

# The OCIMS Water Quality Decision Support Tool

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OCIMS Stakeholder Workshop, 22-24 May 2023

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# Water Quality (WQ)

Objective of maintaining or achieving receiving water quality such that the water body remains or becomes fit for all designated uses, including :

- ✓ *Recreational use*
- ✓ *Industrial use*
- ✓ *Aquaculture*
- ✓ *The Protection of biodiversity and ecosystem functioning*

## South African Water Quality Guidelines for Coastal Marine Waters – Volume 1: Natural Environment and Mariculture Use



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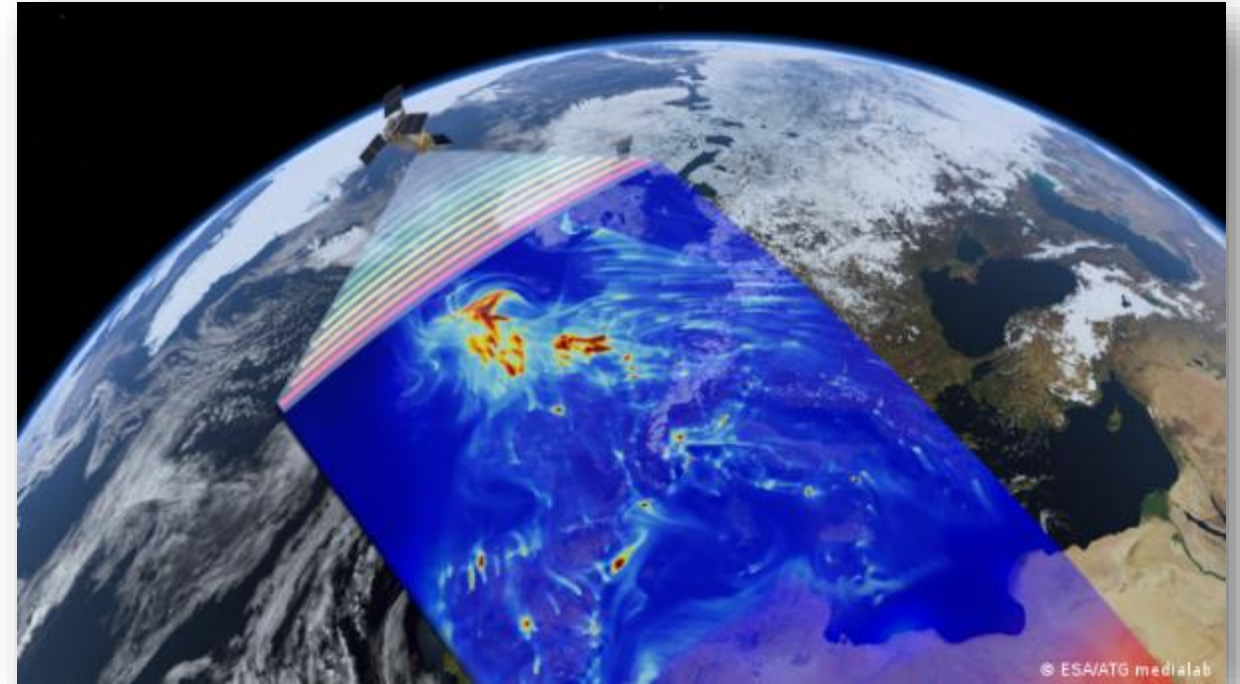
# Purpose of the WQ DeST

- Support data integration (multiple types, from multiple sources)
- Allow near-real time data access
- Show monitoring data “in context” (i.e. spatially)
- Understand trends and patterns in water body state
- Users:
  - National & regional managers, researchers, interested/affected parties



# Why use satellite data?

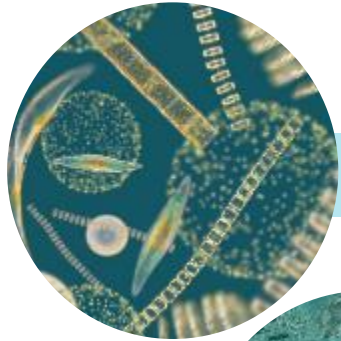
- Data are freely available
- It's a routine and reliable source of information
- It provides global coverage
- It provides historical coverage
- The combination of *in situ* and satellite information is often the most powerful



# What can satellites measure?

Satellites cannot directly measure :

- x *Nutrients or dissolved oxygen*
- x *Pollutants, metals, toxins*
- x *Salinity (at high resolution)*



