Advancing Ecosystem Accounts: Leveraging Coastal and Marine Observation Data

National Natural Capital Accounting Forum 2024
Stats SA, Pretoria

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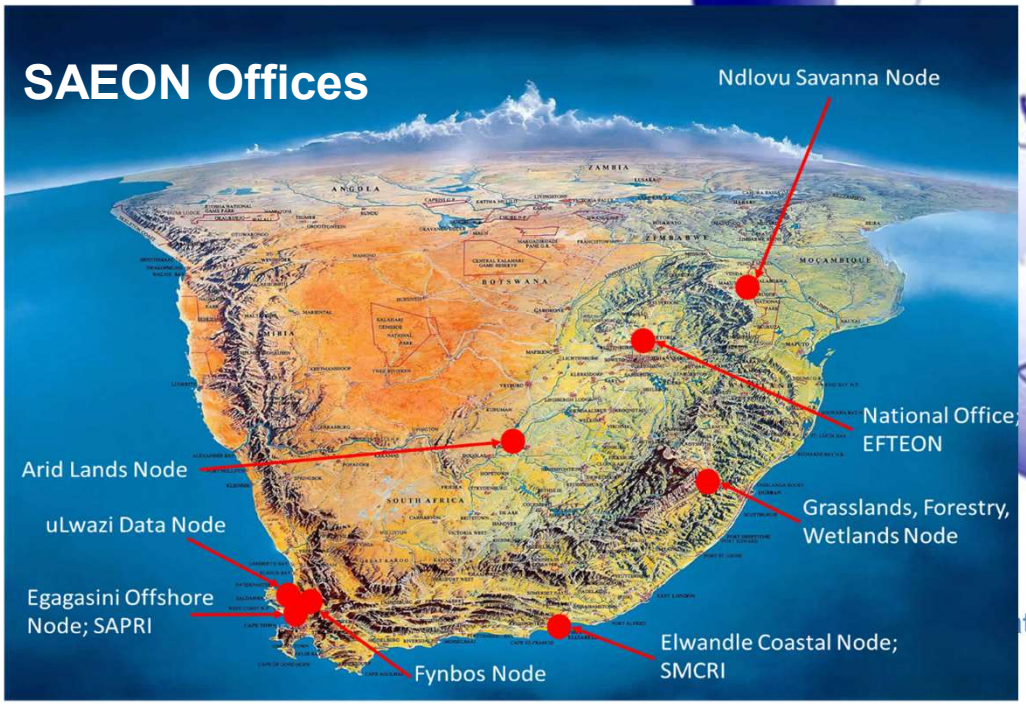
South African Environmental Observation Network

- Established in 2002 – national facility focusing on environmental science
- National Research Foundation, funded by Department of Science and Innovation
- Research facilities available to South African and international scientists
- Open data policy with associated platforms

Mega-RI

Unique in the world

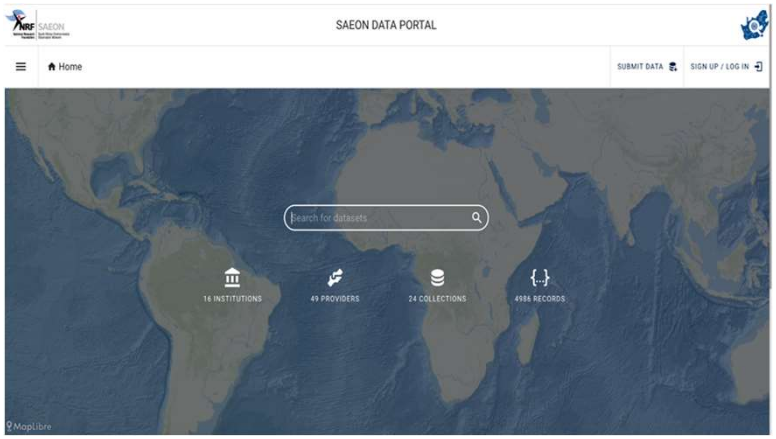
- Transdisciplinary
- 3 Oceans
- Tropics to the Antarctic
- Most of the global Bio- & eco-regions
- Rapidly changing with global consequences



