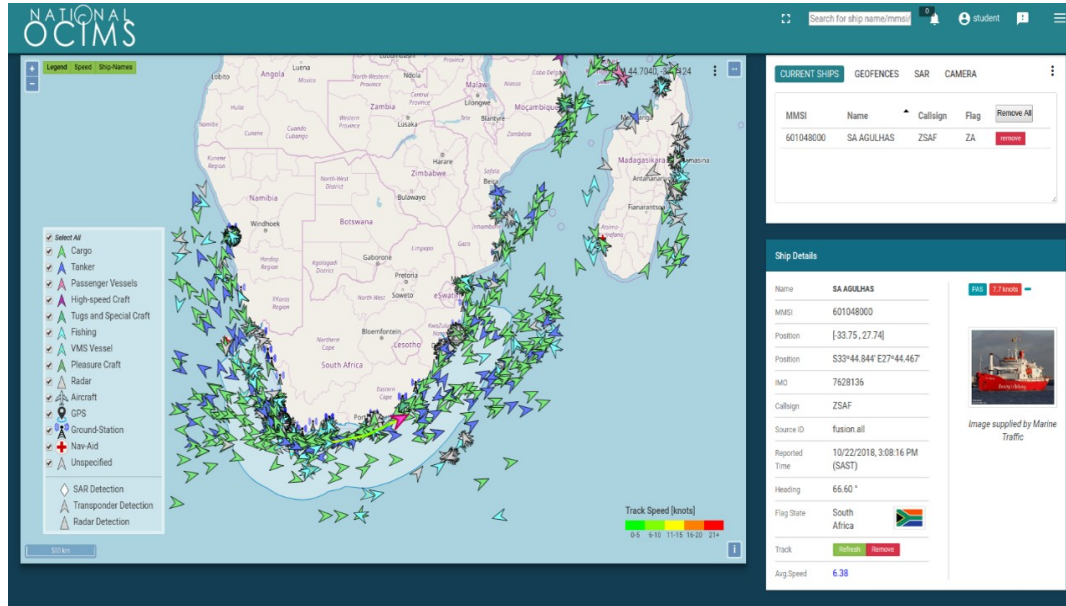


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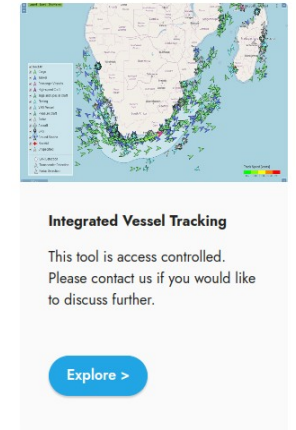
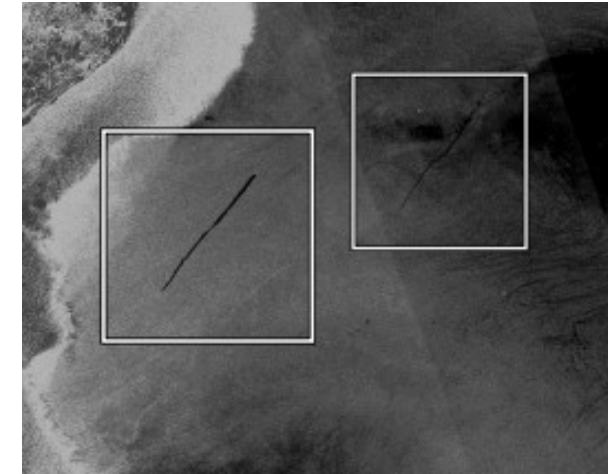




# Integrated Vessel Tracking Decision Support Tool



Used for vessel monitoring and surveillance, illegal activity detection, operations planning, Oil spill/ Bilge detection, safety at sea. Uses AIS, VMS, Satellite SAR etc..