*Algal blooms*



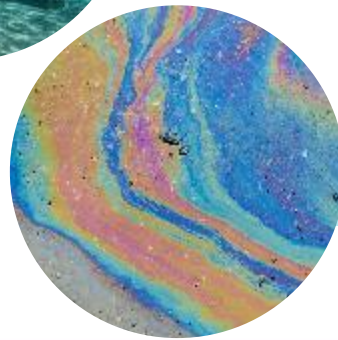
*Floating vegetation*



*Water clarity*



*Suspended sediments*



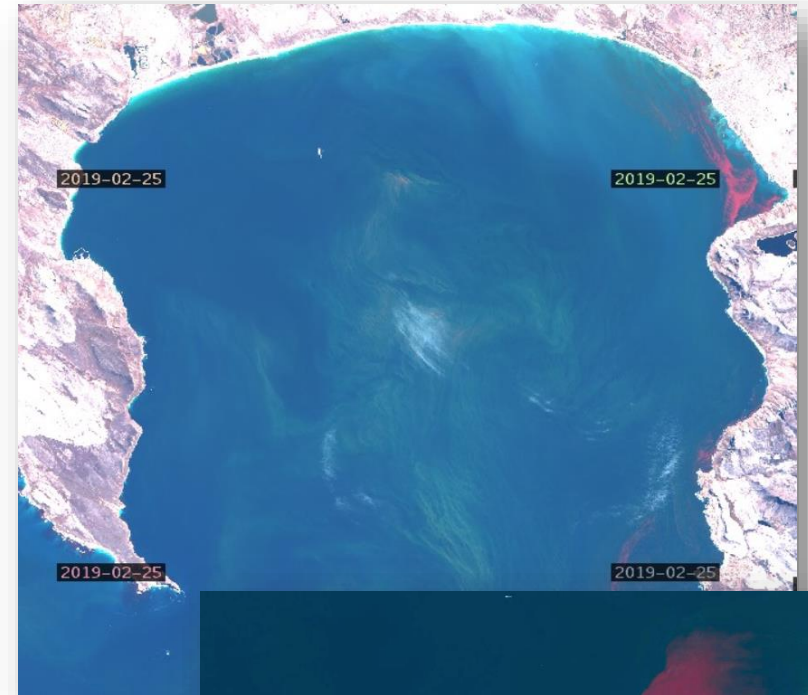
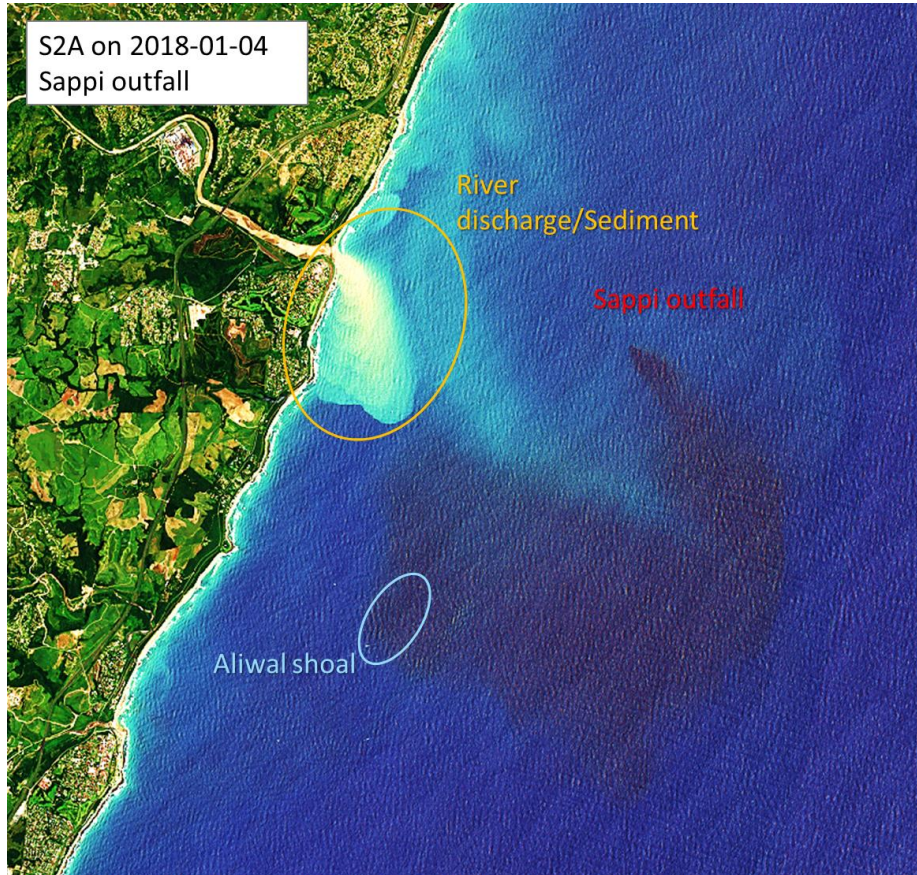
*Surface oil slicks*