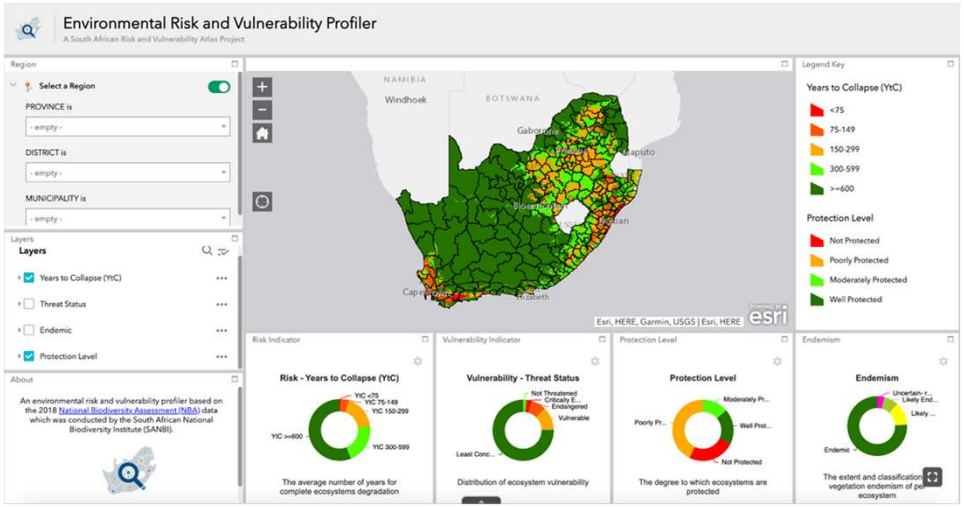
tion, Impact and Partnerships

NRF National Research Foundation 25 SAEON South African Environmental Observation Network

SAEON Open Data Platform: Products and services to enable decision support



Data Catalogue
https://catalogue.saeon.ac.za/



Data visualisation capabilities: atlases, dashboards, risk profilers

Indicator Dashboards

CORE TRUST SEAL

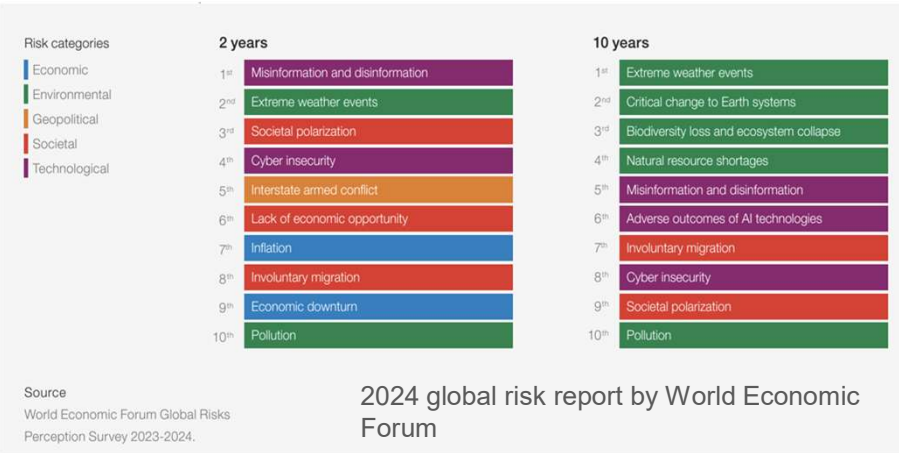
SAEON data centre certified by the CoreTrustSeal

Trust and Sustainability

System engineering process is usually based on developing independent, scalable and interoperable components. Using existing tools (where possible) lowers development and maintenance costs in the long run

Winners of the 2024 NSTF-South32 Data for Research Award

SARVA: Facilitating the interpretation of global change data

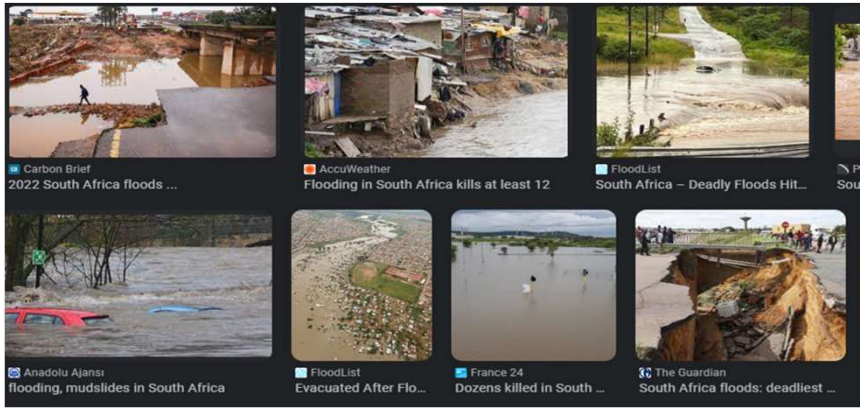


2024 global risk report by World Economic Forum

- The South African Risk and Vulnerability Atlas (SARVA) was established in 2008 as part of DSI's **10-year Global Change Grand Challenge.**
- Currently hosted by the NRF-SAEON uLwazi Node
- Open data access and the development of decision-support tools.
- Platform to preserve and provide access to global risk data for South Africa.

https://sarva.saeon.ac.za/

- South Africa not spared
- SARVA to assist with decision making in dealing with issues such as



Climate and weather

The ocean plays a huge role in the Earth's climate and weather. At the same time, it is being affected by climate change.

