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Oceans and Coastal Information Management System

SAIHC Conference

Lauren Williams

3 September 2019

Operation Phakisa

- 2014 Operation Phakisa Oceans Economy Lab was held in Durban
- The Ocean has the potential to contribute up to R177billion to the SA GDP
- Potential to create 1 million jobs by 2033
- Initiative 6: Oceans and Coastal Information Management System and Enhancing Earth Observation
  - ZaCube 2 nanosat

NATIONAL OCIMS

Vision, Mission and Objectives

Vision

Develop a locally relevant and globally cognisant technological solution that supports the ecological conservation and socio-economic potential of South Africa's oceans and coasts through information and decision-support for effective governance.

Mission

Integrate current and future systems, information and expertise into a user-friendly and **cost effective** national Oceans and Coasts information system for the benefit of relevant stakeholders.

Objectives

decision making support

strategic and operational planning

protection oceans and coastal environment

economic growth and job creation

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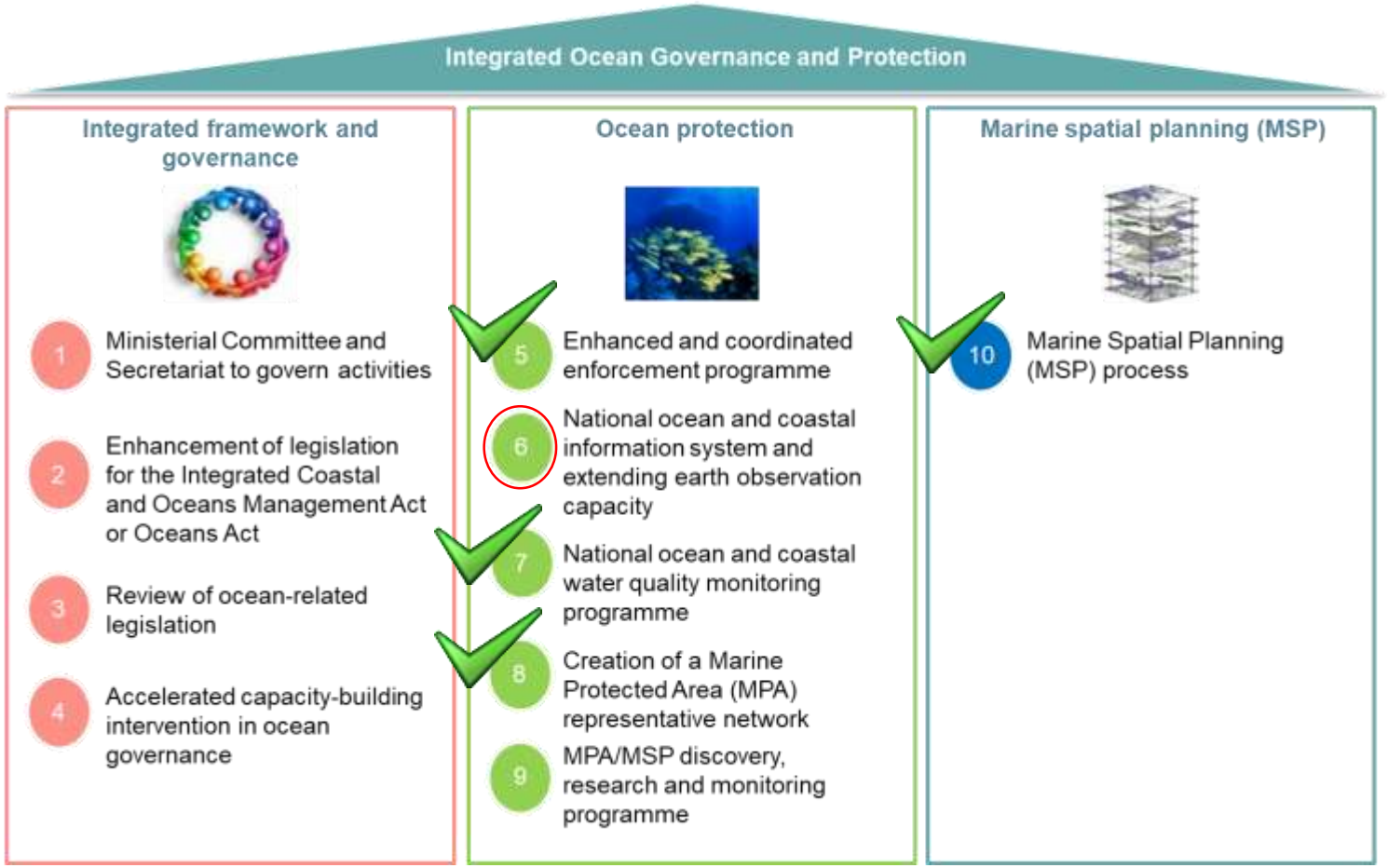
OCIMS in the context of Operation Phakisa

- Oceans economy enablers:

OCIMS in the context of Operation Phakisa



- Marine Transport and Manufacturing
- Offshore Oil and Gas
- ✓ Aquaculture
- Marine Protection Services and Ocean Governance
- ✓ Small Harbours and Coastline Development
- ✓ Coastal and Marine Tourism
- ✓ Skills Development and Capacity Building
- Research, Technology and Innovation

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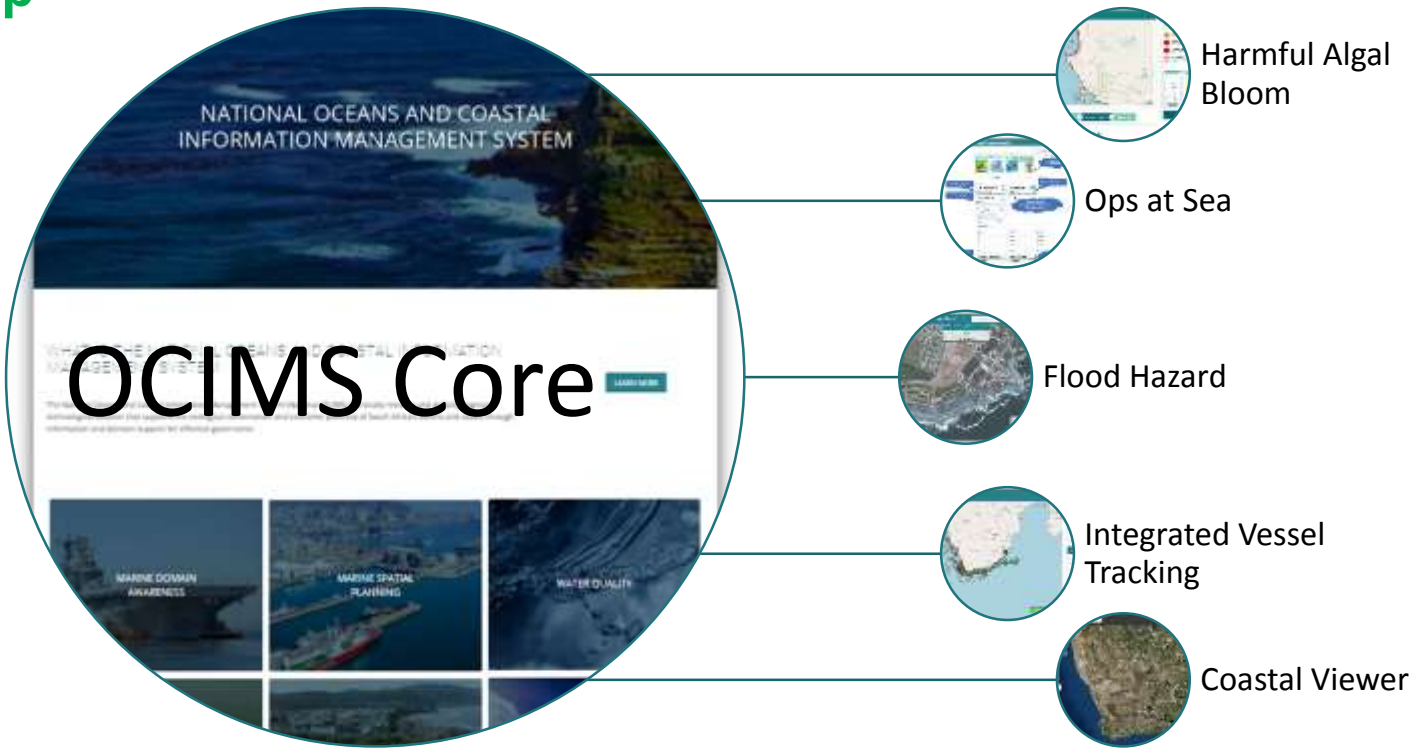
What is OCIMS?

- System of systems – A one-stop-shop
- It is NOT a data repository
- Comprises of a Core System
- Decision Support Tools (DeSTs)
- Data searching for any oceans and coastal related information
- Document Library



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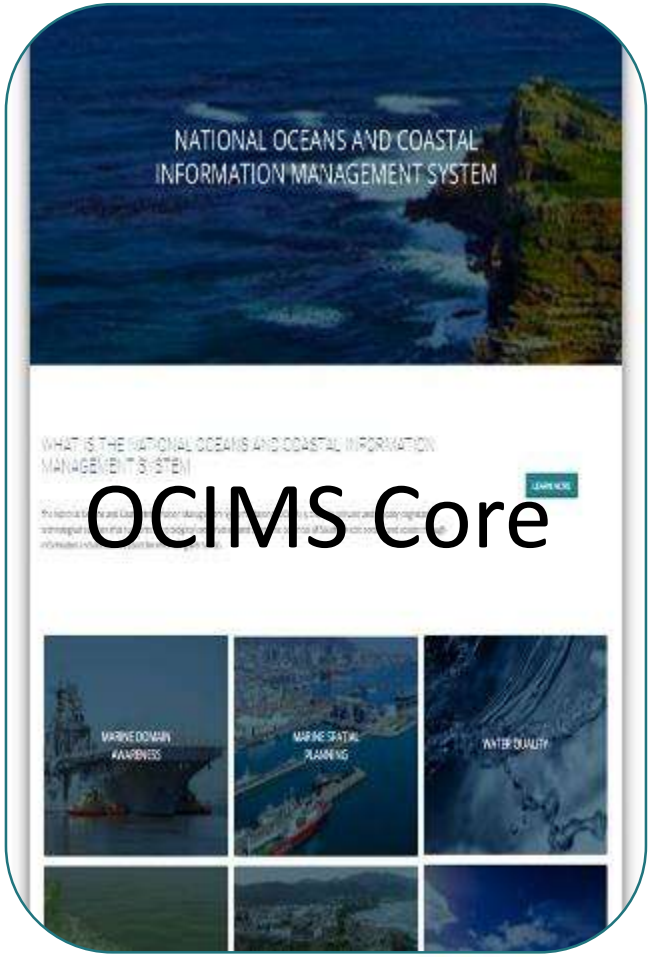
Introduction

- 2019/20 is year 5 in our initial 5 year OCIMS development cycle;
- OCIMS Core and 9 Decision Support Tools
- Marine Information Management System
- Established user communities and partnership
- Accessible via: www.ocims.gov.za



- Harmful Algal Bloom
- Ops at Sea
- Coastal Flood Hazard
- Integrated Vessel Tracking
- Coastal Viewer
- Marine Spatial Planning
- Water quality
- Oil spill / Bilge Detection
- Fisheries Support

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Marine Information Management System (MIMS)

- OCIMS is supported by MIMS infrastructure;
- MIMS IS a data repository;
- Designed for long term (100yrs) data storage;
- Follow international ISO standards;
- Format agnostic
  - Spatial data
  - Model outputs
  - PDF documents
  - Xls
  - Etc…

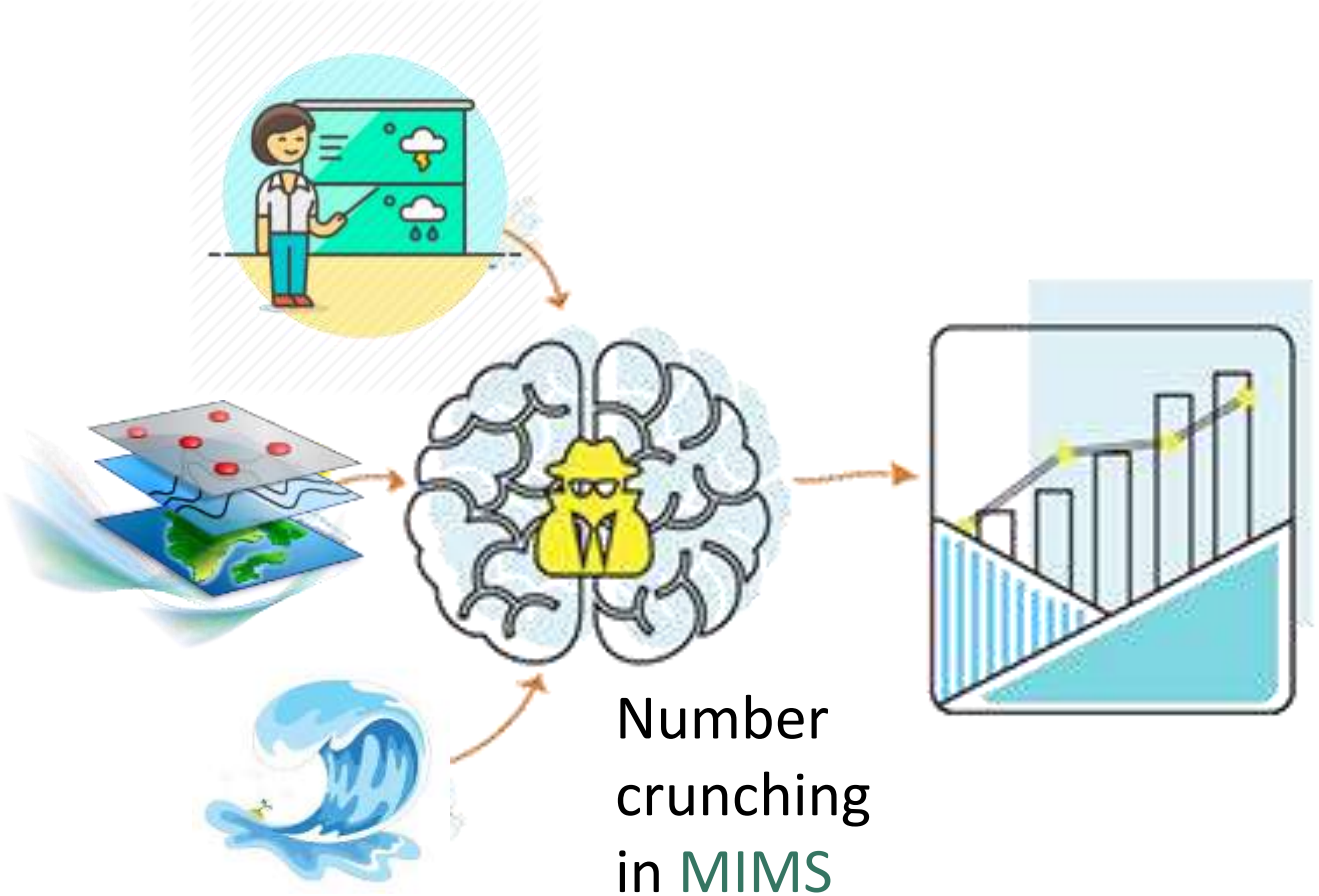
Marine Information Management System (MIMS)

- System is managed by a team of people, including:
  - Data Curators (METADATA EXPERTS)
  - System Administrators
  - Database Administrators
  - Developers
  - Programmers
  - Product developers (GIS practitioners and Ocean modelers)
  - Content managers

- OCIMS will be migrated to MIMS infrastructure

How the OCIMS DeSTs Work...