*Sea surface temperature*



# Visible impacts on ocean colour



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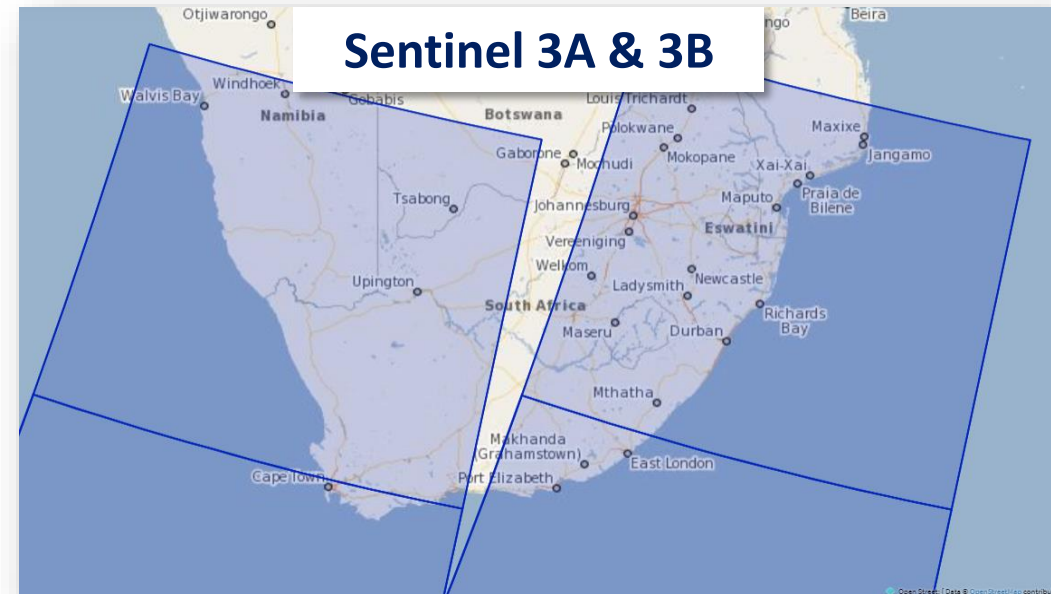




# Satellite coverage & resolution



- Designed for land observation
- Narrow swath
- Higher spatial resolution (10-60m)
- 5-day revisit time



- Specifically designed for marine observation
- Wider swath
- Lower spatial resolution (300m – 1km)
- Daily revisit time

# The research component

- This is a *two year* (2022-2023) New Earth Observation Frontiers Domain Development Action
- Focusing on developing *high spatial resolution* (10-300m) water quality products
- from *freely available* environmental satellite data
- for the *coastal marine and estuarine* domains of South Africa
- We want to synthesize data products into useful and *intuitive* information and *indicators*, to support the needs of a diverse water quality community





