

# COLLATION AND COMPILATION OF MULTI-SCALE AND MULTI-RESOLUTION BATHYMETRIC DATA IN THE WESTERN INDIAN OCEAN

[WIObathy]

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# Introduction



Understanding the shape of the seafloor is fundamental for understanding the Ocean circulation, Tsunami forecasting, fishing resources, sediment transport, climate change, underwater geo-hazards, cable & pipeline routing and sustainable ecosystem management.



Nippon Foundation and GEBCO initiated the Seabed 2030 Project in 2018 with a global initiative to achieve a complete map of the ocean floor by 2030.

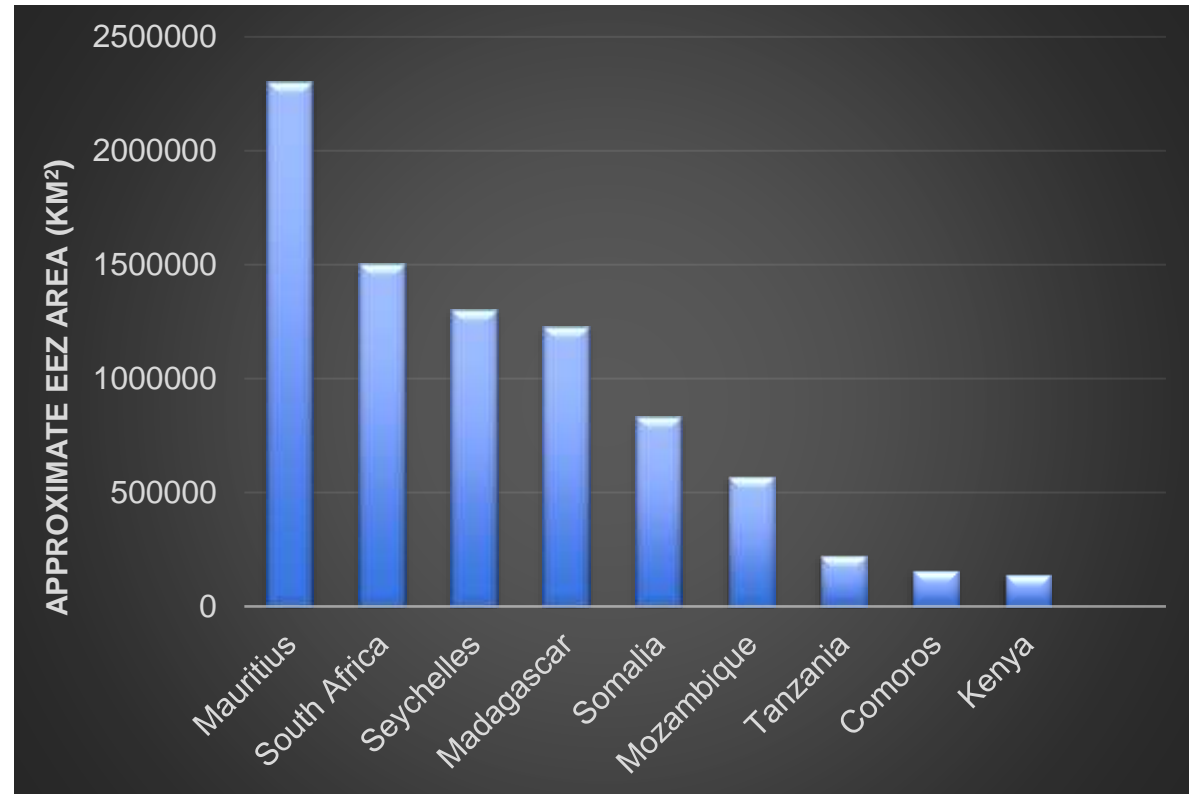
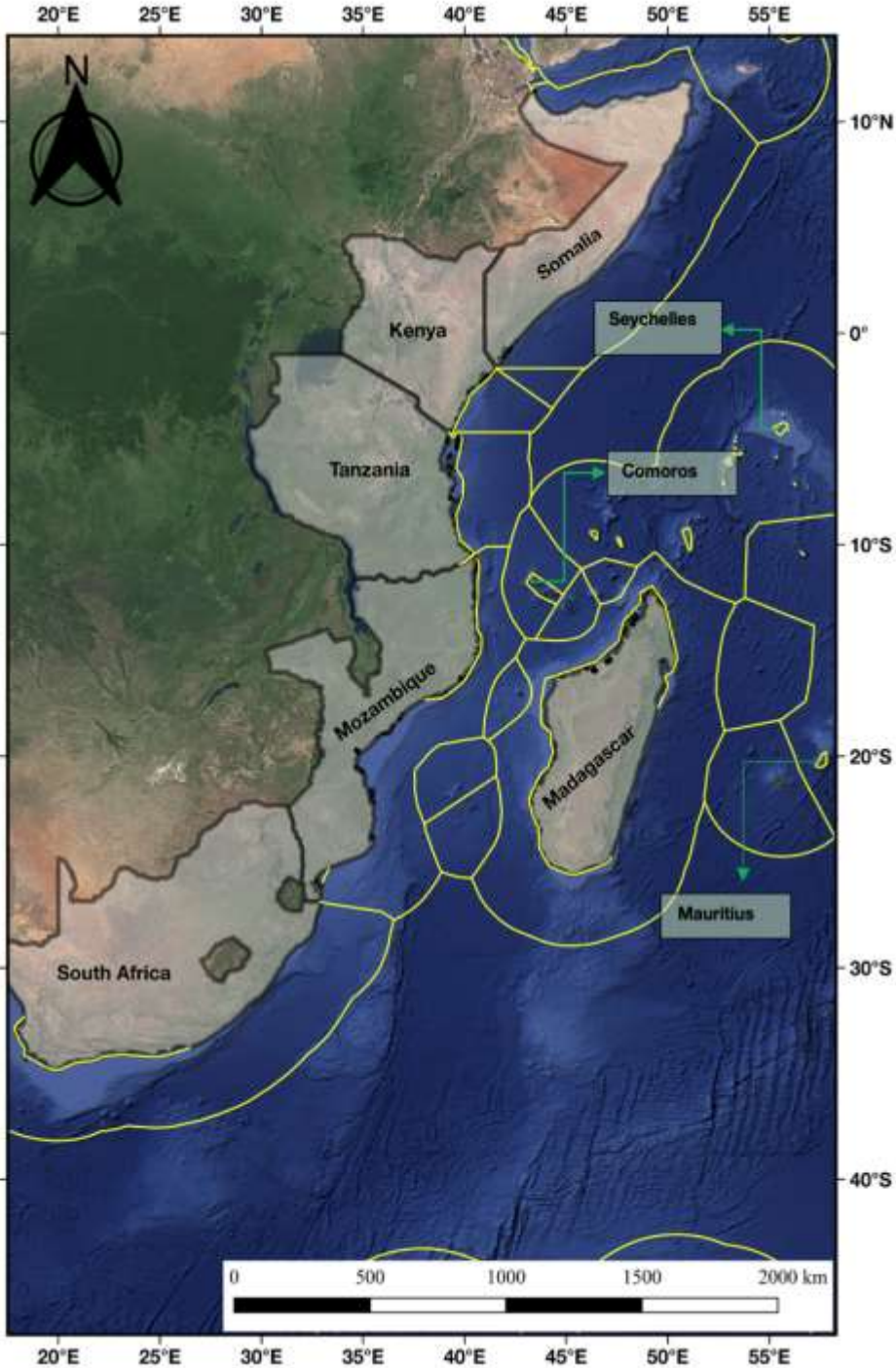