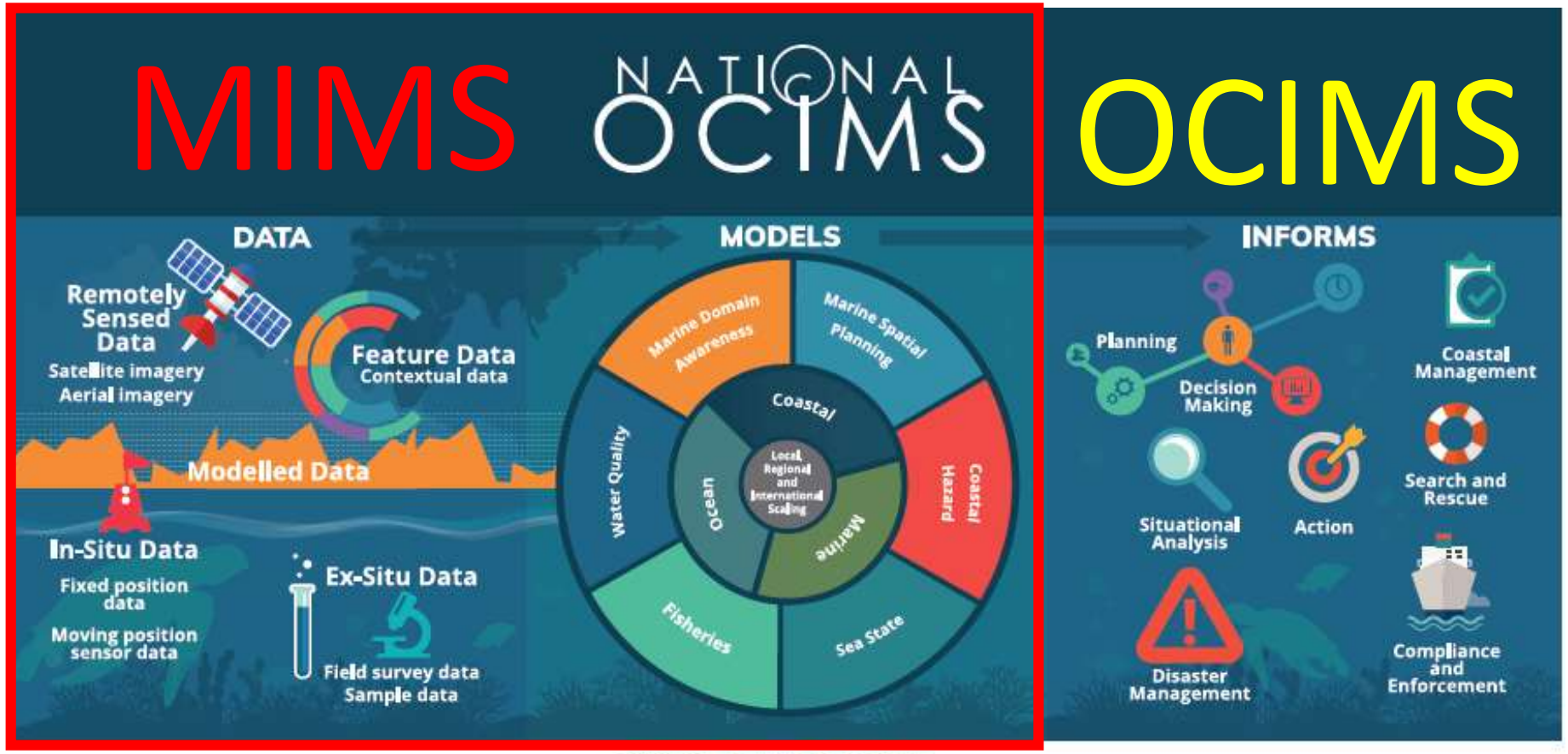
Data providers SHARE their data



Number crunching in MIMS

Products are shared through OCIMS

Conceptual Model



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OCIMS Core (www.ocims.gov.za)

- Here you will find:
  - General information
  - Links to documents
  - Links to DeSTs
  - Data search function
  - Instructions and videos
- What's new?
  - Blogs – communicating science
  - Twitter Feed (@OCIMS_SA)
  - Weather information (weather-atlas.com)
  - Feature stakeholders/partners

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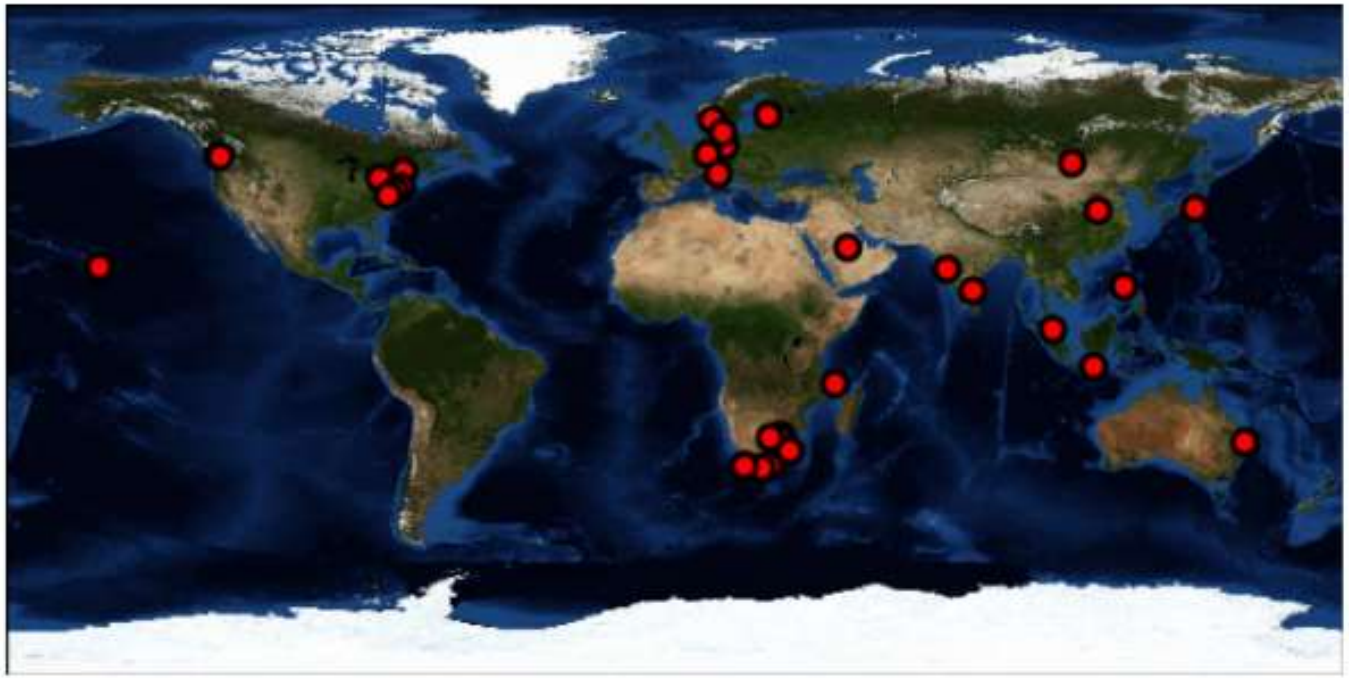
OCIMS Core

- Auto-generated Monthly reports:
  - Coastal Flood Hazards
  - Coastal Operations at Sea
  - OCIMS Core
  - Harmful Algal Bloom
  - Marine Spatial Planning

OCIMS Core – Analytics



Highlights: Marine Spatial Planning

- Support to Initiative 10: Marine Spatial Planning
- OCIMS role is to develop an interactive viewer with tools to support the planning process and development of maps
- Guided by the needs of the established National Working Group
- MSP DeST front end developed, but access is protected

Highlights: Marine Spatial Planning

2016
- MSP Bill drafted and gazzetted for public comment
- MSP national stakeholder summit

2017
- Framework for MSP in South Africa gazzetted
- MSP Bill introduced to Parliament

2018
- Data gathering exercise
- Refining MSP tool requirements (OCIMS)

2019
- MSP Act
- OCIMS MSP Tool development

Marine area means a bio-geographic area that will serve as a planning unit for a marine area plan

Marine area plan means a plan developed within a marine area by analyzing and allocating the spatial and temporal distribution of human activities in the South African waters to achieve ecological, economic and social objectives, taking into account all relevant principles and factors set out in this Act;

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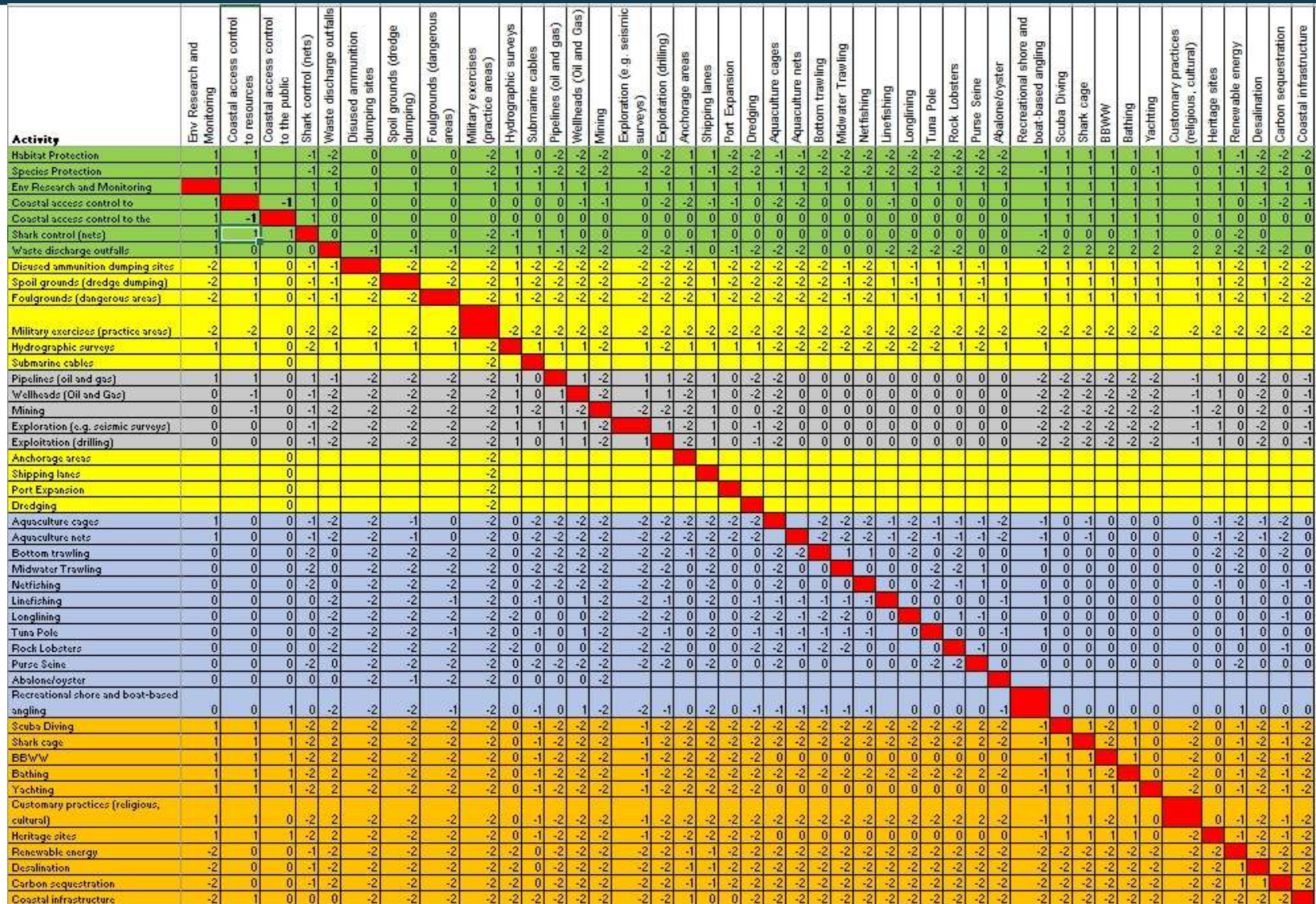
Highlights: Marine Spatial Planning

- MSP Act
- National Working Group
- Sector document
- Compatibility matrix
- Study tour (July 2019)
- Evaluation of existing tools:
  - SeaSketch
  - Symphony