## Users:

- State Security Agency
- Department of Defence
- South African Maritime Safety Agency
- South African Navy
- Marine pollution (DFFE)
- SARS
- Border Management Authority



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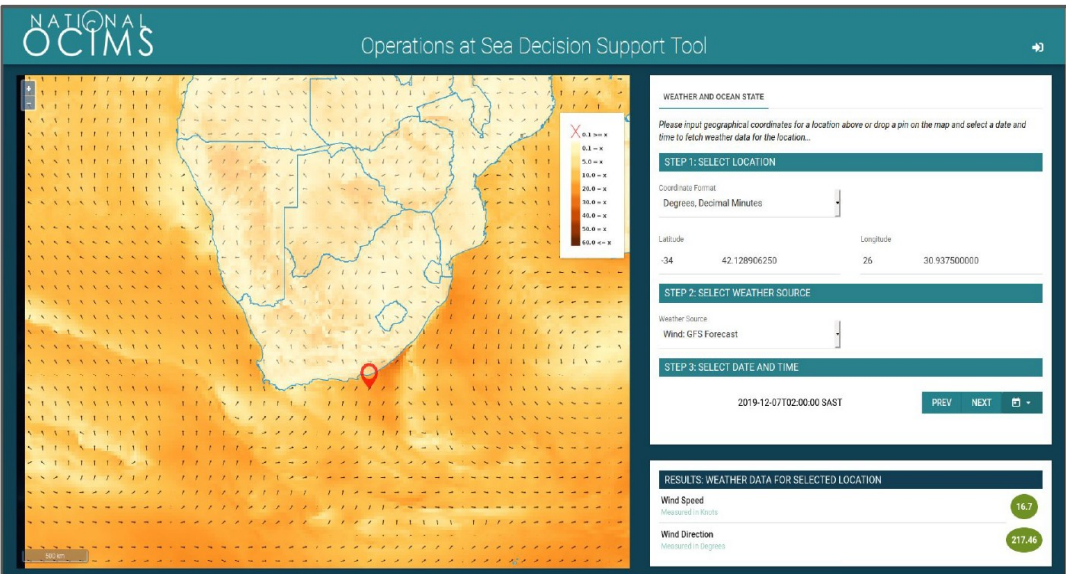
# Operations at Sea Tool Decision Support Tool



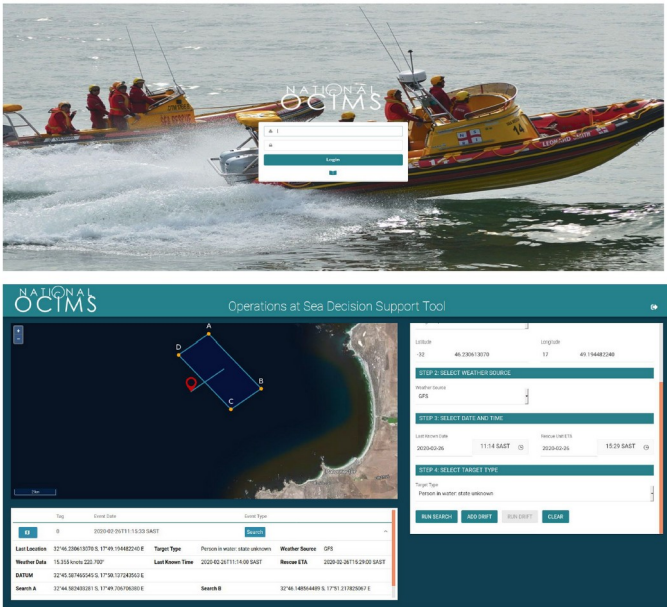
### Operations at Sea

Use of ocean models and sea state parameters.

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Open access to sea state forecasts of wind, waves and currents based on both freely available global systems as well as regionally optimized systems (South African Weather Service and SAEON models).



Prevents human error calculation, promote rapid response and is used for volunteer training.