# (Temporary) OCIMS Water Quality Decision Support Tool

## Current features:

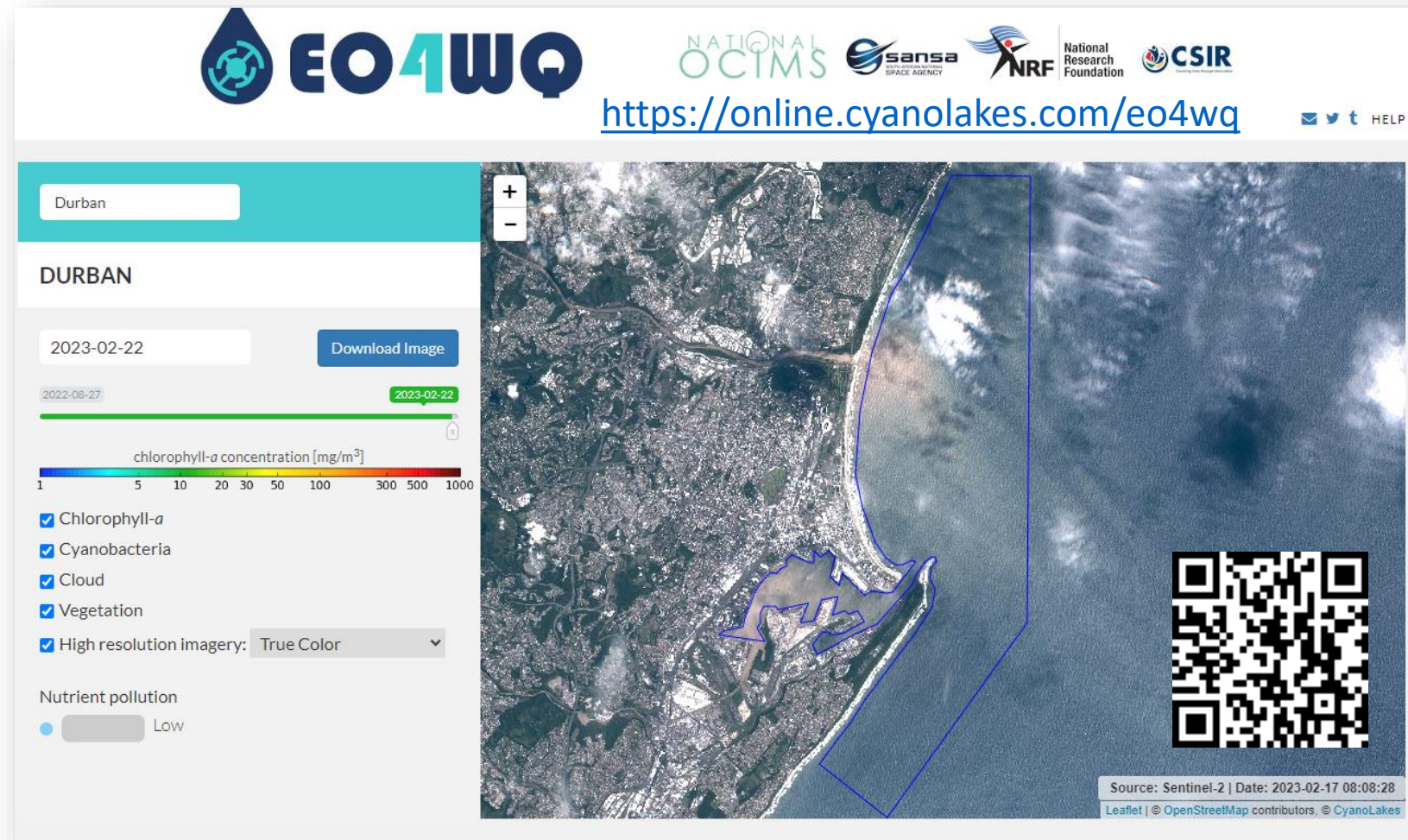
- ✓ 10 sites
- ✓ Map-based view
- ✓ Graphical view