Activity	Env Research and Monitoring	Coastal access control to resources	Coastal access control to the public	Shark control (nets)	Waste discharge outfalls	Disused ammunition dumping sites	Spoil grounds (dredge dumping)	Foulgrounds (dangerous areas)	Military exercises (practice areas)	Hydrographic surveys	Submarine cables	Pipelines (oil and gas)	Wellheads (Oil and Gas)	Mining	Exploration (e.g. seismic surveys)	Exploitation (drilling)	Anchorage areas	Shipping lanes	Port Expansion	Dredging	Aquaculture cages	Aquaculture nets	Bottom trawling	Midwater Trawling	Netfishing	Linefishing	Longlining	Tuna Pole	Rock Lobsters	Purse Seine	Abalone/oyster	Recreational shore and boat based angling	Scuba Diving	Shark cage	BBWW	Bathing	Yachting	Customary practices (religious, cultural)	Heritage sites	Renewable energy	Desalination	Carbon sequestration	Coastal infrastructure
Habitat Protection	1	1		-1	-2	0	0	0	-2	1	0	-2	-2	-2	0	-2	1	1	-2	-2	-1	-1	-2	-2	-2	-2	-2	-2	-2	-2	-2	1	1	1	1	1	1	1	-1	-2	-2	-2
Species Protection	1	1		-1	-2	0	0	0	-2	1	-1	-2	-2	-2	-2	-2	1	-1	-2	-2	-1	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-1	1	1	1	0	-1	0	1	-1	-2	-2	0
Env Research and Monitoring		1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Coastal access control to	1		-1	1	0	0	0	0	0	0	0	0	-1	-1	0	-2	-2	-1	-1	0	-2	-2	0	0	0	-1	0	0	0	0	0	1	1	1	1	1	1	1	1	0	-1	-2	-1
Coastal access control to the	1	-1		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	1	0	0	0	0
Shark control (nets)	1	1	1		0	0	0	0	-2	-1	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	0	0	0	1	1	0	0	-2	0		
Waste discharge outfalls	1	0	0	0		-1	-1	-1	-2	1	1	-1	-2	-2	-2	-2	-1	0	-1	-2	-2	-2	0	0	0	-2	-2	-2	-2	0	0	-2	2	2	2	2	2	2	2	-2	-2	-2	0
Disused ammunition dumping sites	-2	1	0	-1	-1		-2	-2	-2	1	-2	-2	-2	-2	-2	-2	-2	1	-2	-2	-2	-2	-2	-1	-2	1	-1	1	1	-1	1	1	1	1	1	1	1	1	1	-2	1	-2	-2
Spoil grounds (dredge dumping)	-2	1	0	-1	-1	-2		-2	-2	1	-2	-2	-2	-2	-2	-2	-2	1	-2	-2	-2	-2	-2	-1	-2	1	-1	1	1	-1	1	1	1	1	1	1	1	1	1	-2	1	-2	-2
Foulgrounds (dangerous areas)	-2	1	0	-1	-1	-2	-2		-2	1	-2	-2	-2	-2	-2	-2	-2	1	-2	-2	-2	-2	-2	-1	-2	1	-1	1	1	-1	1	1	1	1	1	1	1	1	1	-2	1	-2	-2
Military exercises (practice areas)	-2	-2	0	-2	-2	-2	-2	-2		-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2
Hydrographic surveys	1	1	0	-2	1	1	1	1	-2		1	1	1	-2	1	-2	1	1	1	-2	-2	-2	-2	-2	-2	-2	-2	-2	1	-2	1	1											
Submarine cables			0						-2																																		
Pipelines (oil and gas)	1	1	0	1	-1	-2	-2	-2	-2	1	0		1	-2	1	1	-2	1	0	-2	-2	0	0	0	0	0	0	0	0	0	0	-2	-2	-2	-2	-2	-2	-1	1	0	-2	0	-1
Wellheads (Oil and Gas)	0	-1	0	-1	-2	-2	-2	-2	-2	1	0	1		-2	1	1	-2	1	0	-2	-2	0	0	0	0	0	0	0	0	0	0	-2	-2	-2	-2	-2	-2	-1	1	0	-2	0	-1
Mining	0	-1	0	-1	-2	-2	-2	-2	-2	1	-2	1	-2		-2	-2	-2	1	0	0	-2	0	0	0	0	0	0	0	0	0	0	-2	-2	-2	-2	-2	-2	-1	-2	0	-2	0	-1
Exploration (e.g. seismic surveys)	0	0	0	-1	-2	-2	-2	-2	-2	1	1	1	1	-2		1	-2	1	0	-1	-2	0	0	0	0	0	0	0	0	0	0	-2	-2	-2	-2	-2	-2	-1	1	0	-2	0	-1
Exploitation (drilling)	0	0	0	-1	-2	-2	-2	-2	-2	1	0	1	1	-2	1		-2	1	0	-1	-2	0	0	0	0	0	0	0	0	0	0	-2	-2	-2	-2	-2	-2	-1	1	0	-2	0	-1
Anchorage areas			0						-2																																		
Shipping lanes			0						-2																																		
Port Expansion			0						-2																																		
Dredging			0						-2																																		
Aquaculture cages	1	0	0	-1	-2	-2	-1	0	-2	0	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2		-2	-2	-2	-1	-2	-1	-1	-1	-2	-1	0	-1	0	0	0	0	-1	-2	-1	-2	0
Aquaculture nets	1	0	0	-1	-2	-2	-1	0	-2	0	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2		-2	-2	-2	-1	-2	-1	-1	-1	-2	-1	0	-1	0	0	0	0	-1	-2	-1	-2	0
Bottom trawling	0	0	0	-2	0	-2	-2	-2	-2	0	-2	-2	-2	-2	-2	-2	-1	-2	0	0	-2	-2		1	1	0	-2	0	-2	0	0	1	0	0	0	0	0	0	0	-2	-2	0	-2	0
Midwater Trawling	0	0	0	-2	0	-2	-2	-2	-2	0	-2	-2	-2	-2	-2	-2	0	-2	0	0	-2	0	0		0	0	0	-2	-2	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Netfishing	0	0	0	-2	0	-2	-2	-2	-2	0	-2	-2	-2	-2	-2	-2	0	-2	0	0	-2	0	0	0		0	0	0	-2	-1	1	0	0	0	0	0	0	0	0	-1	0	0	-1	-1
Linefishing	0	0	0	0	-2	-2	-2	-1	-2	0	-1	0	1	-2	-2	-1	0	-2	0	-1	-1	-1	-1	-1	-1		0	0	0	0	-1	1	0	0	0	0	0	0	0	1	0	0	0	0
Longlining	0	0	0	0	-2	-2	-2	-2	-2	-2	0	0	0	-2	-2	-2	0	0	0	-2	-2	-1	-2	-2	0	0		0	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	-1	0
Tuna Pole	0	0	0	0	-2	-2	-2	-1	-2	0	-1	0	1	-2	-2	-2	0	-2	0	-1	-1	-1	-1	-1	-1	-1	0		0	0	-1	1	0	0	0	0	0	0	0	1	0	0	0	0
Rock Lobsters	0	0	0	0	-2	-2	-2	-2	-2	-2	0	0	0	-2	-2	-2	0	0	0	-2	-2	-1	-2	-2	0	0	0	0		-1	0	0	0	0	0	0	0	0	0	0	0	-1	0
Purse Seine	0	0	0	-2	0	-2	-2	-2	-2	0	-2	-2	-2	-2	-2	-2	0	-2	0	0	-2	0	0	0	0	0	0	-2	-2		0	0	0	0	0	0	0	0	0	0	-2	0	0	0
Abalone/oyster	0	0	0	0	0	-2	-1	-2	-2	0	0	0	0	-2																															
Recreational shore and boat-based angling	0	0	1	0	-2	-2	-2	-1	-2	0	-1	0	1	-2	-2	-1	0	-2	0	-1	-1	-1	-1	-1	-1		0	0	0	0	-1		0	0	0	0	0	0	0	1	0	0	0	0
Scuba Diving	1	1	1	-2	2	-2	-2	-2	-2	0	-1	-2	-2	-2	-1	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	2	-2	-1		1	-2	1	0	-2	0	-1	-2	-1	-2
Shark cage	1	1	1	-2	2	-2	-2	-2	-2	0	-1	-2	-2	-2	-1	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	2	-2	-1	1		-2	1	0	-2	0	-1	-2	-1	-2
BBWW	1	1	1	-2	2	-2	-2	-2	-2	0	-1	-2	-2	-2	-1	-2	-2	-2	-2	-2	0	0	0	0	0	0	0	0	0	0	0	-1	1	1		1	0	-2	0	-1	-2	-1	-2
Bathing	1	1	1	-2	2	-2	-2	-2	-2	0	-1	-2	-2	-2	-1	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	2	-2	-1	1	1	-2		0	-2	0	-1	-2	-1	-2
Yachting	1	1	1	-2	2	-2	-2	-2	-2	0	-1	-2	-2	-2	-1	-2	-2	-2	-2	-2	0	0	0	0	0	0	0	0	0	0	0	-1	1	1	1	1		-2	0	-1	-2	-1	-2
Customary practices (religious, cultural)	1	1	0	-2	2	-2	-2	-2	-2	0	-1	-2	-2	-2	-1	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	2	-2	-1	1	1	-2	1	0		0	-1	-2	-1	-2
Heritage sites	1	1	1	-2	2	-2	-2	-2	-2	0	-1	-2	-2	-2	-1	-2	-2	-2	-2	-2	0	0	0	0	0	0	0	0	0	0	0	-1	1	1	1	1	0	-2		-1	-2	-1	-2
Renewable energy	-2	0	0	-1	-2	-2	-2	-2	-2	-2	0	-2	-2	-2	-2	-2	-1	-1	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2		-2	-2	-2
Desalination	-2	0	0	-1	-2	-2	-2	-2	-2	-2	0	-2	-2	-2	-2	-2	-1	-1	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	1		-2	-2
Carbon sequestration	-2	0	0	-1	-2	-2	-2	-2	-2	-2	0	-2	-2	-2	-2	-2	-1	-1	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	1	1		-2
Coastal infrastructure	-2	1	0	0	0	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	1	0	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	

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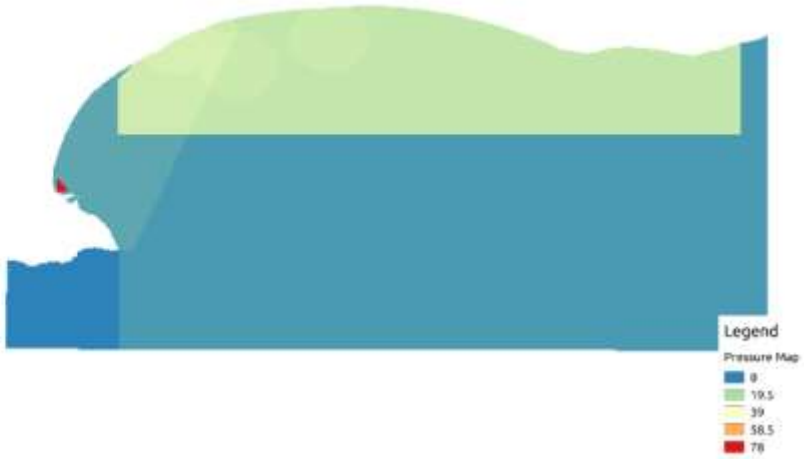
Highlights: Marine Spatial Planning

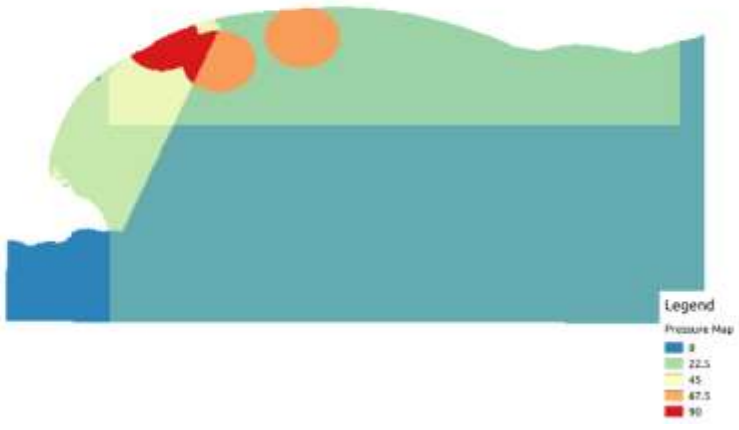
- Spatial layers - geoprocessing tools which we are developing;
- ArcGIS and open source environments;
- Pressure mapping tool which incorporates different layer weightings;
- Cumulative Impact Assessment maps

Priority	Sector	Weighting
1	Environment	50
2	Fisheries	30
3	Tourism	10
4	Transport	5
5	Mining	5

Priority	Sector	Weighting
1	Fisheries	70
2	Environment	20
3	Tourism	5
4	Transport	3
5	Mining	2

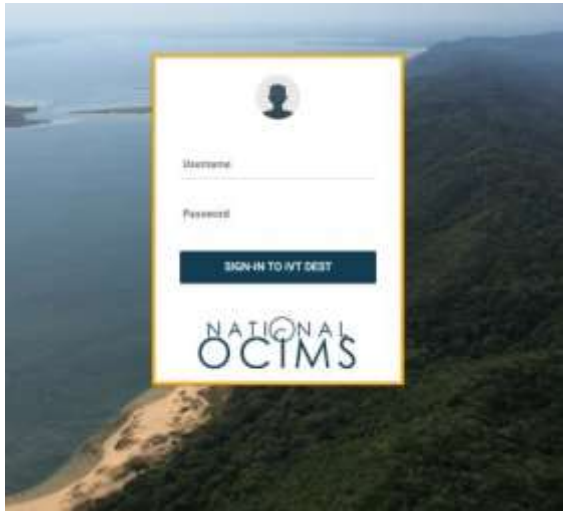


Priority	Sector	Weighting
1	Mining	50
2	Transport	20
3	Tourism	10
4	Fisheries	10
5	Environment	10



Highlights: Integrated Vessel Tracking

- Integration of datasets from various sources including
  - DAFF – VMS data;
  - SAMSA – Satellite AIS;
  - SANSA – SAR images.
- Support from DoD (SA Navy and IMT) and SSA
- Received AIS data from ZA Cube2 (launched Dec 2018)
- New features:
  - Can incorporate camera feeds;
  - Geofencing – Vessels entering MPAs – Phakisa MPAs
  - Automatic detection of dark targets and manual “flagging”
  - Additional layers e.g. Sea Surface Temperature



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NATIONAL OCIMS

Search for ship name/mmsi/

0

student

Legend Speed Ship-Names

Select All
- Cargo
- Tanker
- Passenger Vessels
- High-speed Craft
- Tugs and Special Craft
- Fishing
- VMS Vessel
- Pleasure Craft
- Radar
- Aircraft
- GPS
- Ground-Station
- Nav-Aid
- Unspecified