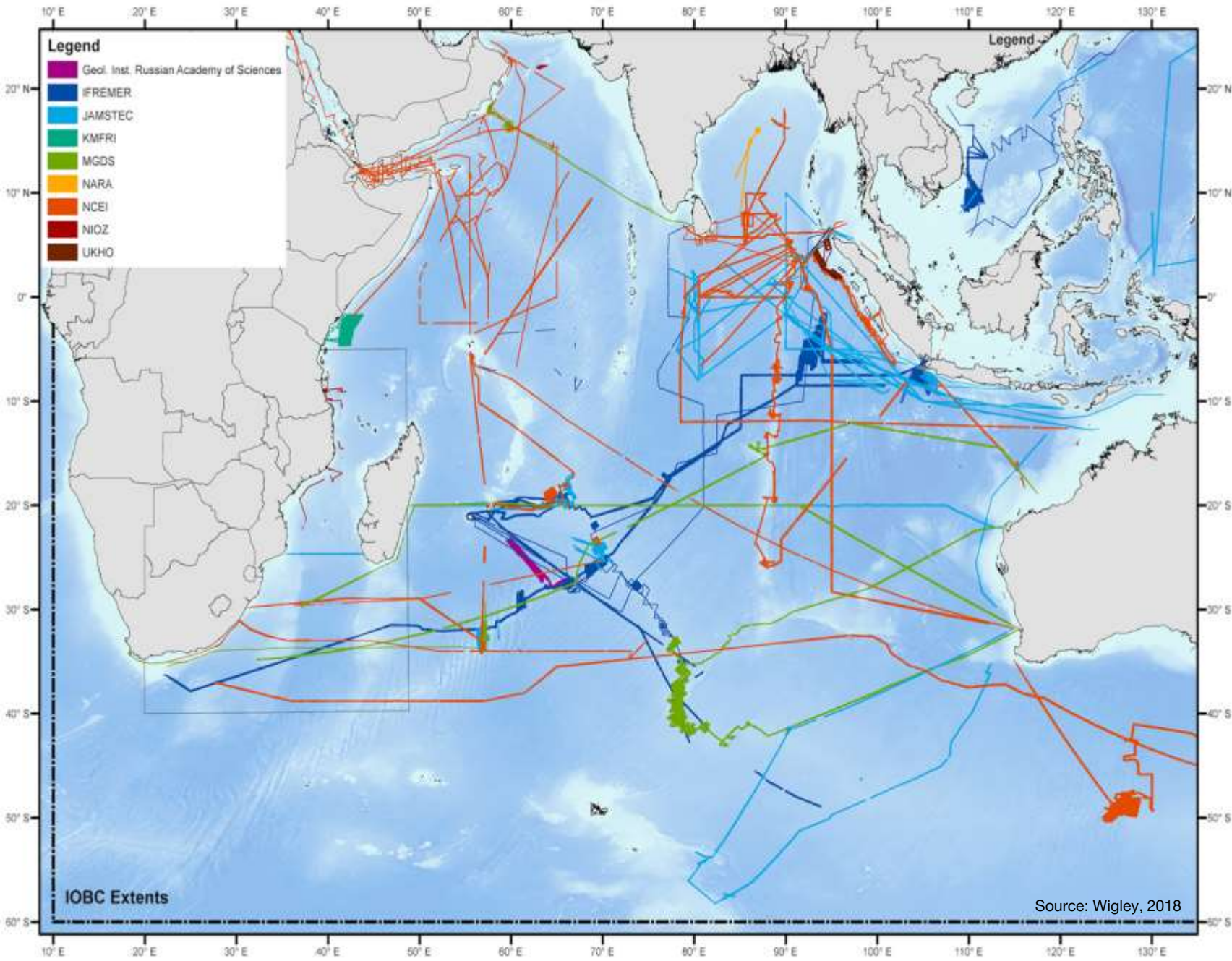
Seabed 2030 Project is endorsed as a UN decade action. SDG 14.

- However, due to the required expertise, equipment and associated costs, bathymetry data collection remains challenging.
- As of June 2024, only 26% of the global ocean is mapped to an adequate resolution using direct measurements.
- The coverage is even dire in developing countries incl. those of the West Indian Ocean (WIO) region.