## Medium (300 m) resolution:

- ✓ Chl-a
- ✓ Cyanobacteria risk
- ✓ Floating vegetation

## High (20 m) resolution:

- ✓ True colour (20m)
- ✓ Bloom risk
- ✓ Enhanced vegetation







Algoa Bay

### ALGOA BAY

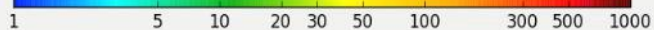
2023-05-22

Download Image

2022-11-26

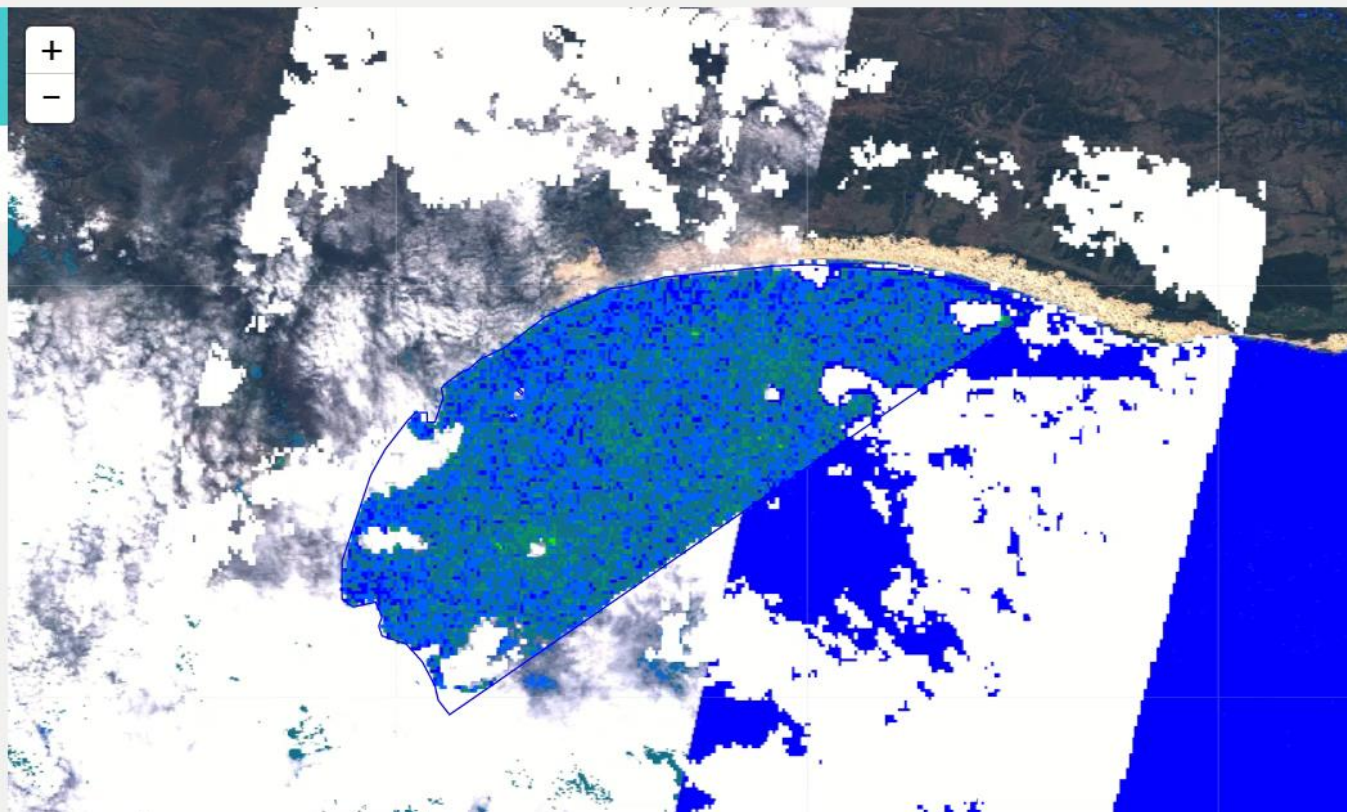
2023-05-22

chlorophyll-a concentration [mg/m<sup>3</sup>]



