

# Aquaculture and Fisheries Decision Support Tool

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# The Challenge

- Environmental threats such as **Harmful Algal Blooms (HABs)** and **ocean heatwaves** have the potential to negatively affect natural and farmed **marine resources**.
- Also, monitoring these events across the **large spatial scales** of South African coastal waters is challenging



## RED TIDE DEVASTATES SOUTH AFRICAN ABALONE FARMS

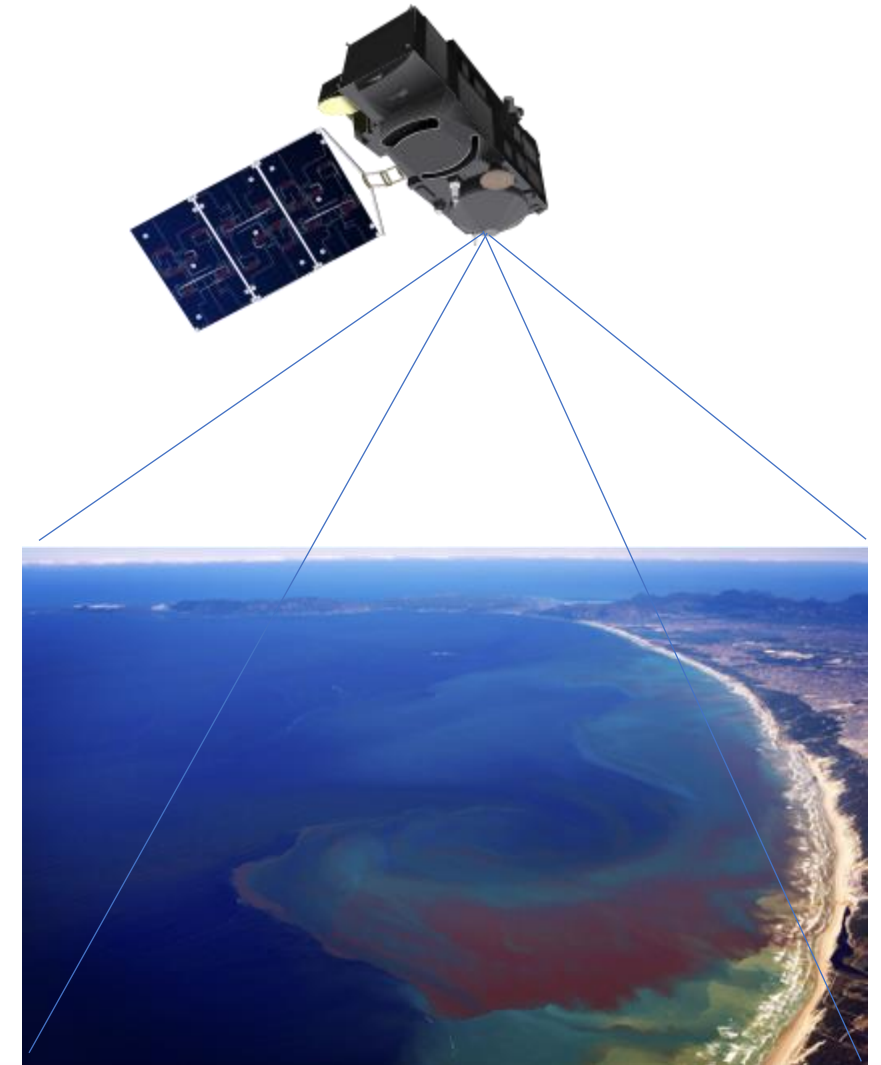
Dr. Alex Mouton, BVSc, MSc

an abalone farms suffered devastating losses due to a m earlier this year. Three farms situated in Hermanus, past, lost up to 50 percent of their stock. These farms mated 24 million abalone, or a third of the total South



# The Solution

- Therefore, **continuous monitoring** of these resources is essential
- Satellite provides data over much greater space and time scales than possible with only **in-situ** measurements
- Synoptic scale **satellite-derived maps** provide farm managers and government departments with information to **support decision-making** that help **mitigate these threats** and **avoid unnecessary economic losses**.