- SAR Detection
- Transponder Detection
- Radar Detection

Track Speed [knots]
0-5 6-10 11-15 16-20 21+

CURRENT SHIPS | GEOFENCES | SAR | CAMERA

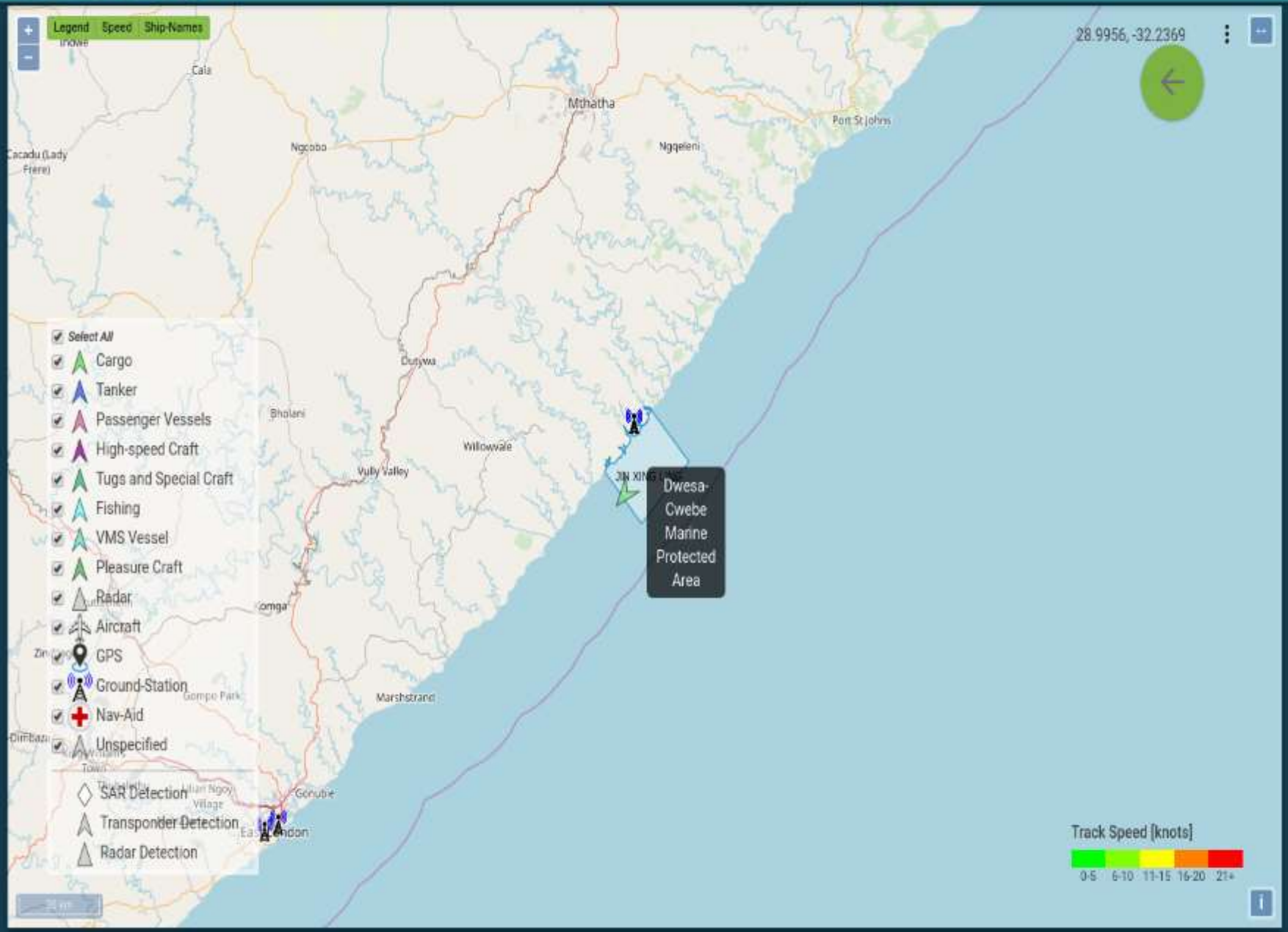
MMSI	Name	Callsign	Flag	Remove All
601048000	SA AGULHAS	ZSAF	ZA	remove

Ship Details

Name	SA AGULHAS
MMSI	601048000
Position	[-33.75 , 27.74]
Position	S33°44.844' E27°44.467'
IMO	7628136
Callsign	ZSAF
Source ID	fusion.all
Reported Time	10/22/2018, 3:08:16 PM (SAST)
Heading	66.60 °
Flag State	South Africa
Track	Refresh Remove
Avg.Speed	6.38

PAS 7.7 knots

Image supplied by Marine Traffic



CURRENT SHIPS | GEOFENCES | SAR | CAMERA

Name	Select Geofence
Dwesa-Cwebe Marine Protected Area	☑
Langebaan Lagoon Marine Protected Area	☐
Sixteen Mile Beach Marine Protected Area	☐

NATIONAL OCIMS

Search for ship name/mmsi/

0

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Legend Speed Ship-Names

23.6659, -34.7522

Select All
Cargo
Tanker
Passenger Vessels
High-speed Craft
Tugs and Special Craft
Fishing
VMS Vessel
Pleasure Craft
Radar
Aircraft
GPS
Ground-Station
Nav-Aid
Unspecified

SAR Detection
Transponder Detection
Radar Detection

CPO BREMEN

Track Speed [knots]
0-5 6-10 11-15 16-20 21+

20 km

CURRENT SHIPS GEOFENCES SAR CAMERA

Image	Date	Detections	Sensor	Beam
☑	2018-10-20T17:11:26.000Z	67	RS2	OSVN
☐	2018-10-19T17:41:16.000Z	26	RS2	SCNB
☐	2018-10-19T02:07:35.000Z	1	RS2	OSVN
☐	2018-10-18T16:30:54.000Z	81	RS2	OSVN

Detected Ship Details

Name	CPO BREMEN
MMSI	229655000
Position	[-34.74 , 23.67]
Position	S34°44.626' E23°40.461'
IMO	9450387
Callsign	9HA3490
Heading	117 °
Flag State	Malta
Length	131 m
Width	67 m
Confirm Dark Target	Yes No

Ship hh

Image supplied by Marine Traffic

NATIONAL OCIMS

Search for ship name/mmsi/

0

student

Legend Speed Ship Names

Select All
Cargo
Tanker
Passenger Vessels
High-speed Craft
Tugs and Special Craft
Fishing
VMS Vessel
Pleasure Craft
Radar
Aircraft
GPS
Ground-Station
Nav-Aid
Unspecified

SAR Detection
Transponder Detection
Radar Detection

Track Speed [knots]
0-5 6-10 11-15 16-20 21+

South Africa
Lesotho
Eswatini
Bloemfontein
Welkom
Kimberley
Upington
Newcastle
Ladysmith
Mthatha
Makhanda (Grahamstown)
Port Elizabeth
Botshabelo
Northern Cape
Western Cape
Eastern Cape
North West
Gauteng
Mpumalanga
KwaZulu-Natal

CURRENT SHIPS GEOFENCES SAR CAMERA

Description
Hamburg, Germany
CSIR Smart ADS-B
Sydney Bridge
Waterfront Smart AIS

CSIR Smart ADS-B

GRAB IMAGE

Please contact the OCIMS team if you have a camera feed you would like to see here.

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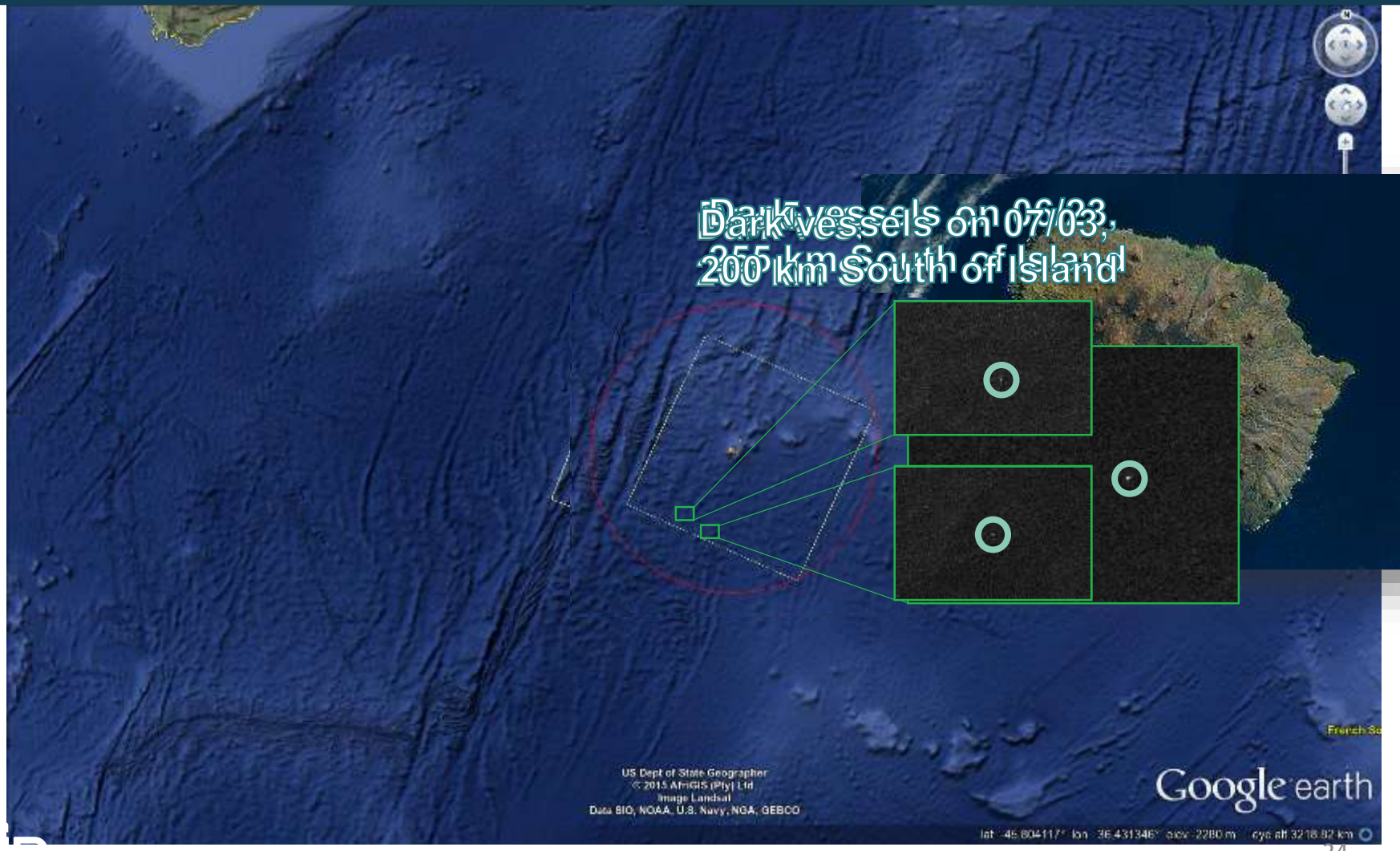
SAR Pilot Study

- Month long campaign that ran from 12 June to 10 July 2015.
- All images acquired between 2AM and 3AM. Vessels at this time almost invisible to naked eye.
- Eight 500km x 500km images which covered 80% of the EEZ, twice weekly.
- Five images contained one or more vessels detected without AIS transponders (dark targets).
- This campaign highlighted the importance of SAR as the only technology available to monitor these large areas independently.

SAR Pilot Study



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SAR Pilot Study

- Image 1: 12 June -> 1 detection (500km West)
- Image 2: 16 June -> No detections
- Image 3: 19 June -> No detections
- Image 4: 23 June -> 2 detections (255km South)
- Image 5: 26 June -> 3 detections (300 km North-West)
- Image 6: 30 June -> No detections
- Image 7: 3 July -> 2 detections (200km South)
- Image 8: 10 July -> 2 detections (200km South)
- Total dark targets between 12 June and 10 July: 10

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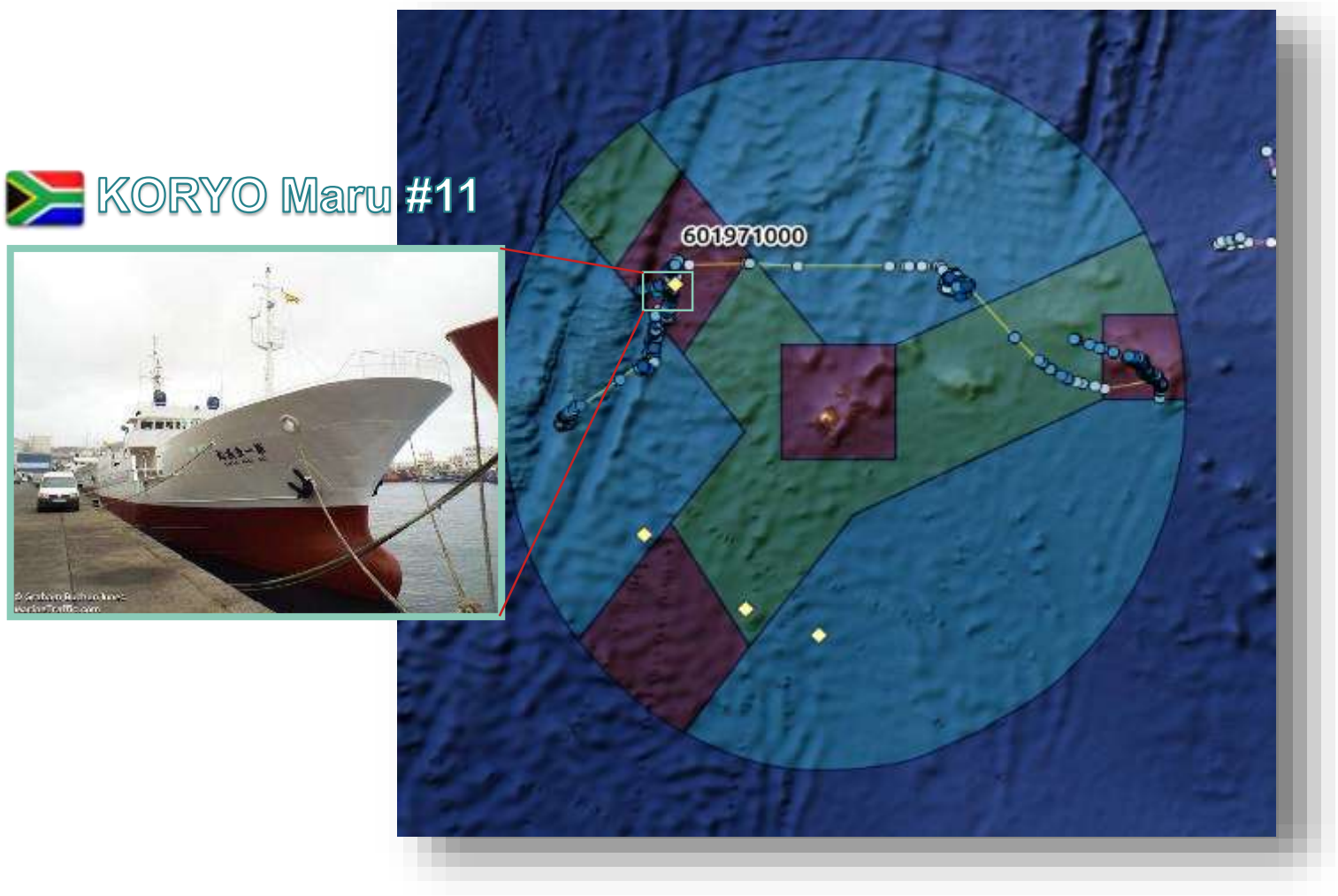
SAR Pilot Study

Vessel fishing in a marine protected zone



NATIONAL OCIMS

Highlights: Harmful Algal Blooms

- Technical Advisory Group has been formally established
- Stakeholders:
  - Aquaculture farms
  - Commercial fisheries
  - Subsistence fishers
  - ABALOBI
- Uses Modis and Sentinel satellites to detect algal blooms
- Also receives data from buoys deployed and the user community
- Alerts are sent out when blooms are detected

NATIONAL OCIMS

Highlights: Harmful Algal Blooms

- Algal Bloom was initially detected on 19 November 2018 in False Bay;
- Image was provided via social media;
- The colour of the bloom indicated that it may be toxic – DAFF was alerted;
- A DAFF official has tentatively identified the bloom as Lepidodinium chlorophorum, which should not pose a risk to human health;
- The bloom does have the potential to result in anoxic conditions, which may lead to marine mortalities.