Ocean health

Overfishing, climate change and pollution are putting these vital natural ocean's services at risk, and their impacts are critically under-observed.

Coastal communities

Communities in many less developed areas are particularly at risk from changing weather and ocean patterns, and increased disaster risk.

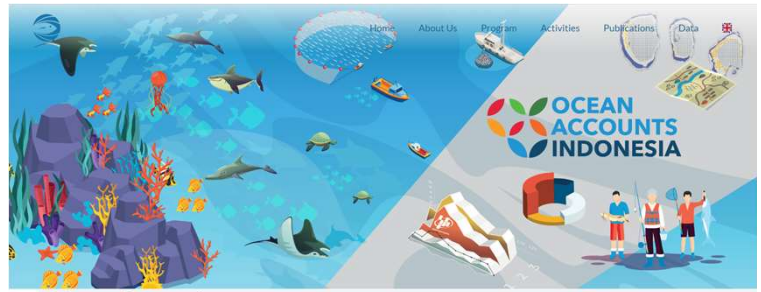
Renewable Energy

The ocean provides a vast potential for renewable energy sources but challenges like technological development and environmental impacts need to be addressed.

If we haven't got data underpinning our decisions, we might as well be guessing at solutions.

Global Ocean Accounts Partnership (GOAP)

- The Global Ocean Accounts Partnership (GOAP) is a global, multi-institutional partnership established to enable countries and other stakeholders to go Beyond GDP to measure and manage progress toward ocean sustainable development.
- Co-chaired by the Ministry of Marine Affairs and Fisheries (Kementerian Kelautan dan Perikanan Republik Indonesia), Indonesia and Charles Darwin Foundation for the Galapagos Islands, Ecuador.
- GOAP membership is open to national governments, intergovernmental institutions, representative bodies of the private sector, and research-intensive institutions (who have been granted formal not-for-profit status in their country of origin) who seek to ensure that the diverse values of the ocean are recognised in all decision-making related to social and economic development.
- African Community of Practice has been established.