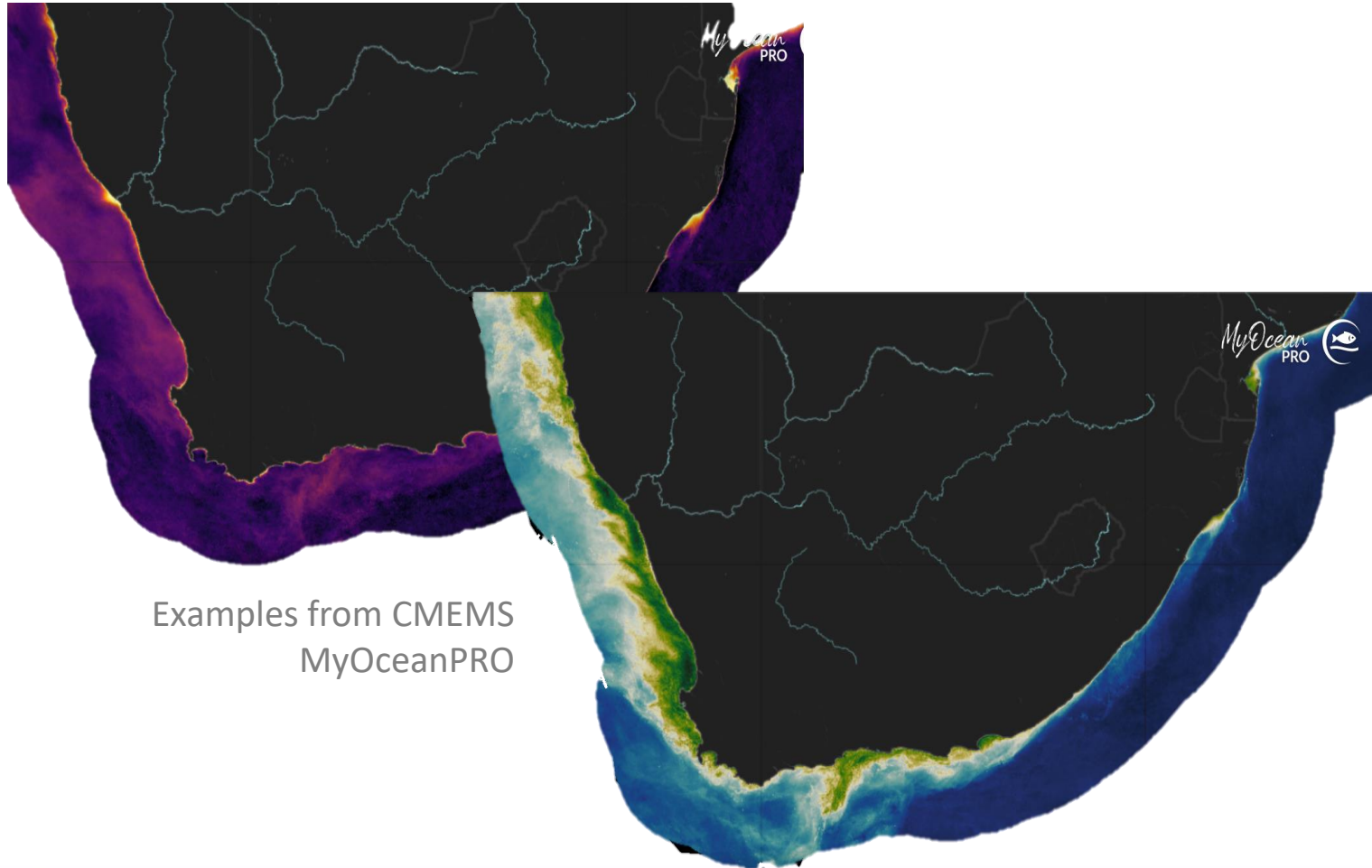
- Chlorophyll-a
- Cyanobacteria
- Cloud
- Vegetation
- High resolution imagery: Chlorophyll-a

Nutrient pollution





# Products in development this year



Examples from CMEMS  
MyOceanPRO

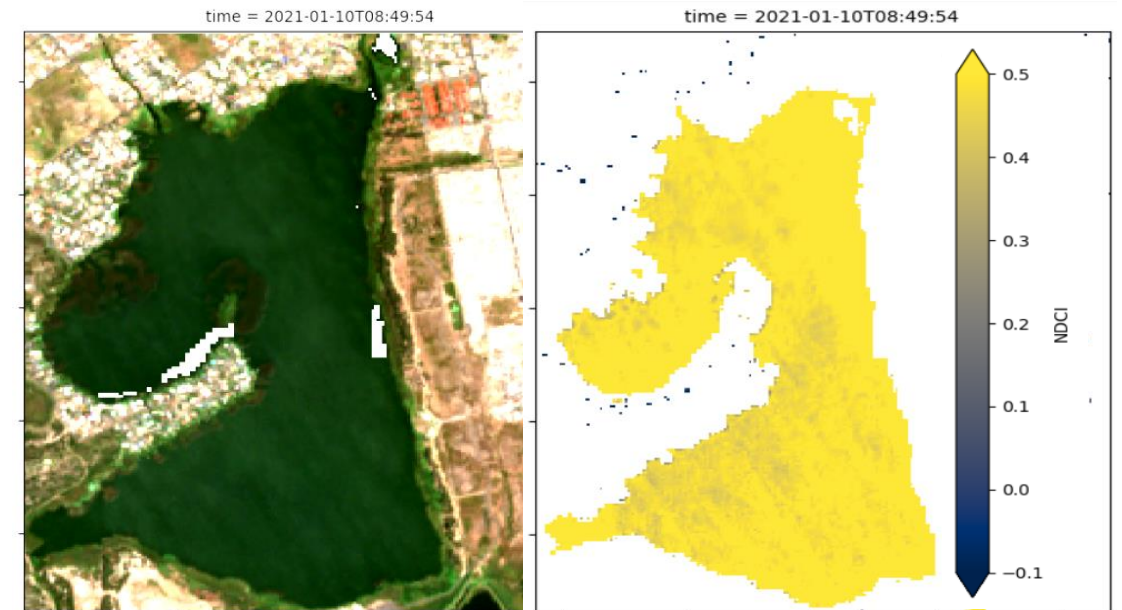
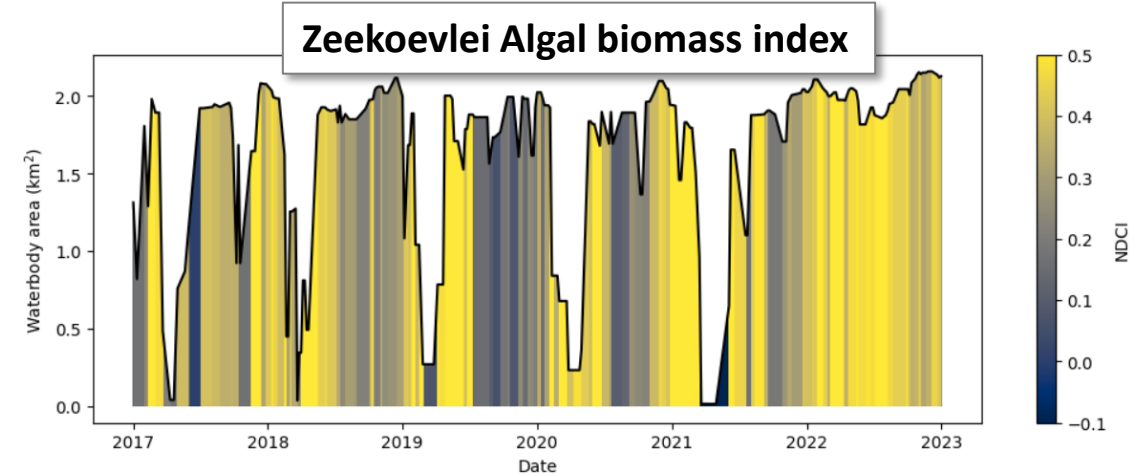
Daily 300m resolution Chl-a and suspended sediment /turbidity products for SA coastal waters