- Algal bloom observed through OCIMS HAB DeST

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Harmful Algal Bloom Decision Support Tool

HIGH RISK AREAS: ST HELENA BAY | SW CAPE | GARDEN ROUTE | ALGOA BAY

DATE ON VIEW: 2018-11-19

SEEK TO SPECIFIC DATE: -1 DAY +1 DAY

Harmful Algal Bloom Risk

Area	2018-11-19	2018-11-18	2018-11-17	2018-11-16	2018-11-15	2018-11-14	2018-11-13
Namaqua Shelf	blue	grey	red	grey	red	blue	blue
Greater St Helena Bay	blue	grey	blue	blue	blue	blue	blue
SW Cape	blue	grey	blue	grey	blue	blue	blue
False Bay	red	grey	red	blue	red	grey	blue
Overberg	red	grey	blue	blue	blue	blue	blue
Langeberg	blue	grey	blue	blue	blue	blue	blue
Garden Route	red	red	red	blue	blue	red	blue
Algoa Bay	red	red	blue	red	grey	blue	blue
Wild Coast	blue	blue	grey	red	grey	grey	blue
KZN South Coast	grey	blue	grey	red	blue	blue	blue
KZN North Coast	grey	blue	grey	red	blue	blue	blue
Elephant Coast	grey	grey	grey	grey	blue	blue	grey

Now viewing:
Blooms from Chl-A Analysis

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Harmful Algal Bloom Decision Support Tool

HIGH RISK AREAS: ST HELENA BAY | SW CAPE | GARDEN ROUTE | ALGOA BAY

DATE ON VIEW: 2018-11-21

SEEK TO SPECIFIC DATE: -1 DAY | +1 DAY

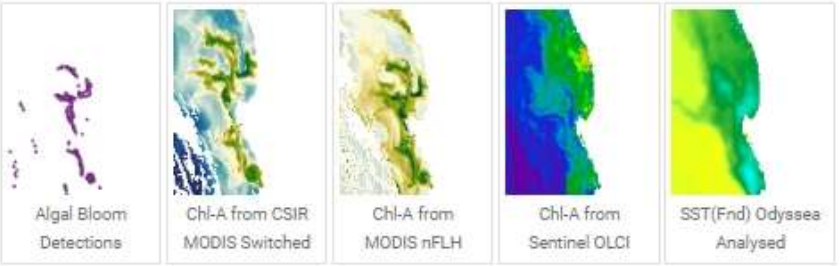
PICK DATE: 2018-11-21

Harmful Algal Bloom Risk

High Bloom Activity | Stable / Unknown | No Data

Area	2018-11-21	2018-11-20	2018-11-19	2018-11-18	2018-11-17	2018-11-16	2018-11-15
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	●	●	●	●	●	●	●

Now viewing:
Blooms from Chl-A analysis



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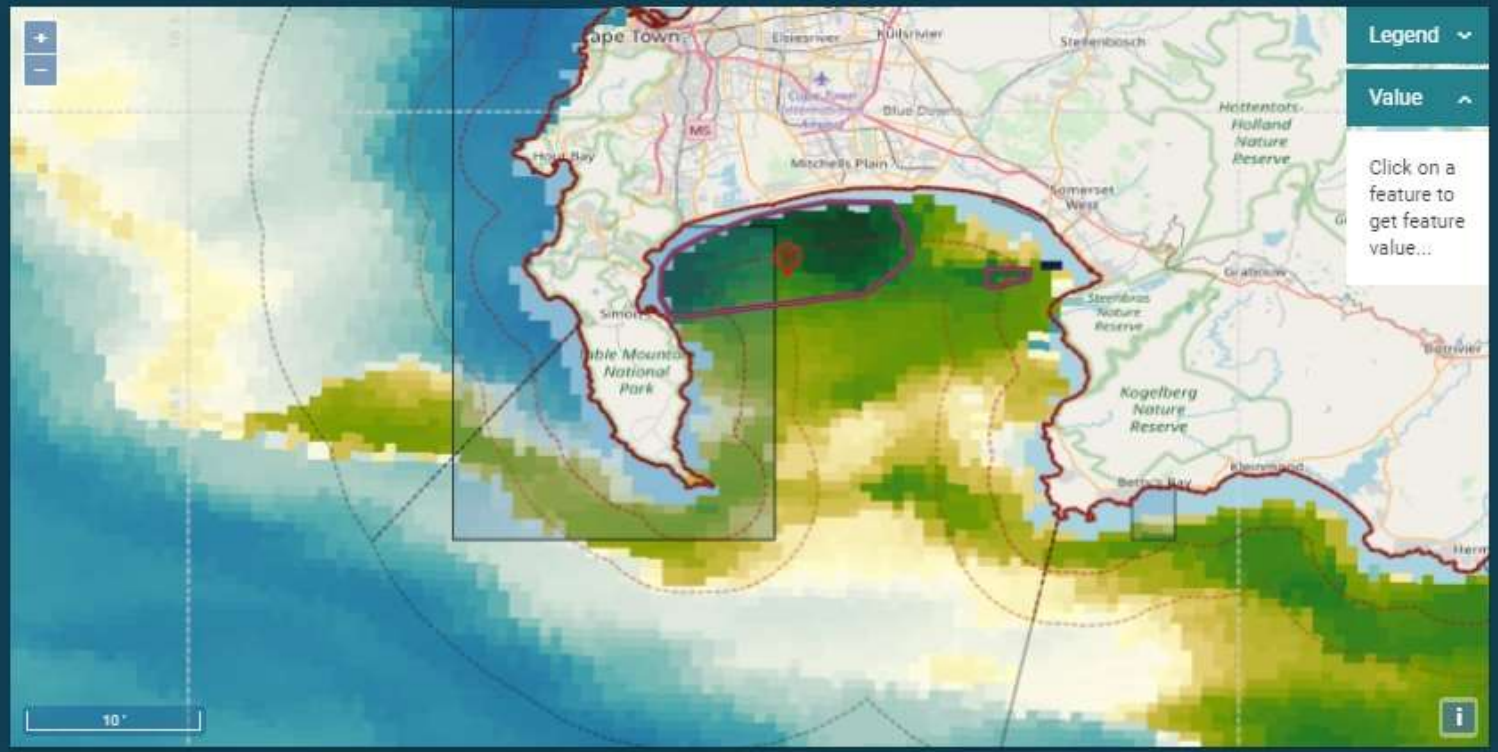
Harmful Algal Bloom Decision Support Tool

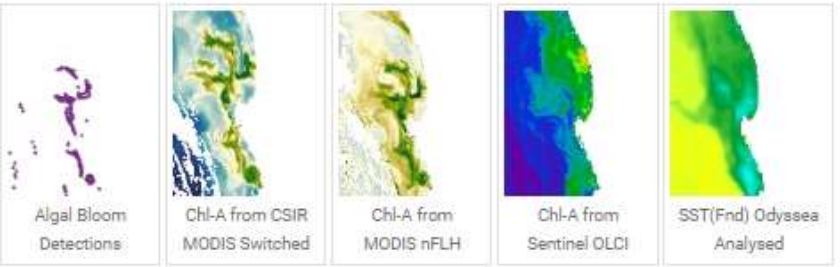


Harmful Algal Bloom Risk

High Bloom Activity · Stable / Unknown · No Data

Area	2018-11-22	2018-11-21	2018-11-20	2018-11-19	2018-11-18	2018-11-17	2018-11-16
Namaqua Shelf	High	Stable	Stable	Stable	No Data	High	No Data
Greater St Helena Bay	High	Stable	Stable	Stable	No Data	Stable	Stable
SW Cape	High	Stable	Stable	Stable	No Data	Stable	No Data
False Bay	High	High	Stable	High	No Data	High	Stable
Overberg	Stable	Stable	Stable	High	No Data	Stable	Stable
Langeberg	No Data	No Data	No Data	No Data	No Data	No Data	No Data
Garden Route	Stable	Stable	No Data	High	High	High	Stable
Algoa Bay	No Data	Stable	Stable	High	High	Stable	High
Wild Coast	Stable	Stable	Stable	Stable	Stable	No Data	High
KZN South Coast	Stable	Stable	High	No Data	Stable	No Data	High
KZN North Coast	Stable	Stable	Stable	No Data	Stable	No Data	High
Elephant Coast	No Data	No Data	No Data	No Data	No Data	No Data	No Data

Now viewing:
Blooms from Chl-A analysis



HIGH RISK AREAS: ST HELENA BAY | SW CAPE | GARDEN ROUTE | ALGOA BAY

DATE ON VIEW: 2018-11-22

SEEK TO SPECIFIC DATE: -1 DAY | +1 DAY

PICK DATE: 2018-11-22

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Harmful Algal Bloom Decision Support Tool

HIGH RISK AREAS: ST HELENA BAY | SW CAPE | GARDEN ROUTE | ALGOA BAY

DATE ON VIEW: 2018-11-23

SEEK TO SPECIFIC DATE: -1 DAY | +1 DAY

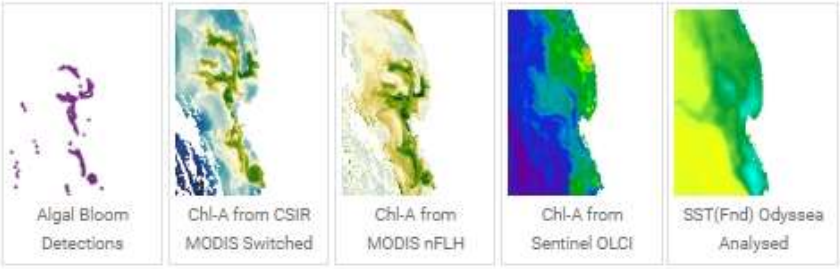
PICK DATE: 2018-11-23

Harmful Algal Bloom Risk

High Bloom Activity | Stable / Unknown | No Data

Area	2018-11-23	2018-11-22	2018-11-21	2018-11-20	2018-11-19	2018-11-18	2018-11-17
Namaqua Shelf	Stable	High	Stable	Stable	Stable	No Data	High
Greater St Helena Bay	High	High	Stable	Stable	Stable	No Data	Stable
SW Cape	Stable	High	Stable	Stable	Stable	No Data	Stable
False Bay	High	High	High	Stable	High	No Data	High
Overberg	Stable	Stable	Stable	Stable	High	No Data	Stable
Langeberg	No Data	No Data	No Data	No Data	No Data	No Data	No Data
Garden Route	Stable	Stable	Stable	No Data	High	High	High
Algoa Bay	High	No Data	Stable	Stable	High	High	Stable
Wild Coast	High	Stable	Stable	Stable	Stable	Stable	No Data
KZN South Coast	Stable	Stable	Stable	High	No Data	Stable	No Data
KZN North Coast	Stable	Stable	Stable	Stable	No Data	Stable	No Data
Elephant Coast	No Data	No Data	No Data	No Data	No Data	No Data	No Data

Now viewing:
Blooms from Chl-A analysis



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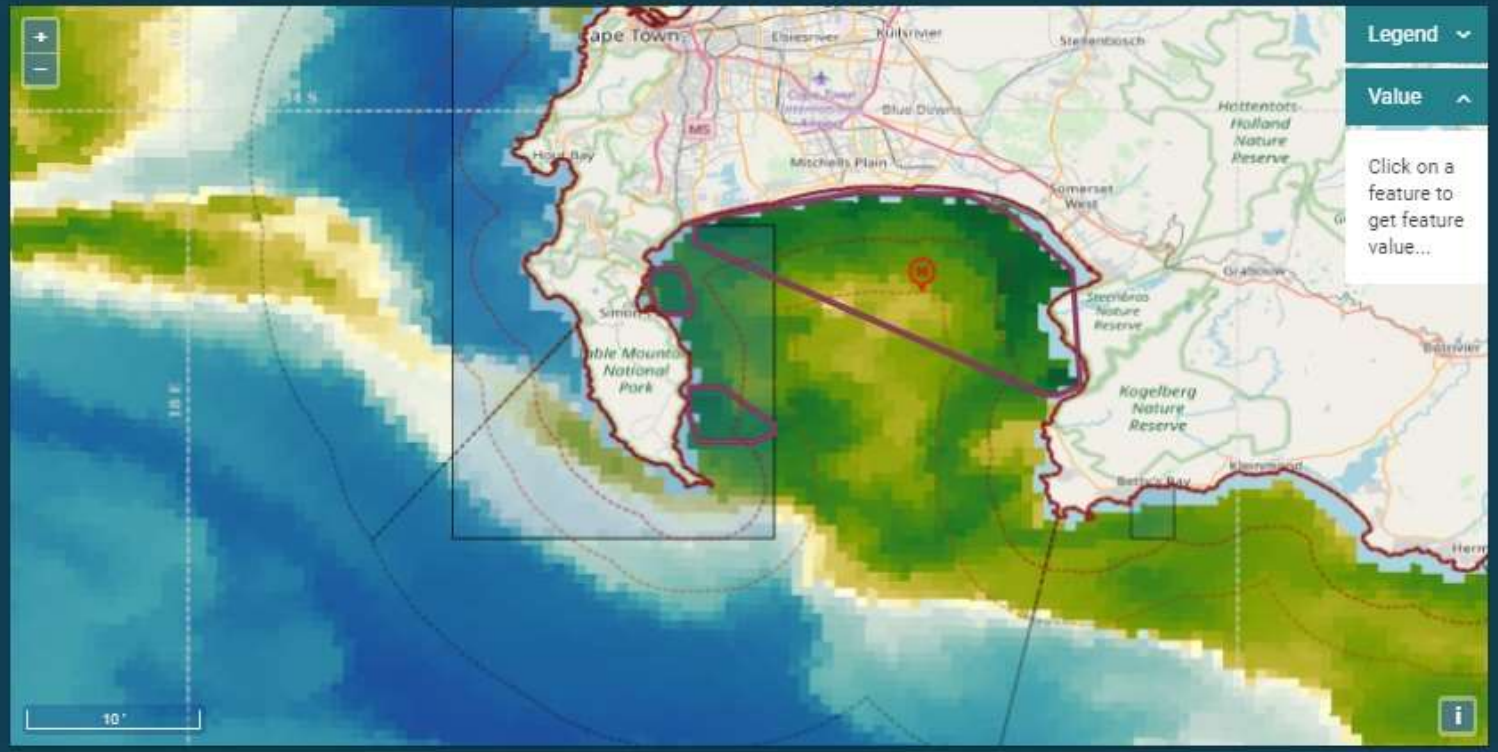
Harmful Algal Bloom Decision Support Tool