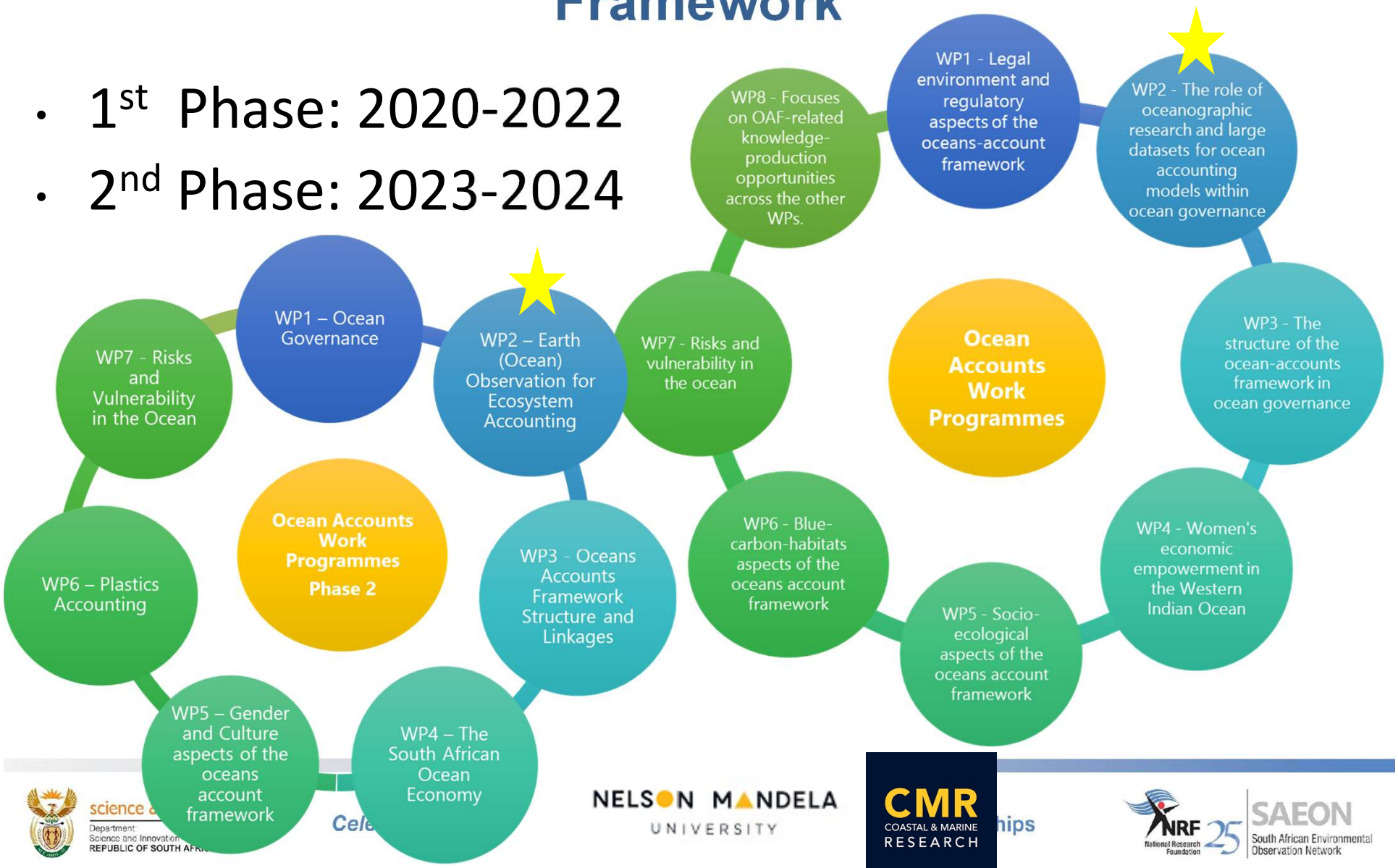
Ocean Accounts

Ocean Accounts comprise structured compilation of information on marine resource assets (maps, data, statistics, and indicators), as well as their interactions and changes over time in a certain area. The Ocean Accounts include seven components: ecosystem assets, flows to the economy, flows to the environment, ocean economy, governance, combined presentation, and ocean wealth. Gili Matra Marine Protected Area (MPA) was selected as a pilot site for data collection. This program is co-implemented by FRCI and the Ministry of Marine Affairs and Fisheries, in collaboration with the Ministry of National Development Planning/BAPPENAS, Ministry of Finance, Statistics Indonesia, the Geospatial Information Agency, and supported by the Global Ocean Accounts Partnership (GOAP).

Launched at the 5th Global Ocean Accounts Dialogue, Bali Indonesia, 1-5 July 2024

NRF Community of Practice: Ocean Accounts Framework

- 1st Phase: 2020-2022
- 2nd Phase: 2023-2024



OCEAN COMPLEXITY

- Distinctly different from the terrestrial environment: vague boundaries, highly dynamic, multi-dimensional, etc.
- Area to manage extensive
- Legislation evolving and at times unclear
- Jurisdictions unclear
- Steadily increasing economic activity
- Increase in stakeholders, users
- Dispersed and expensive data
- Gaps in knowledge and data