- *For general purposes:*  
As maps on the online viewer
- *For policy development:*  
As analysis ready datacubes
- *For research:*  
As spatio-temporal subsets
- *For operations:*  
Via API

# What we are working towards

Near-weekly 10 m resolution Sentinel-2 data products for small coastal and estuarine water bodies:

- True colour imagery
- Algal Biomass Index
- Turbidity index
- Surface water extent
- Time-series information



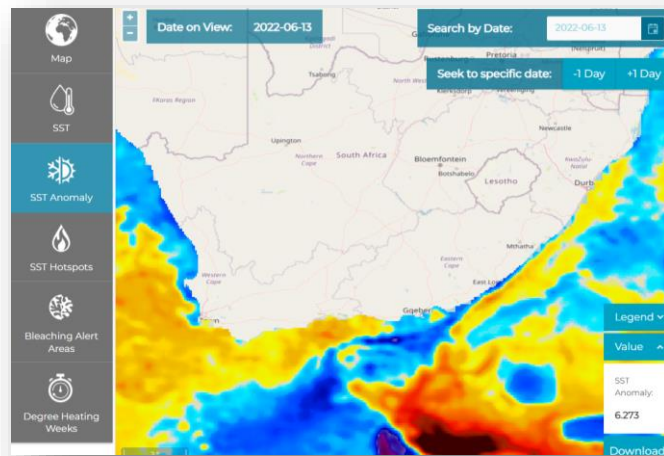
Examples created using Digital Earth Africa Sandbox



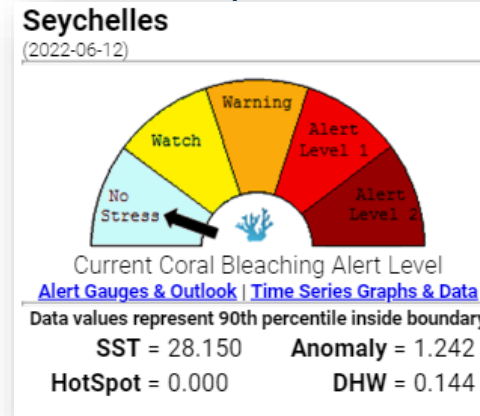
# Need other functionality? Let us know!

The OCIMS WQ tool is still under development, so join the Technical Advisory Group or simply give us your wish-list!