# Introduction Cont'd

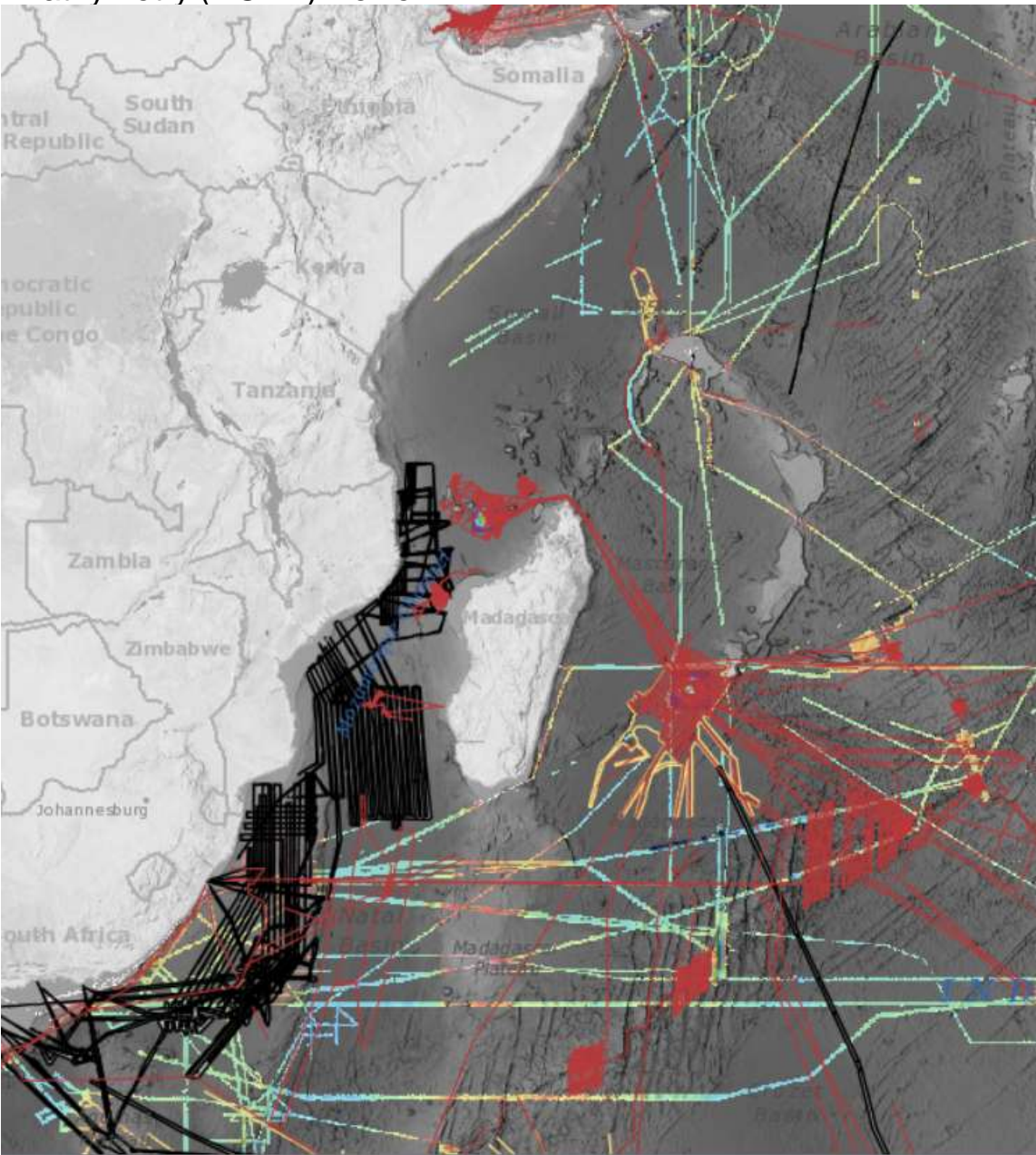
- Combined EEZ of WIO region covers over  $6.0 \times 10^6$  km<sup>2</sup>