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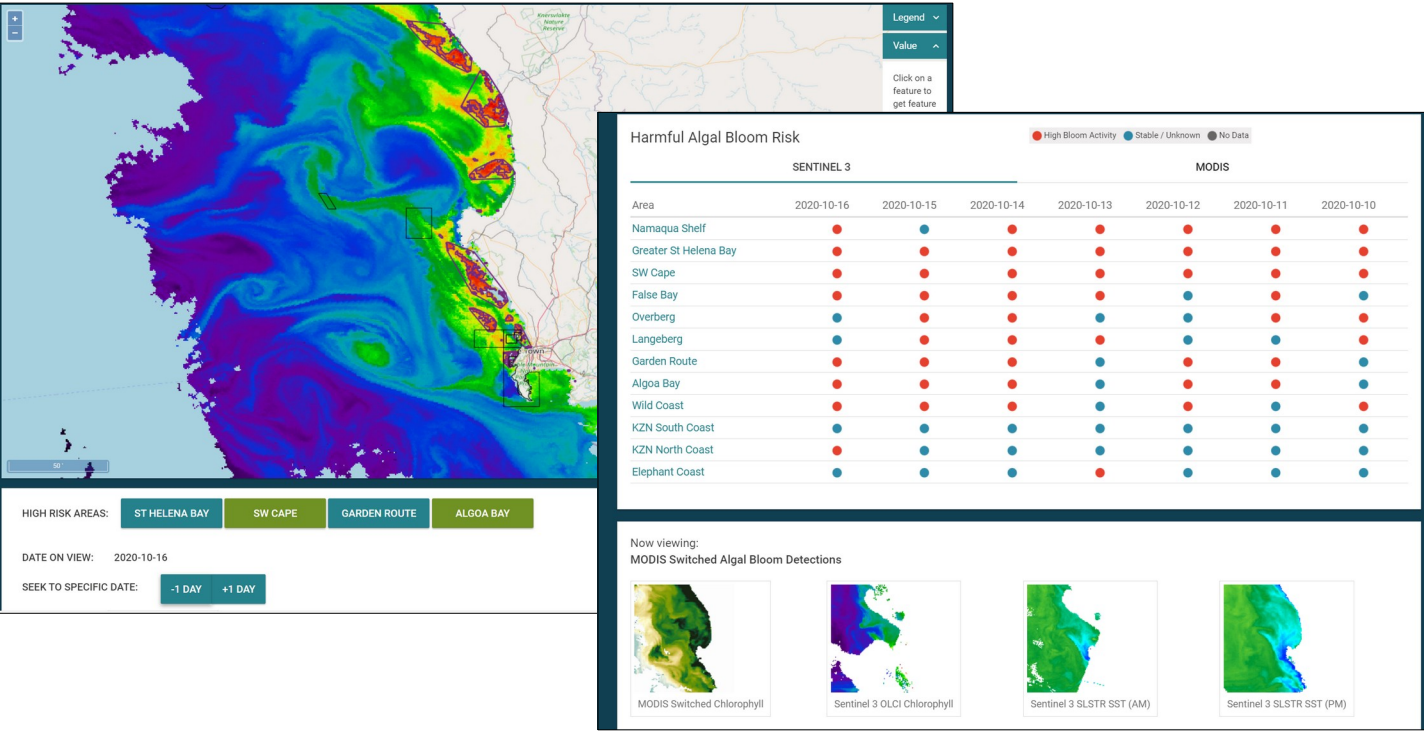
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# Fisheries & Aquaculture Decision Support Tool

## Harmful algal Bloom monitoring



The tool identifies high risk zones for red tides and provides alerts to stakeholders.

- Users:
- Aquaculture Industry
  - Fishing Industry
  - Small-scale fishers



**Aquaculture and Fisheries Support**

A satellite remote-sensing product showing where algal blooms are occurring.