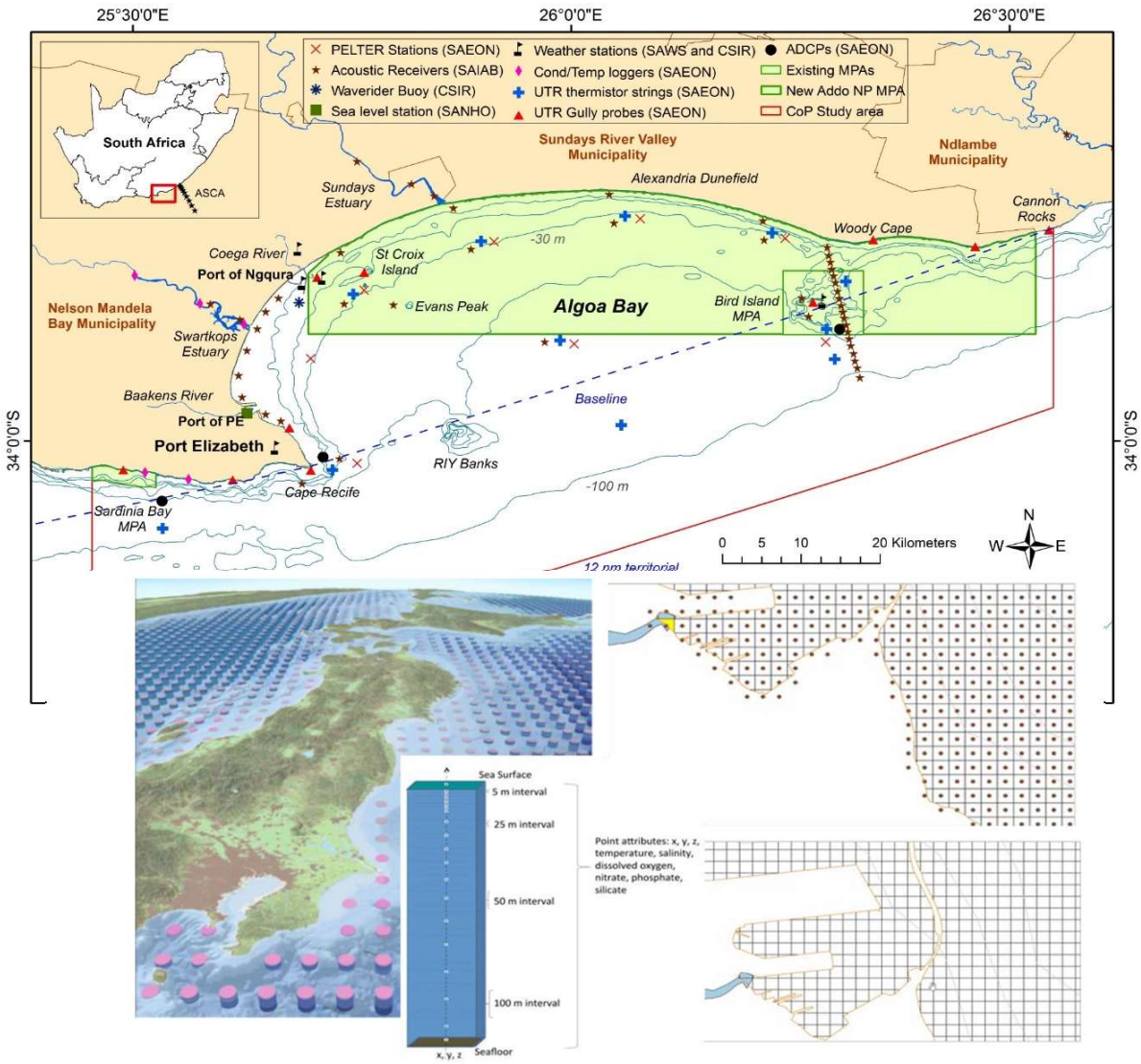


Figure 2.5 Sayre et al., 2017 global ocean mesh grid system and associated xyz water column with centroid representation, on the left. Example of Algoa Bay local scale1 ha grid system with centroid points, on the right.

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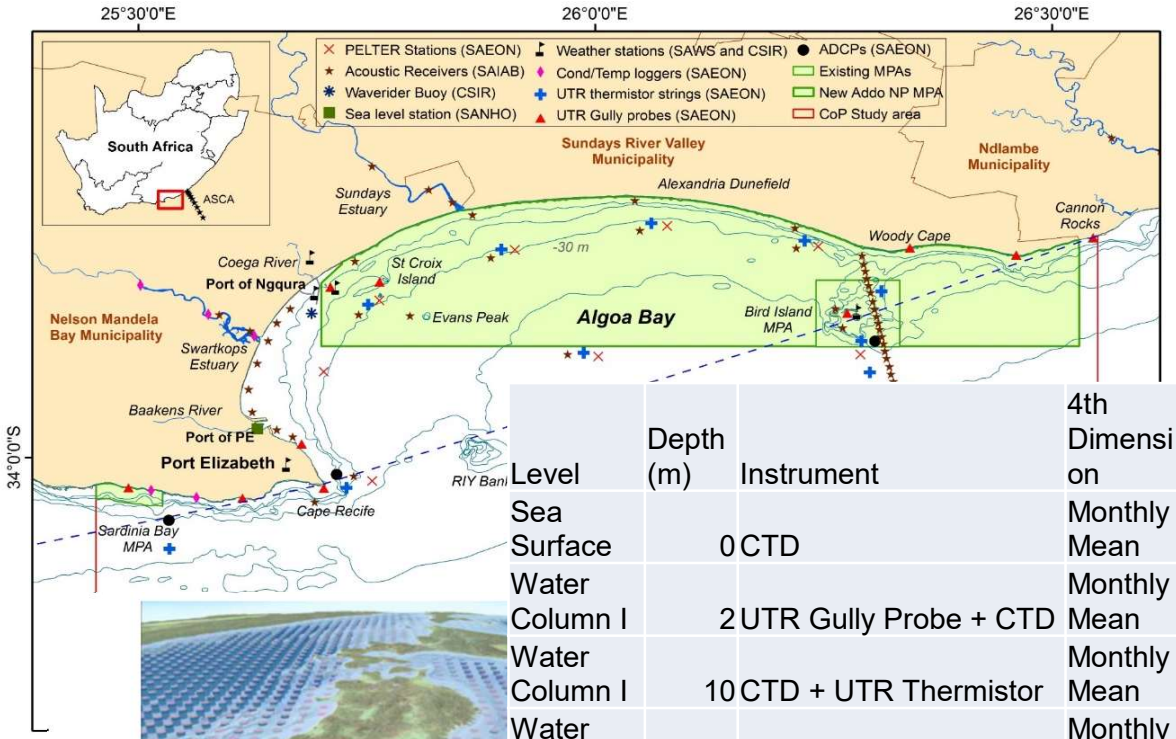