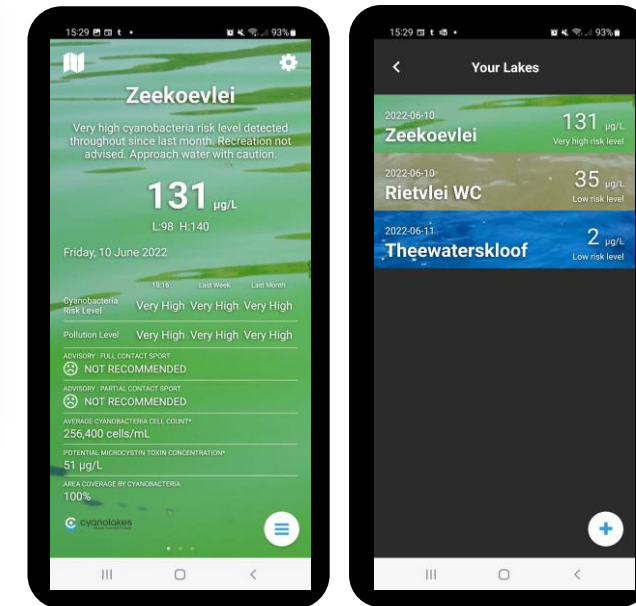
## Mapped spatial data products



## Summary indicators



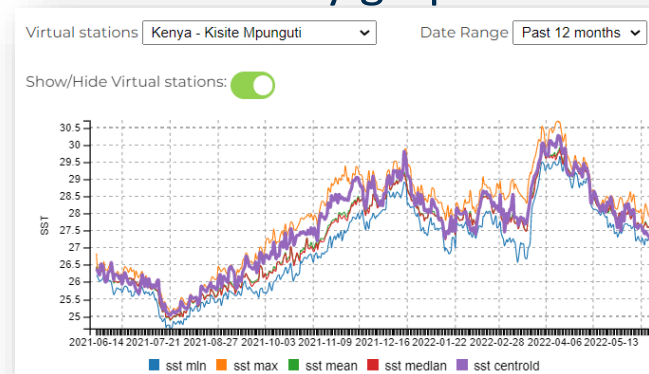
## “Weather-type” info Mobile applications



Download our free mobile app and get today's data on your device.



## Summary graphics



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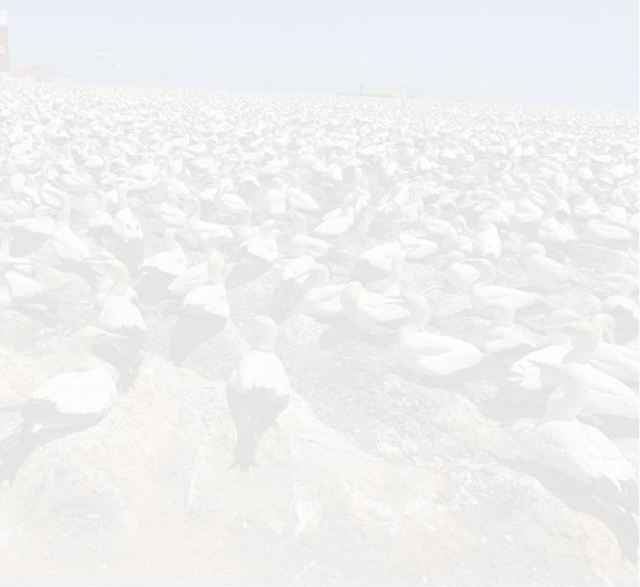


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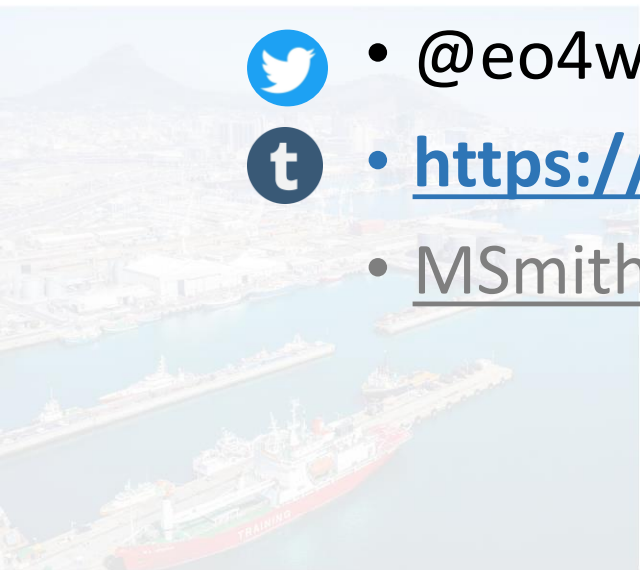


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