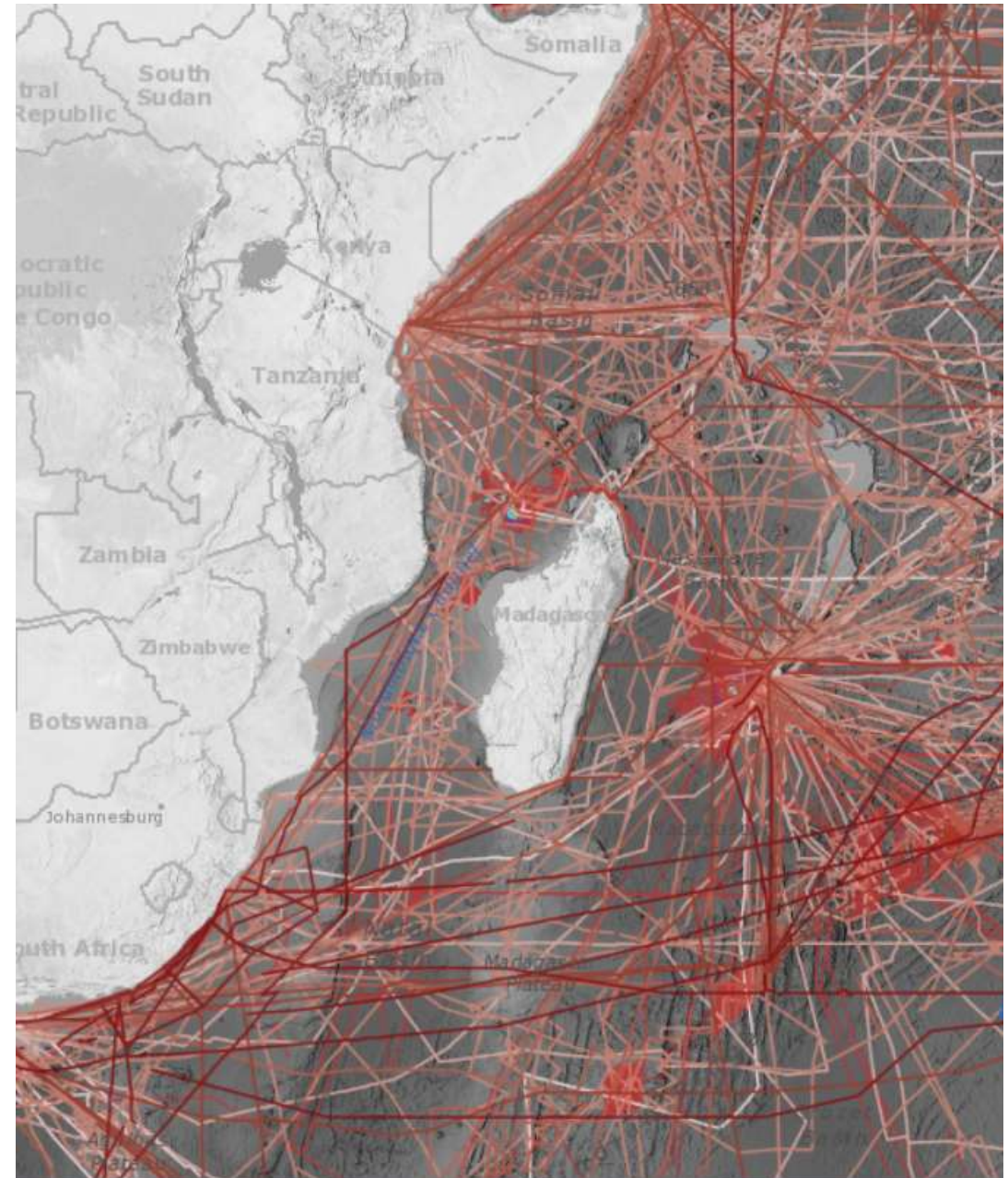


- Bathymetry data has been gathered for diverse purposes, either by institutions, individual countries, or in collaboration.
- However, only a small portion of this data has been made accessible for integration into the GEBCO Grid or other open-source databases.

Multibeam footprint as viewed on the IHO/Data Center for Digital Bathymetry (DCDB) viewer.