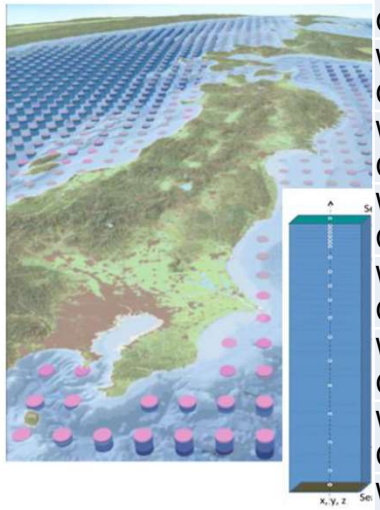

Figure 2.5 Sayre et al., 2017 global ocean r
centroid representation, on the left. Exam
points, on the right.

Level	Depth (m)	Instrument	4th Dimension
Sea Surface	0	CTD	Monthly Mean
Water Column I	2	UTR Gully Probe + CTD	Monthly Mean
Water Column I	10	CTD + UTR Thermistor	Monthly Mean
Water Column I	20	CTD + UTR Thermistor	Monthly Mean
Water Column I	30	CTD + UTR Thermistor	Monthly Mean
Water Column II	40	CTD + UTR Thermistor	Monthly Mean
Water Column II	50	CTD + UTR Thermistor	Monthly Mean
Water Column II	60	CTD + UTR Thermistor	Monthly Mean
Water Column II	70	UTR Thermistor	Monthly Mean
Water Column II	100	UTR Thermistor	Monthly Mean
Water Column II	100-200	Data Gap/ Modeled Data/ADCP to verify	
Sea Floor		Data Gap/ ABP/NBA 2018	
Sub Sea Floor		Data Gap	