[Explore >](#)





# Fisheries & Aquaculture Decision Support Tool

## An exemplar of effective stakeholder co-design

### Relationship Building

- Being invited in my one of the stakeholder community or someone they **trust**
- **Face to face** interactions are important
- **Whatsapp** groups

### Data sharing

- Aquaculture farms **share** data via GIS tool.
- Data only open to those who **share**
- SST and chl maps **provided** via the OCIMS DeST as well as on the Abalobi Fisher app.
- Via whatsapp groups: abalone farmers share phytoplankton counts and visual sightings and OCIMS **shared** useful mapped data



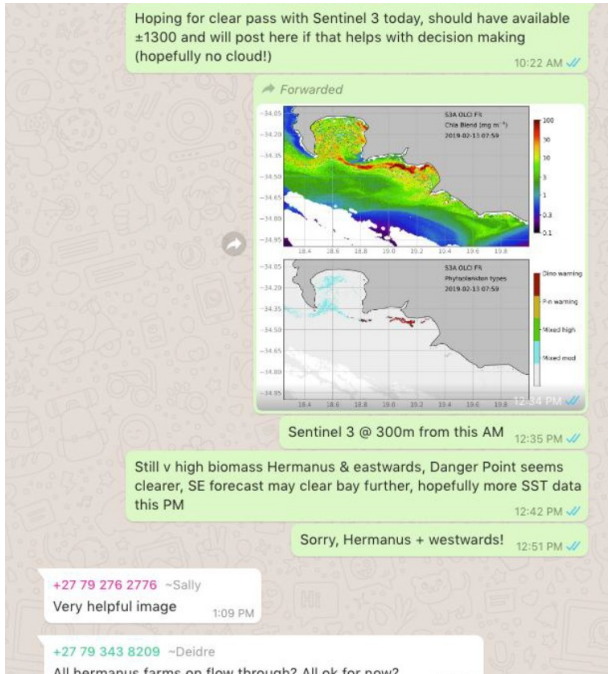
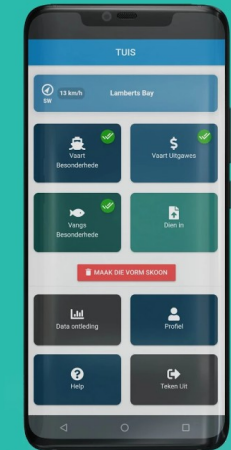
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Plan and track your fishing activity in an easy to use app



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# Regionally Optimized Operational Models

- 1) **South African Weather Service** forecasts of wind, wave and storm surge
  - 2) **SAEON** nearshore current forecasts and hindcasts
- Hindcast/reanalysis: support future planning, legal requests or understanding of past events
  - Forecasts: preparedness for response to maritime incidents (e.g. oil spills, vessel sinking, loss of containers)

## Ongoing developments:

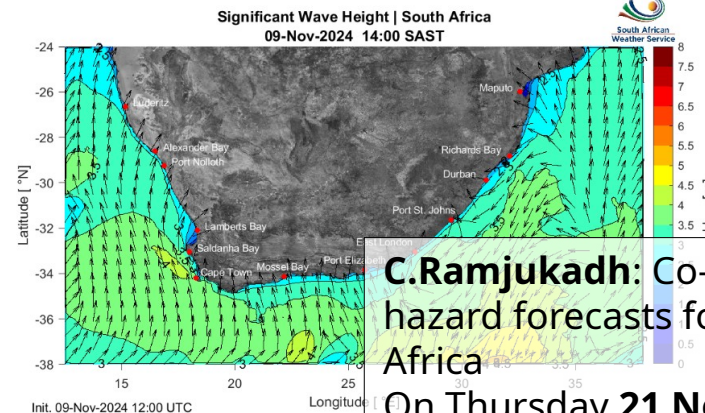
- Extend nearshore forecasts to include full South African coastline (south and east coasts)
- Integrate with and add value to more decision support tools

**G. Fearon:** A relocatable approach to regional ocean forecast systems: applications along South Africa's continental shelf

On **Wednesday 20 November, Session 2.2**



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**C. Ramjukadh:** Co-development of operational rip hazard forecasts for the Cape Peninsula of South Africa