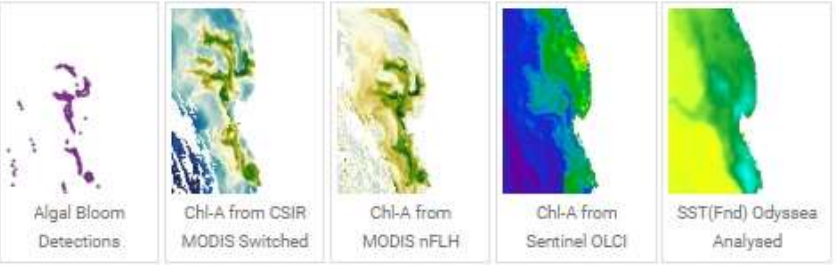


Harmful Algal Bloom Risk

High Bloom Activity · Stable / Unknown · No Data

Area	2018-11-24	2018-11-23	2018-11-22	2018-11-21	2018-11-20	2018-11-19	2018-11-18
Namaqua Shelf	High	Stable	High	Stable	Stable	Stable	No Data
Greater St Helena Bay	High	High	High	Stable	Stable	Stable	No Data
SW Cape	High	Stable	High	Stable	Stable	Stable	No Data
False Bay	High	High	High	High	Stable	High	No Data
Overberg	Stable	Stable	Stable	Stable	Stable	High	No Data
Langeberg	No Data	No Data	No Data	No Data	No Data	No Data	No Data
Garden Route	Stable	Stable	Stable	Stable	No Data	High	High
Algoa Bay	Stable	High	No Data	Stable	Stable	High	High
Wild Coast	No Data	High	Stable	Stable	Stable	Stable	Stable
KZN South Coast	Stable	Stable	Stable	Stable	High	No Data	Stable
KZN North Coast	Stable	Stable	Stable	Stable	Stable	No Data	Stable
Elephant Coast	No Data	No Data	No Data	No Data	No Data	No Data	No Data

Now viewing:
Blooms from Chl-A analysis



HIGH RISK AREAS: ST HELENA BAY | SW CAPE | GARDEN ROUTE | ALGOA BAY

DATE ON VIEW: 2018-11-24

SEEK TO SPECIFIC DATE: -1 DAY | +1 DAY

PICK DATE: 2018-11-24

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Harmful Algal Bloom Decision Support Tool

HIGH RISK AREAS: ST HELENA BAY | SW CAPE | GARDEN ROUTE | ALGOA BAY

DATE ON VIEW: 2018-11-26

SEEK TO SPECIFIC DATE: -1 DAY | +1 DAY

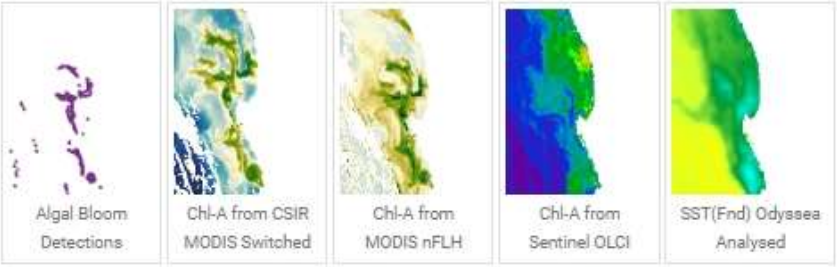
PICK DATE: 2018-11-26

Harmful Algal Bloom Risk

High Bloom Activity | Stable / Unknown | No Data

Area	2018-11-26	2018-11-25	2018-11-24	2018-11-23	2018-11-22	2018-11-21	2018-11-20
Namaqua Shelf	High	No Data	High	Stable	High	Stable	Stable
Greater St Helena Bay	High	No Data	High	High	High	Stable	Stable
SW Cape	High	No Data	High	Stable	High	Stable	Stable
False Bay	High	No Data	High	High	High	High	Stable
Overberg	Stable	No Data	Stable	Stable	Stable	Stable	Stable
Langeberg	No Data	No Data	No Data	No Data	No Data	No Data	No Data
Garden Route	Stable	Stable	Stable	Stable	Stable	Stable	No Data
Algoa Bay	Stable	Stable	Stable	High	No Data	Stable	Stable
Wild Coast	Stable	Stable	No Data	High	Stable	Stable	Stable
KZN South Coast	No Data	Stable	Stable	Stable	Stable	Stable	High
KZN North Coast	No Data	Stable	Stable	Stable	Stable	Stable	Stable
Elephant Coast	No Data	No Data	No Data	No Data	No Data	No Data	No Data

Now viewing:
Chl-A from CSIR MODIS Switched



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Harmful Algal Bloom Decision Support Tool

HIGH RISK AREAS: ST HELENA BAY | SW CAPE | GARDEN ROUTE | ALGOA BAY

DATE ON VIEW: 2018-12-01

SEEK TO SPECIFIC DATE: -1 DAY +1 DAY

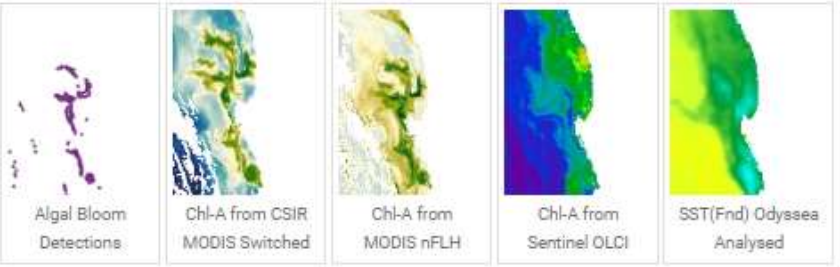
PICK DATE: 2018-12-01

Harmful Algal Bloom Risk

High Bloom Activity · Stable / Unknown · No Data

Area	2018-12-01	2018-11-30	2018-11-29	2018-11-28	2018-11-27	2018-11-26	2018-11-25
Namaqua Shelf	Stable	Stable	Stable	Stable	Stable	High	No Data
Greater St Helena Bay	High	Stable	Stable	Stable	Stable	High	No Data
SW Cape	High	Stable	Stable	Stable	Stable	High	No Data
False Bay	Stable	No Data	No Data	Stable	Stable	High	No Data
Overberg	High	High	Stable	Stable	Stable	Stable	No Data
Langeberg	No Data	No Data	No Data	No Data	No Data	No Data	No Data
Garden Route	Stable	High	Stable	High	Stable	Stable	Stable
Algoa Bay	No Data	Stable	Stable	Stable	Stable	Stable	Stable
Wild Coast	No Data	No Data	High	Stable	Stable	Stable	Stable
KZN South Coast	Stable	Stable	Stable	Stable	Stable	No Data	Stable
KZN North Coast	Stable	Stable	Stable	No Data	Stable	No Data	Stable
Elephant Coast	No Data	No Data	No Data	No Data	No Data	No Data	No Data

Now viewing:
Chl-A from CSIR MODIS Switched



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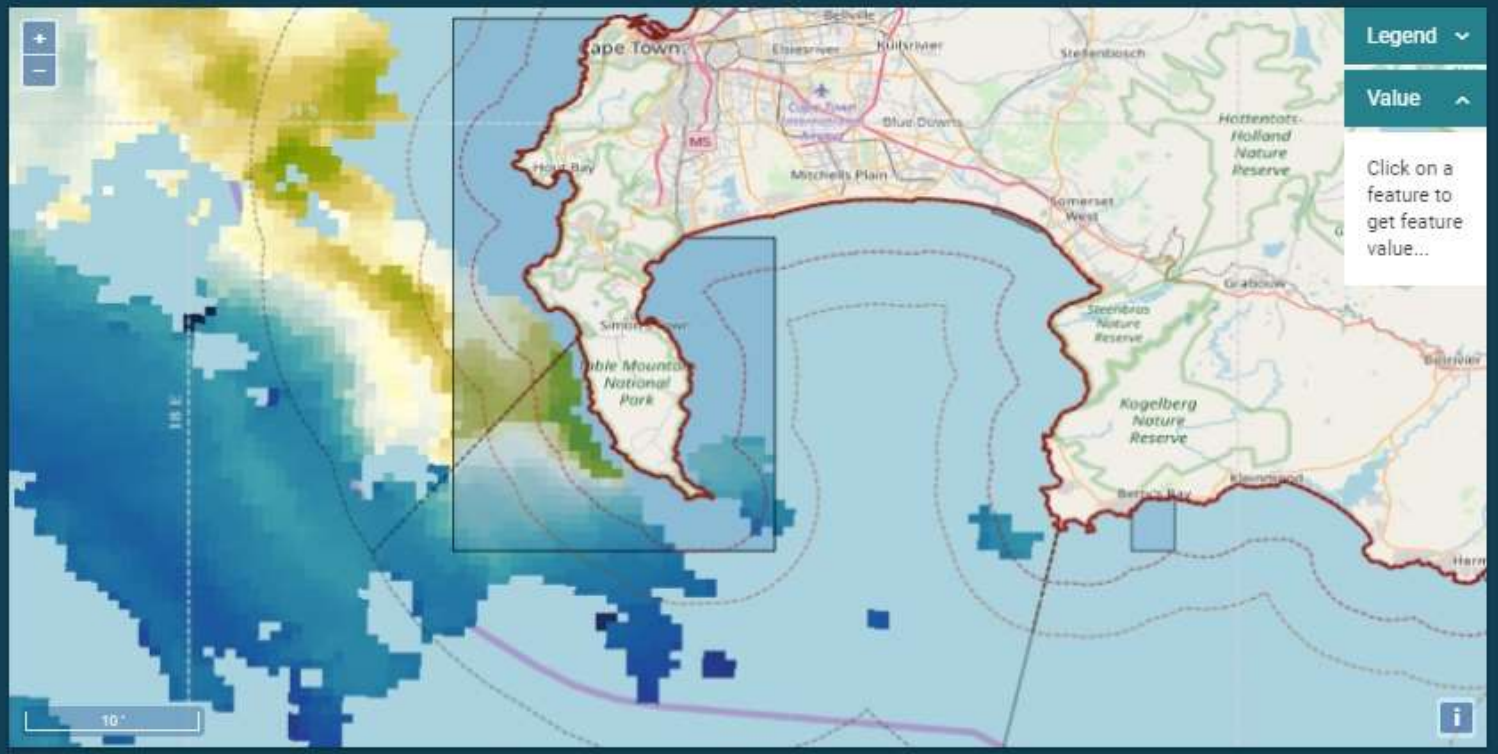
Harmful Algal Bloom Decision Support Tool



HIGH RISK AREAS: ST HELENA BAY | SW CAPE | GARDEN ROUTE | ALGOA BAY

DATE ON VIEW: 2018-12-03

SEEK TO SPECIFIC DATE: -1 DAY | +1 DAY

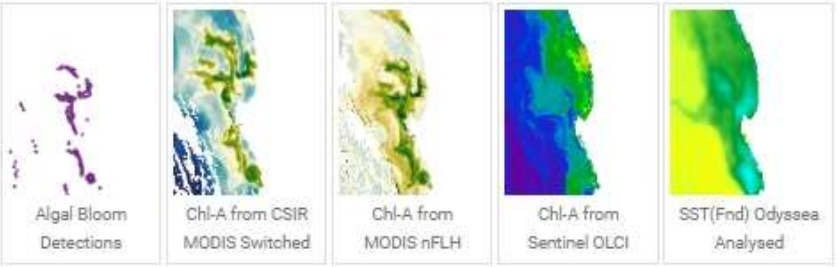
PICK DATE: 2018-12-03

Harmful Algal Bloom Risk

High Bloom Activity | Stable / Unknown | No Data

Area	2018-12-03	2018-12-02	2018-12-01	2018-11-30	2018-11-29	2018-11-28	2018-11-27
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	●	●	●	●	●	●	●