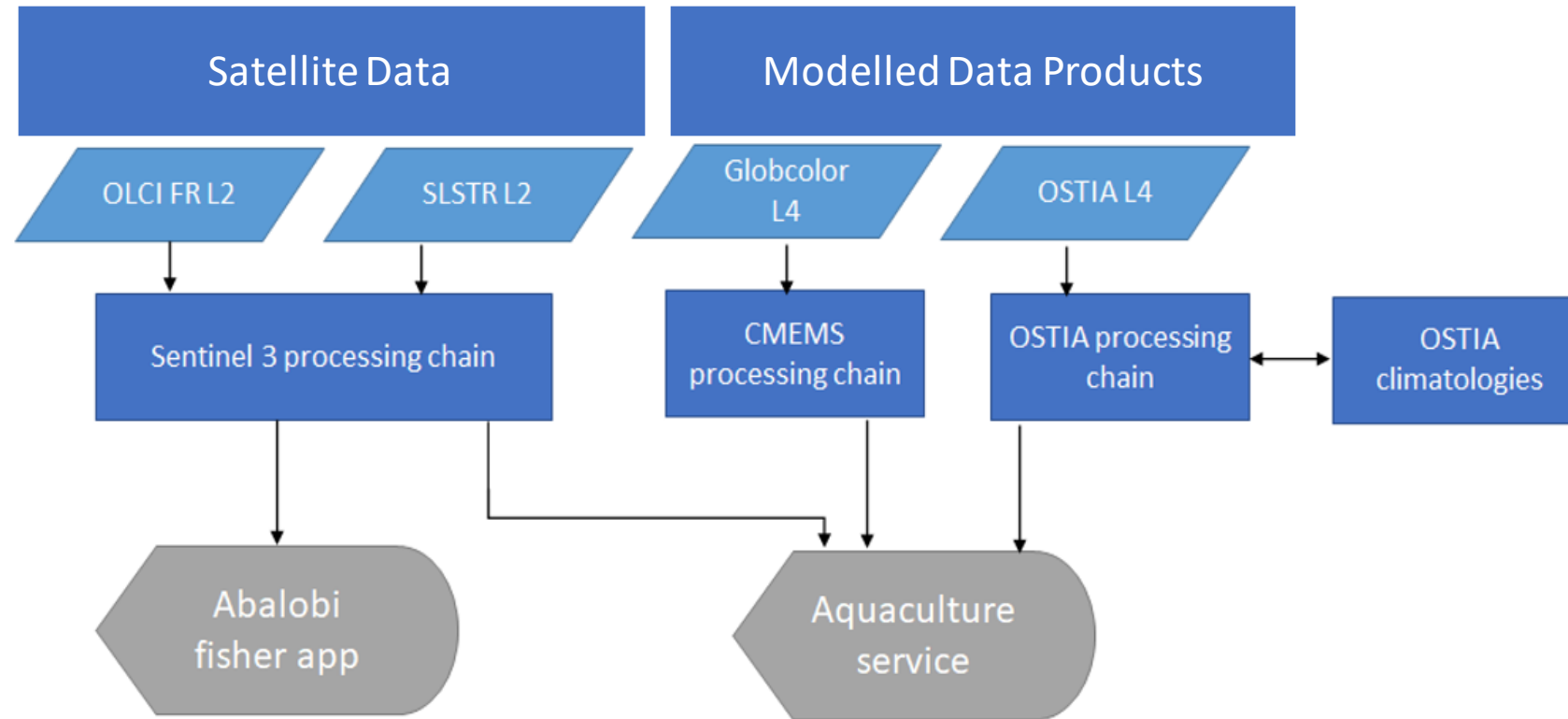


# Earth Observation Data

Data Source



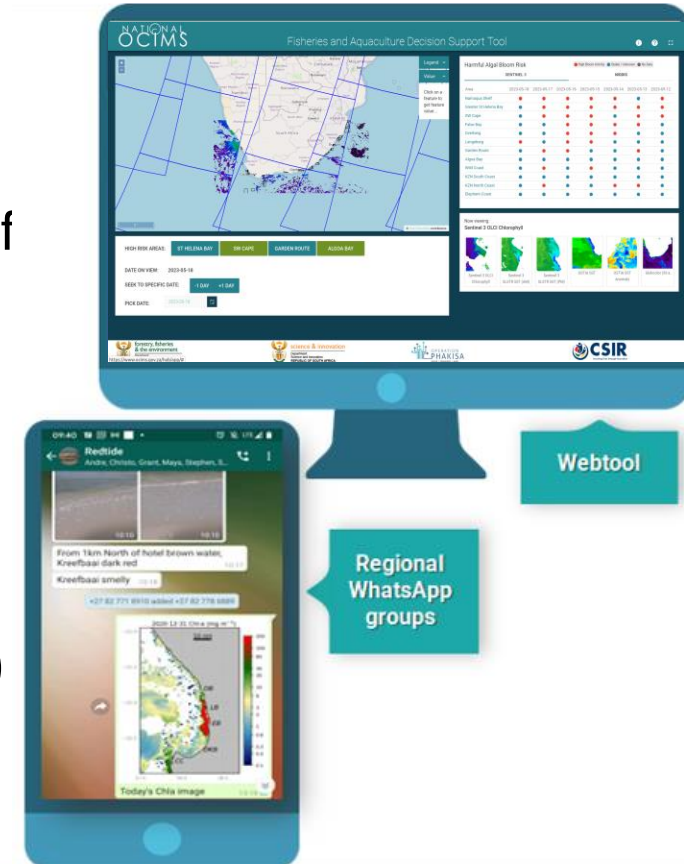
# Earth Observation Data Processing Chains



# Aquaculture Decision Support Tool

- **Aquaculture supported through :**
- Web-based **User Interface**, providing present and historical maps of **Chl-a**, Sea Surface Temperature (**SST**), and **SST anomalies**
- Regional **WhatsApp groups**, providing relevant site-specific, near-real time high resolution satellite images
- **Email alerts** sent to users when there are bloom events
- **Phytoplankton count** data capture tool and dashboard (controlled access)

<https://www.ocims.gov.za/hab/app/>



# Decision Support Tool Features

The screenshot displays the 'Fisheries and Aquaculture Decision Support Tool' interface. The main map shows a coastal region with a color-coded risk overlay. A table on the right provides a 7-day bloom persistence indicator for various coastal areas. Below the map, there are controls for high risk areas, date selection, and a product selector.

**Product information button**

**7-day bloom persistence indicator**

Area	Harmful Algal Bloom Risk						
	2023-04-18	2023-04-17	2023-04-16	2023-04-15	2023-04-14	2023-04-13	2023-04-12
Namaqua Shelf	●	●	●	●	●	●	●
Greater St Helena Bay	●	●	●	●	●	●	●
SW Cape	●	●	●	●	●	●	●
False Bay	●	●	●	●	●	●	●
Overberg	●	●	●	●	●	●	●
Langeberg	●	●	●	●	●	●	●
Garden Route	●	●	●	●	●	●	●
Algoa Bay	●	●	●	●	●	●	●
Wild Coast	●	●	●	●	●	●	●
KZN South Coast	●	●	●	●	●	●	●
KZN North Coast	●	●	●	●	●	●	●
Elephant Coast	●	●	●	●	●	●	●

**Product selector**

**Date selector & scrolling function**

**Jump to high risk regions**

**Product window**

**Bloom analytic**

# Users and Stakeholders

- Government departments (e.g. DFFE)
- Industry (aquaculture & fisheries community)
- Biosecurity
- Local authorities, municipalities, disaster managers
- Open water swimming and safety