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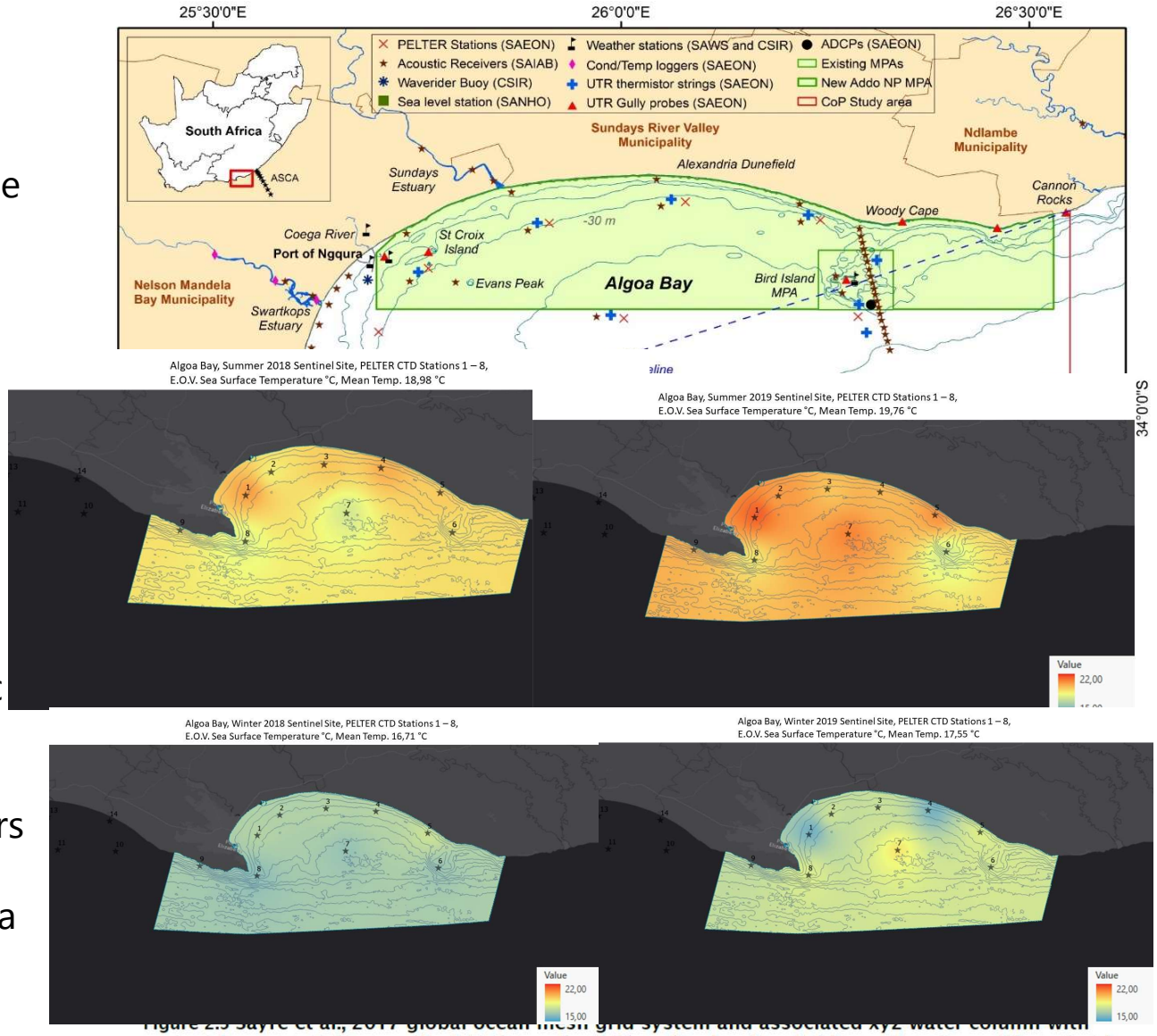


centroid representation, on the left. Example of Algoa Bay local scale1 ha grid system with centroid points, on the right.

SMCRI

Sentinel Sites

Satellite Sentinel Sites

Port Elizabeth = Central Coordinating Unit

Coastal Biogeochemistry Platform

Dive and Hyperbaric Chamber Platform

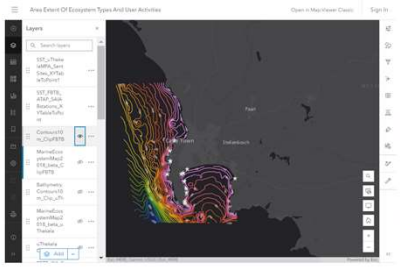
Data Management Platform

Coastal Craft Platform

- Cape Town
- Port Elizabeth
- Durban

Science e

- Cape T
- Port Eli
- Durban



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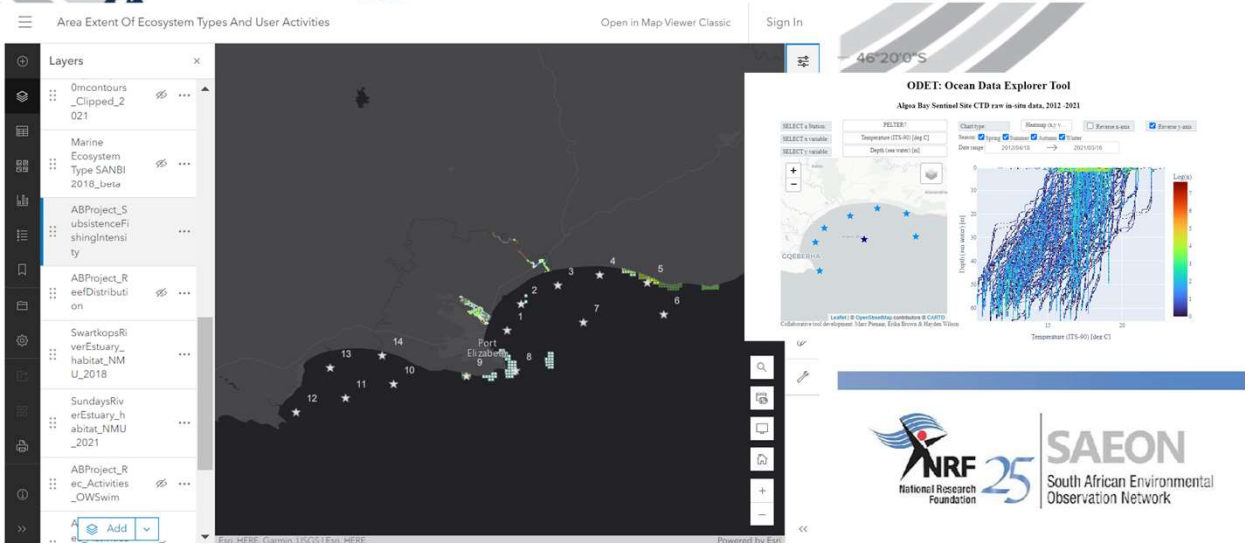
Aerial Sur