Now viewing:
Chl-A from CSIR MODIS Switched



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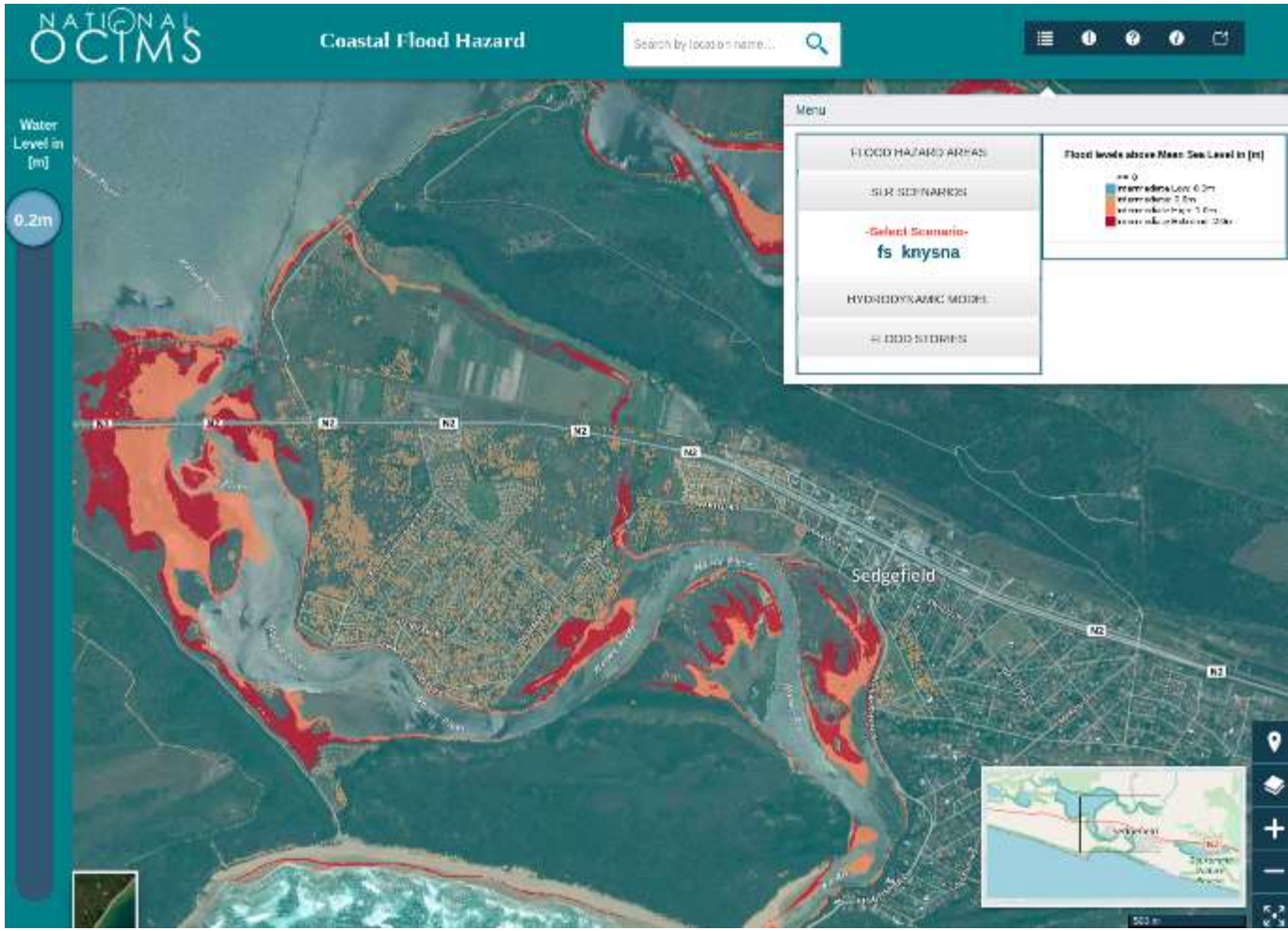
Highlights: Coastal Flood Hazard Tool

- Planning tool using international best practice
  - Dynamic – select your own flooding levels
  - “Drown your town”
  - Inclusion of hydrodynamic modelling
  - Geotagging media files of historical events
- Stakeholders:
  - Coastal Municipalities
  - Coastal Provinces
  - Town planners
  - Disaster managers
  - Environmental practitioners
  - Developers
  - Etc…

Highlights: Coastal Flood Hazard Tool

- FEWS (Flood Early Warning System) training:
  - Facilitated by eThekwini Municipality;
  - Limited experience and skills on near shore model development;
  - First step towards the creation of a shared knowledge base;
  - Implementation of oceanographic models in an operational environment for daily use.
- Other work:
  - SAWS operational storm surge modelling



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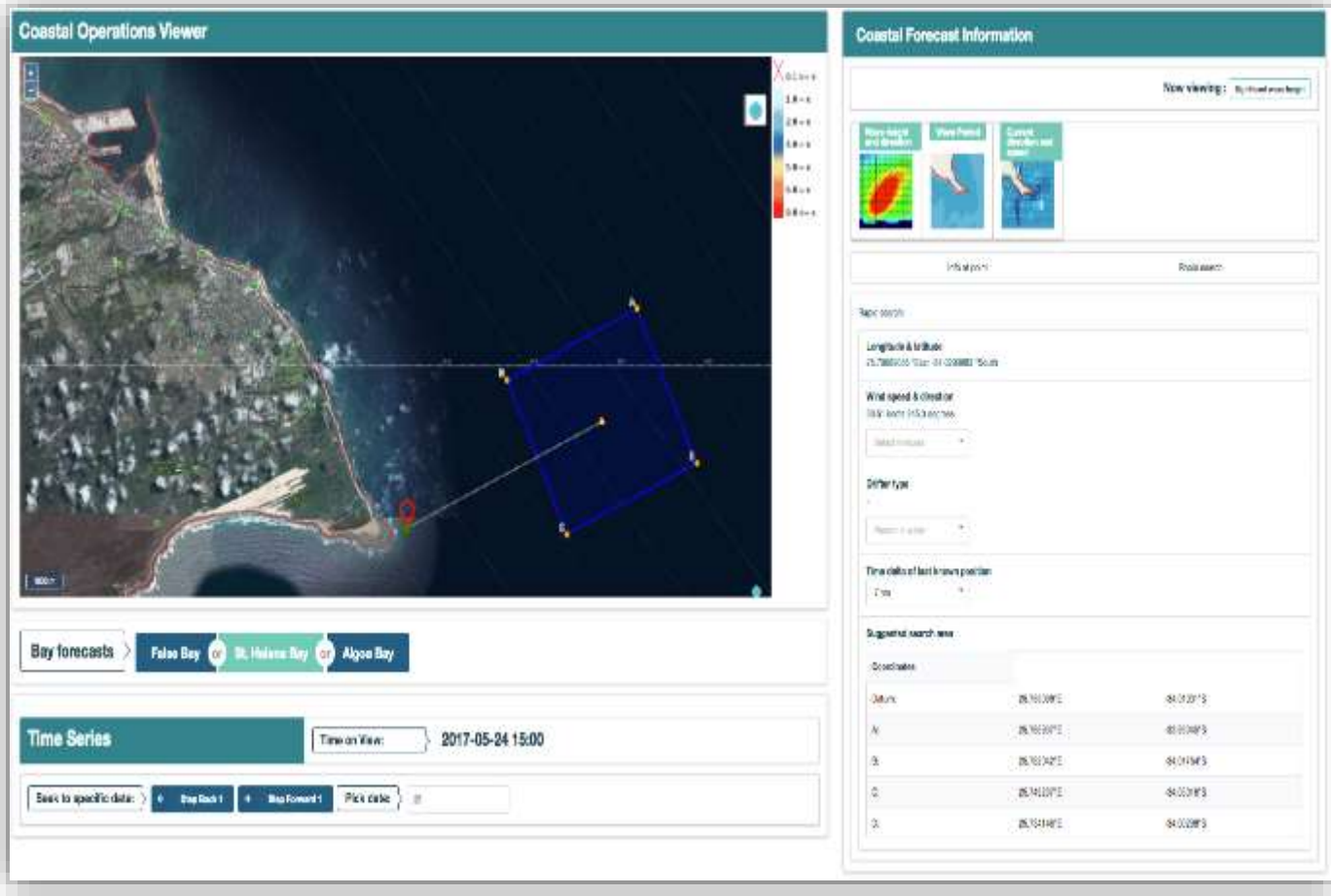
Highlights: Planning Operations at Sea

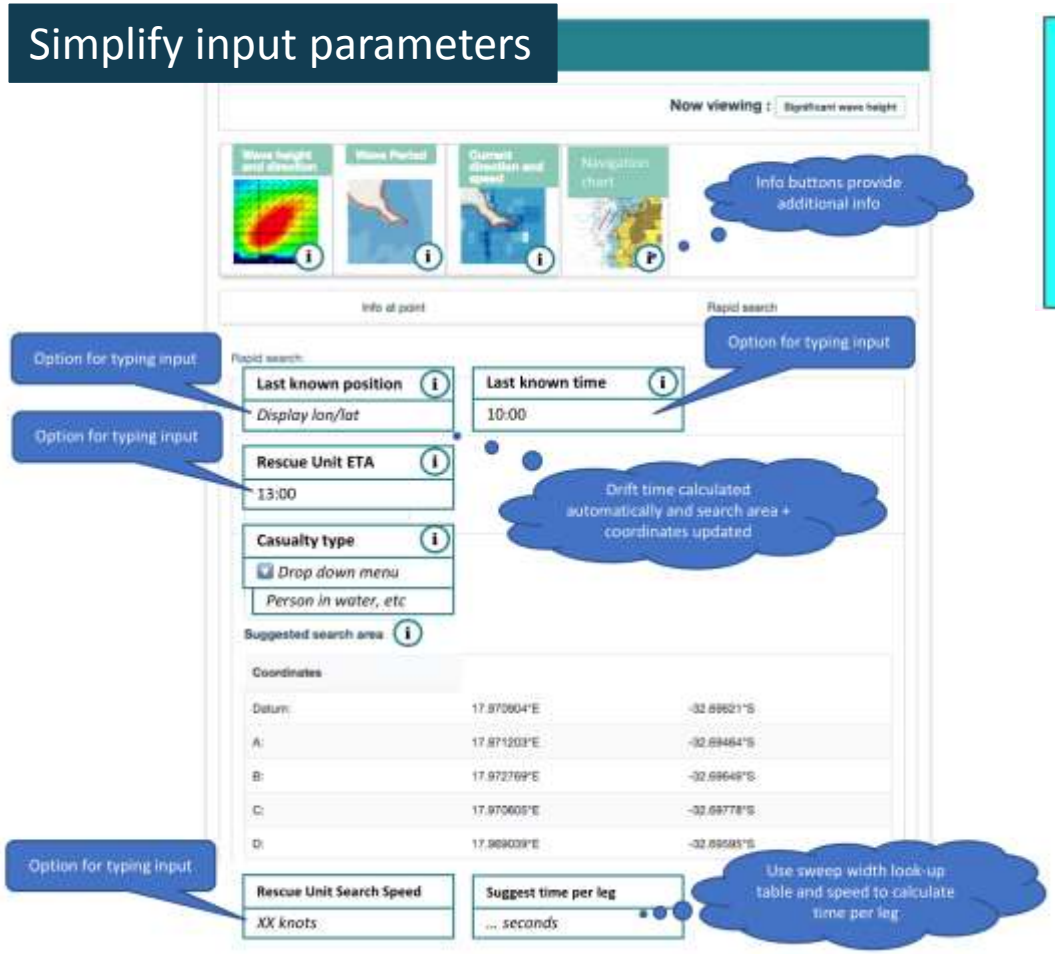
- Technical Advisory Group formally established
- Tool had its first field test on 5th August with NSRI:
  - Researchers and developers got to experience first hand all the planning that goes into these operations
  - End user guiding the development
- Lessons learnt:
  - Real world vs. models
- Collaboration with SAWS

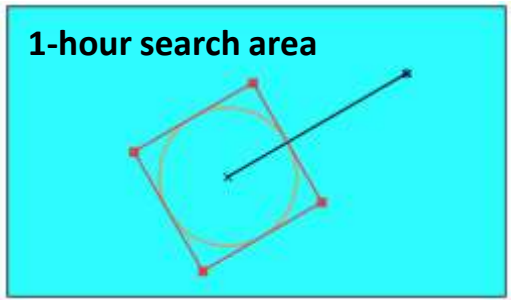


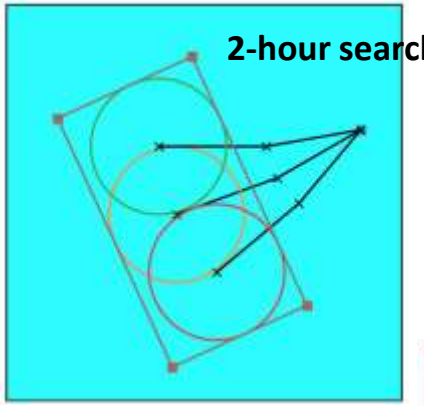
NATIONAL OCIMS

Highlights: Planning Operations at Sea

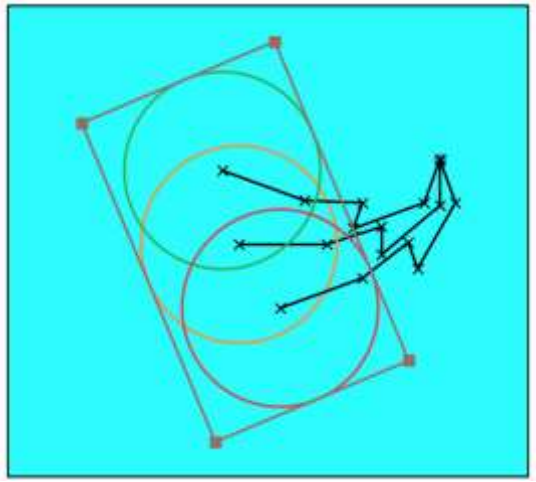
Simplify input parameters







Multi-hour search area



Implement more dynamic search area calculation:

- Pull wind forecast at successive point
- Add divergence

Highlights: Water Quality

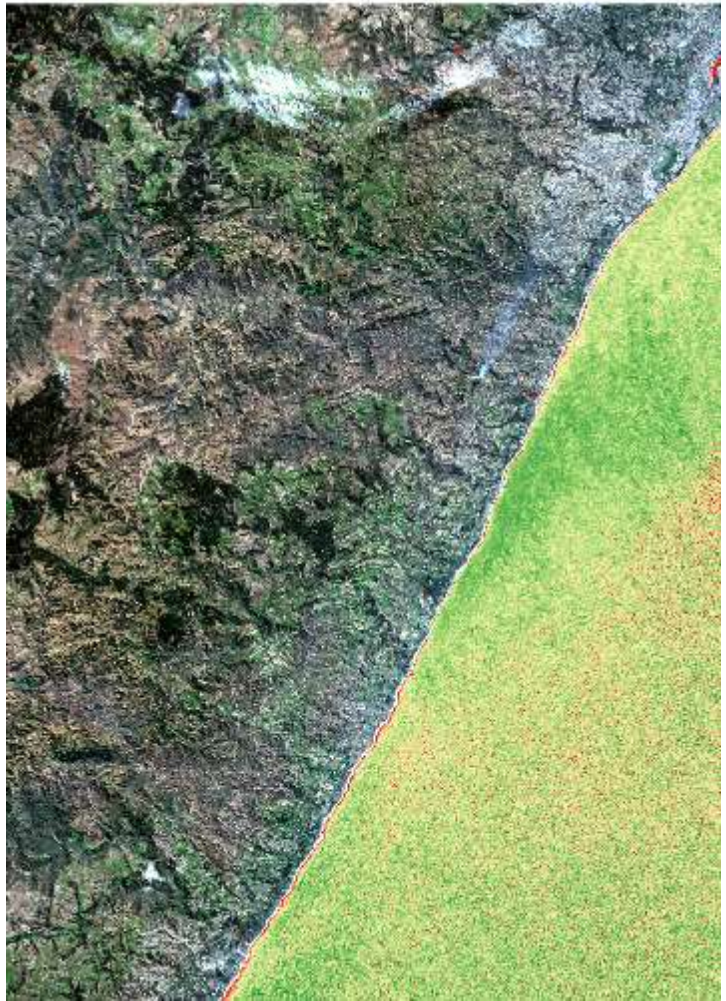
- Water quality monitoring from various datasets, including:
  - Processing of remote sensed satellite imagery e.g. turbidity using Sentinel 2 imagery
  - Point source monitoring: National Outfalls Monitoring Programme (DEA)
  - Water Quality of Blue Flag Beaches (WESSA)
  - Water quality reporting from tertiary institutions and marine monitors