# Future Developments

- User Interface (UI) updates
- Improve the spatial resolution of the Chla (biomass) product from **1 Km to 300 m**
- Add **Phytoplankton type product** to show the type of algae causing the biomass
- Update User interface: add summary graphic from *in situ* phytoplankton count data
- Make data available for analytics – **Data Cubes** and **API**

# Demonstration

- [Demo Link](#)



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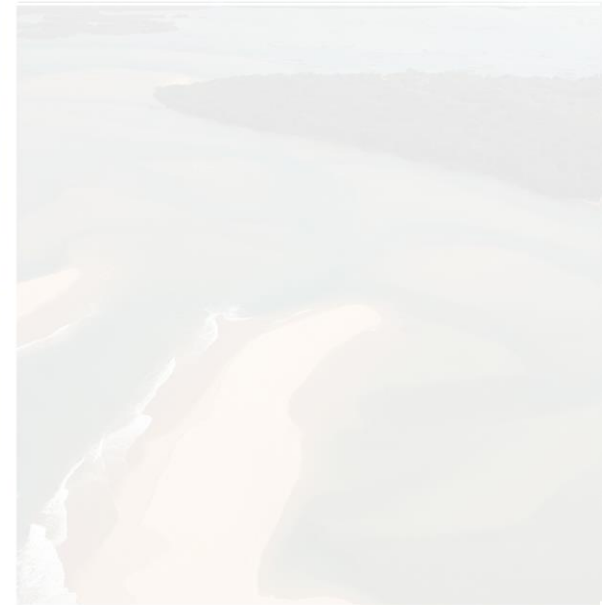
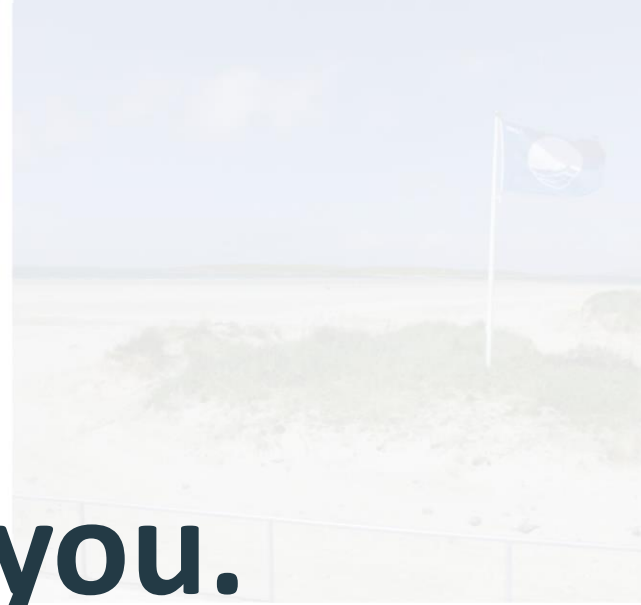


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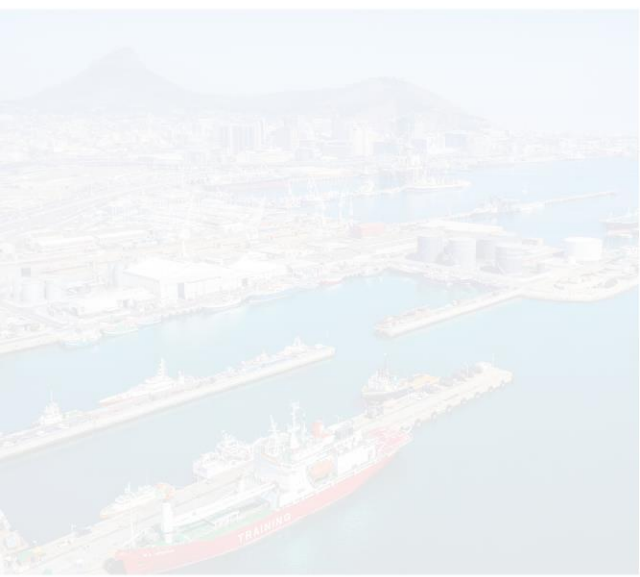


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