Acoustic T

Marine Remote Imagery Platform

South African Coastal Temperature Network

South African Estuaries LTER Platform



science & innovation
Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA

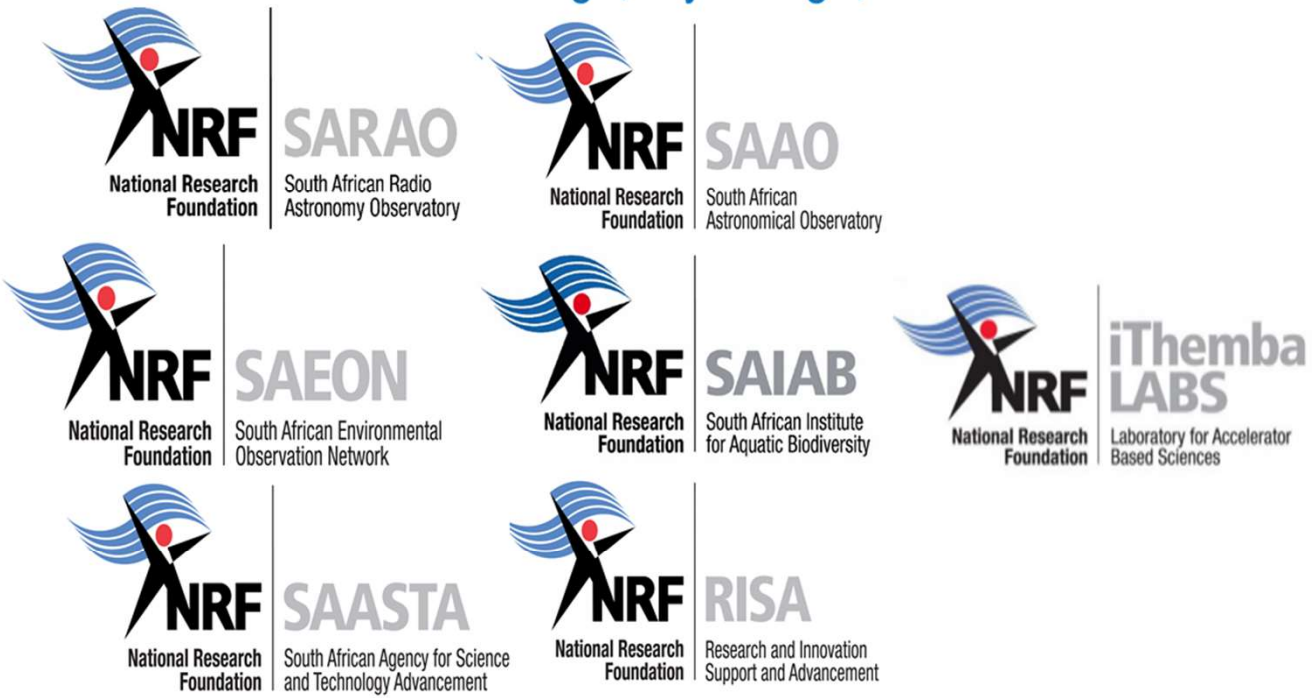
Celebrating 25

NRF National Research Foundation 25 SAEON South African Environmental Observation Network

Reflections

- How can NRF-SAEON be better aligned in the development of national economic-environmental accounts and fulfill the role envisioned in the National NCA Strategy?
- Noting the complexities of the ocean space, how do we ensure development of marine accounts are prioritised and developed alongside terrestrial accounts?

Enkosi, Thank you,
Re a leboga, Siyabonga, Dankie



Email: n.duplessis@saeon.nrf.ac.za

Websites and other Resources:
https://www.algoabayproject.com/
https://oceansea.saeon.ac.za/
https://ulwazi.saeon.ac.za/projects/open-data-platform/
https://www.oceanaccounts.org/