NATIONAL OCIMS

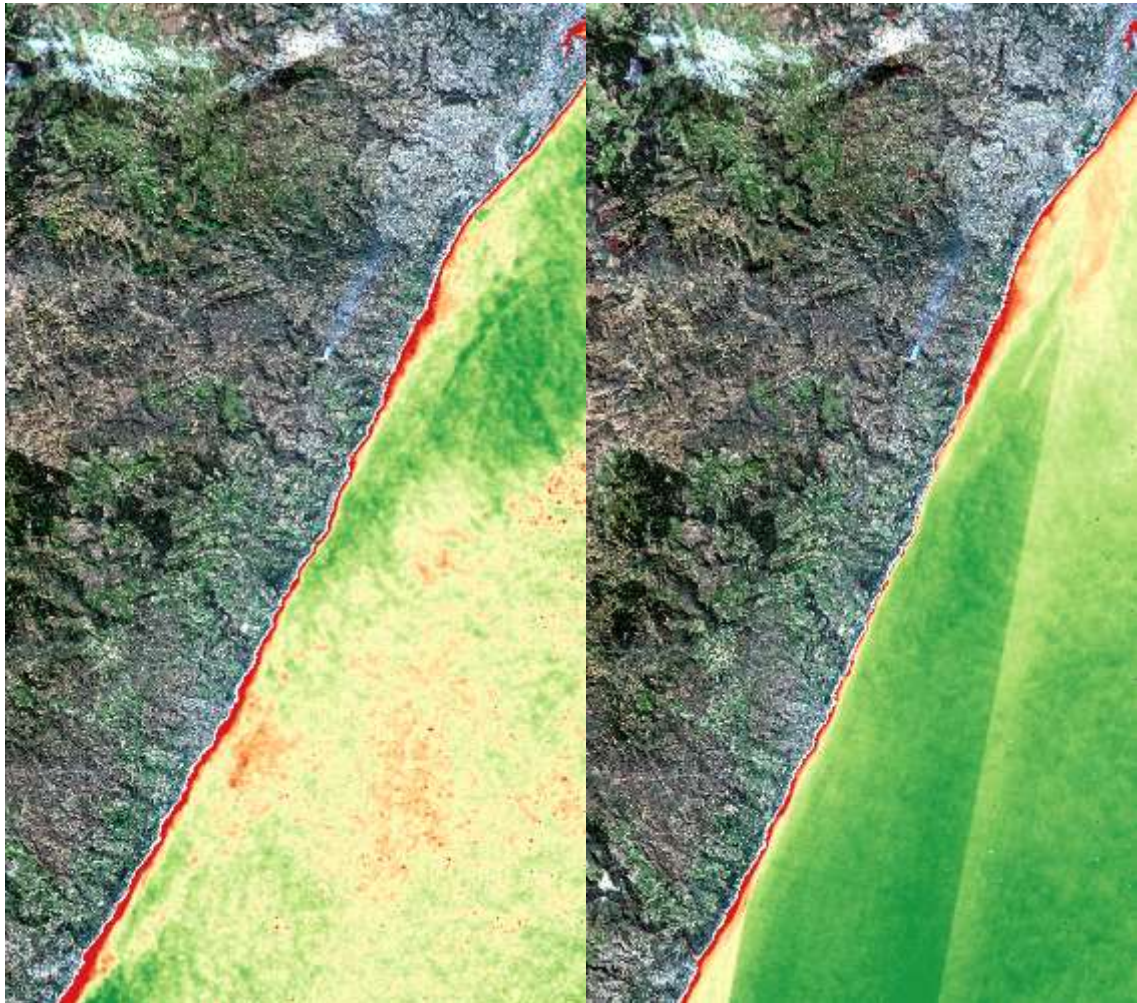
Highlights: Water Quality

Sentinel-2 tile 36JTM of date 2017-07-03.

Turbidity



Chlorophyll – Same Day



NATIONAL OCIMS

Water Quality Decision Support Tool

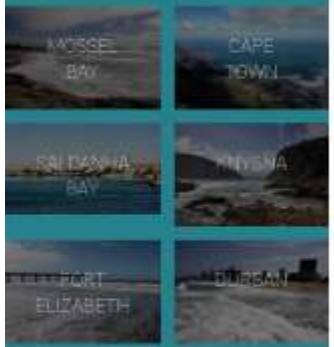
Data

SELECT A LOCATION

SELECT A DATASET

SELECT A RASTER DATASET

Featured Areas



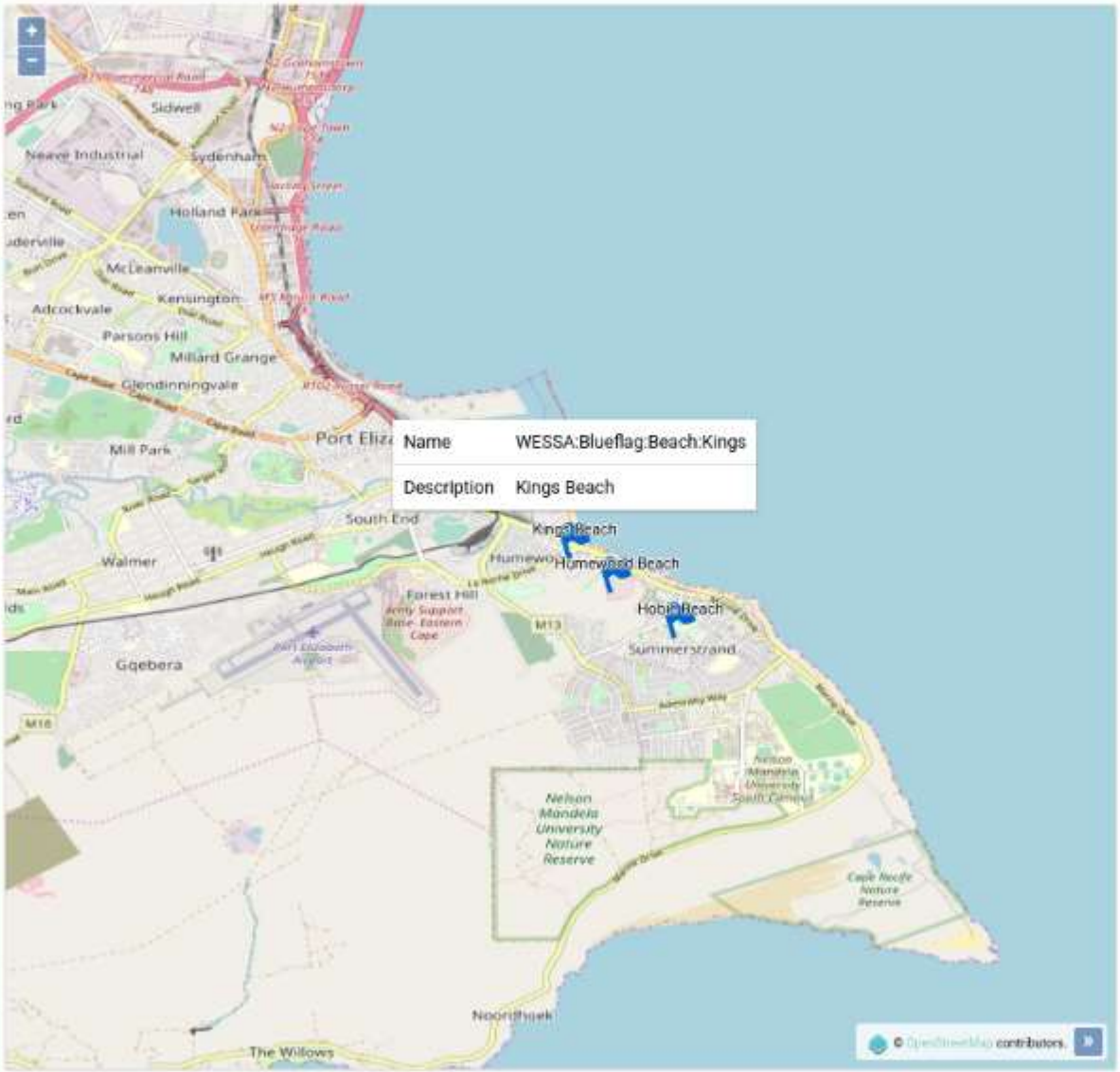
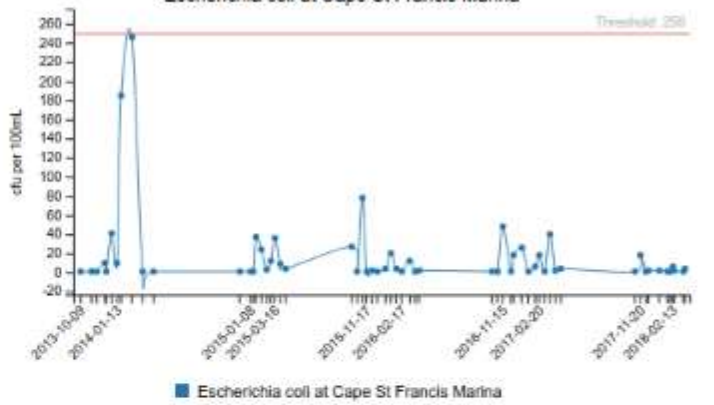


TABLE | CHART



Unit of Measurement

Observed Property

Dataset Name: Escherichia coli

Dataset Description: Coliform bacterium of the genus Escherichia that is commonly found in the lower intestine of warm-blooded organisms

Dataset Definition: https://en.wikipedia.org/wiki/Escherichia_coli

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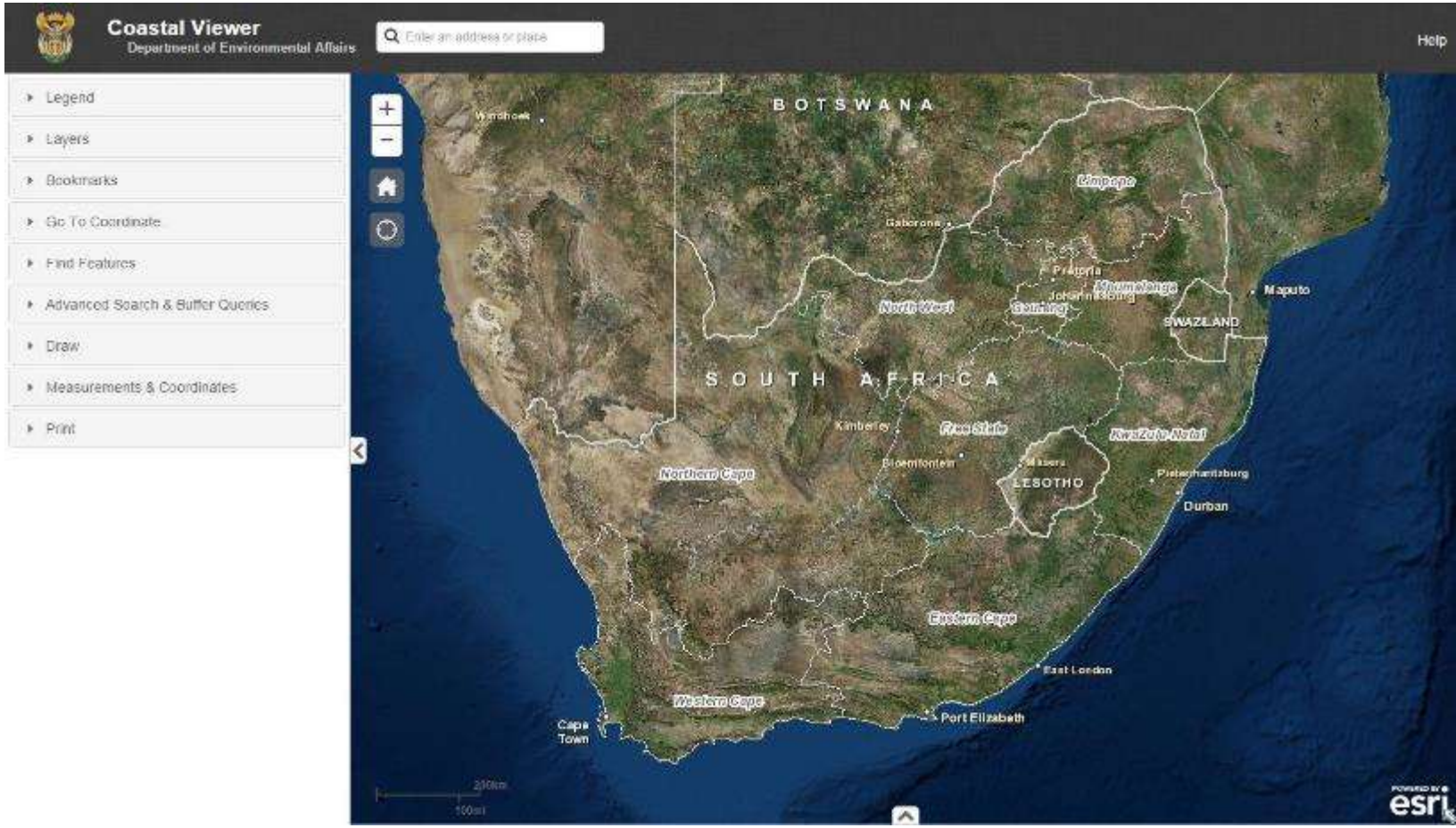
Highlights: Coastal Viewer

- Developed and maintained in-house at DEA
- Makes GIS data available to non-specialists
- Basic functionality, allows for basic spatial analyses e.g. buffering
- User driven system
- Hosting of spatial data
- https://mapservice.environment.gov.za/Coastal%20Viewer/



NATIONAL OCTMS

Highlights: Bilge Dumping

- Detection of oil spills and bilge dumping using SAR imagery

NATIONAL OCTMS

Bilge Dump ALERT REPORT

Report by: BD_DeST
Report Date: 2018-09-17

DETECTION

ATTRIBUTES
Date : 2015/05/16
Location : -17.3842, 20.6192
Length : 9.9 km
Size : 5 km sq.
Wind : 5.4 m/s
Alert Level: High
Confidence Level: High

NOTES
- Bilge dump not verified.
- Possible source identified from SAR.

NATIONAL OCIMS

Partners

www.ocims.gov.za

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