On **Thursday 21 November, Session 7.2**



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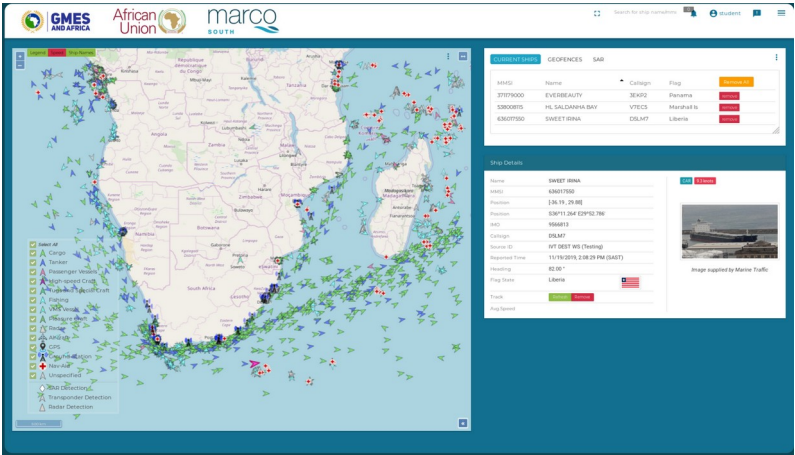
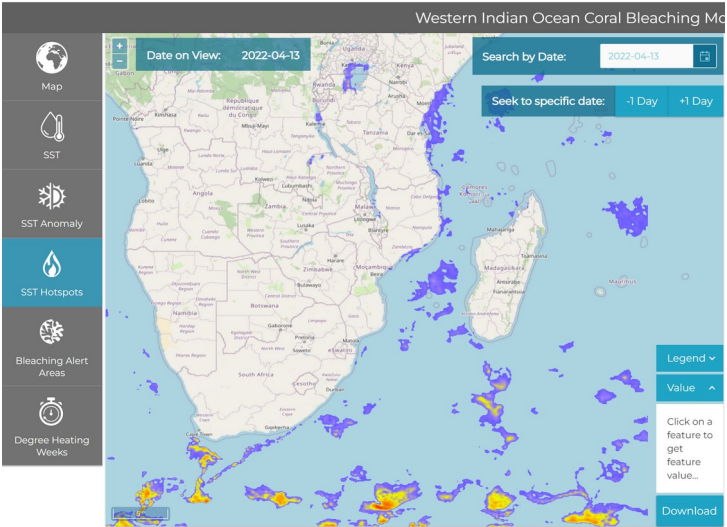
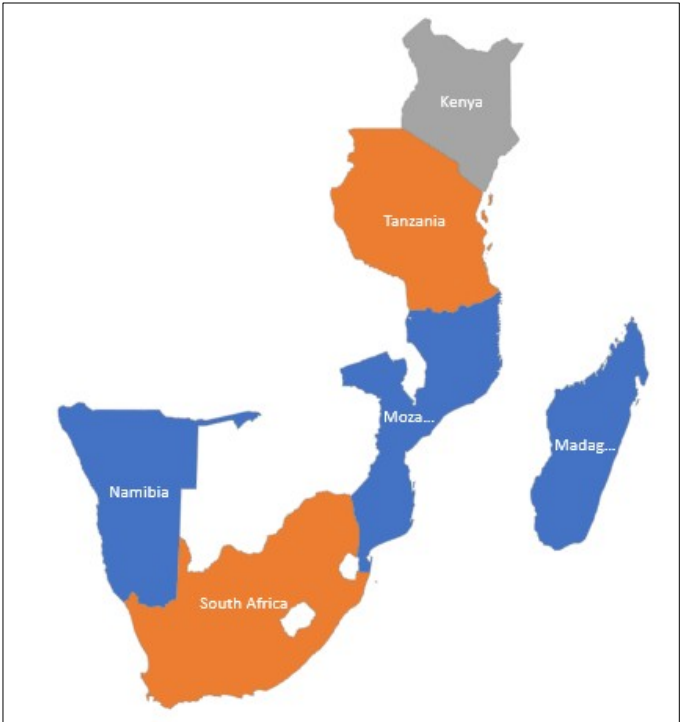
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# Extending Services: MarCOSIO



Co-development between National OCIMS and EU funded GMES & Africa, MarCOSIO provides mechanism for regional expansion of ocean services

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# Thank You

**Jennifer Veitch**

A Sustainable Ocean Modelling Initiative: a South African Approach  
South African Environmental Observation Network

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