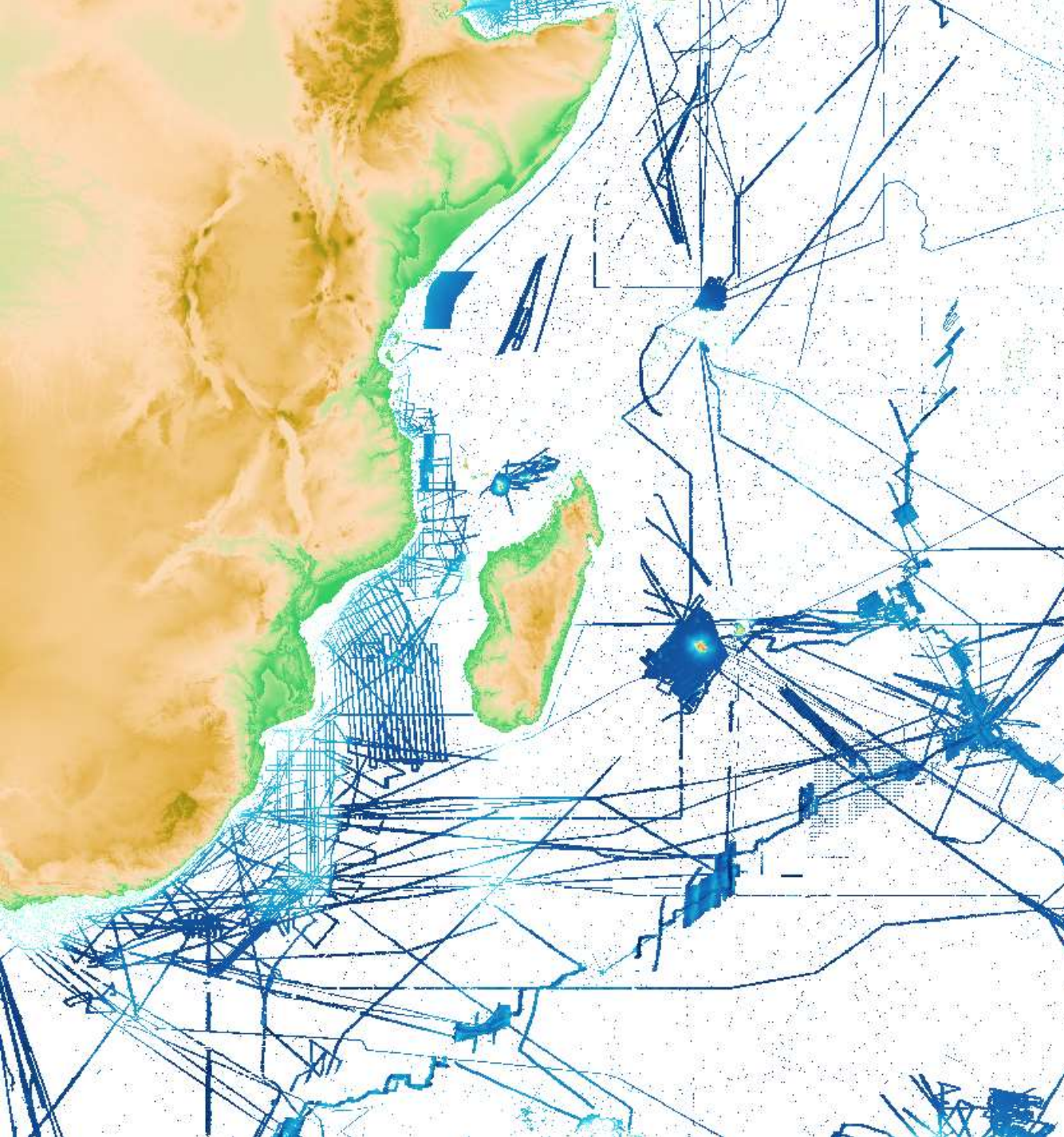


Single Beam surveys as viewed on the IHO/Data Center for Digital Bathymetry (DCDB) viewer.



Bathymetric coverage as viewed on the GEBCO 2022 grid.

[https://www.gebco.net/data\\_and\\_products/gridded\\_bathymetry\\_data/](https://www.gebco.net/data_and_products/gridded_bathymetry_data/)



Example 3

# Area of interest

- Within EEZ
- Outside EEZ



## **Project Objective :**

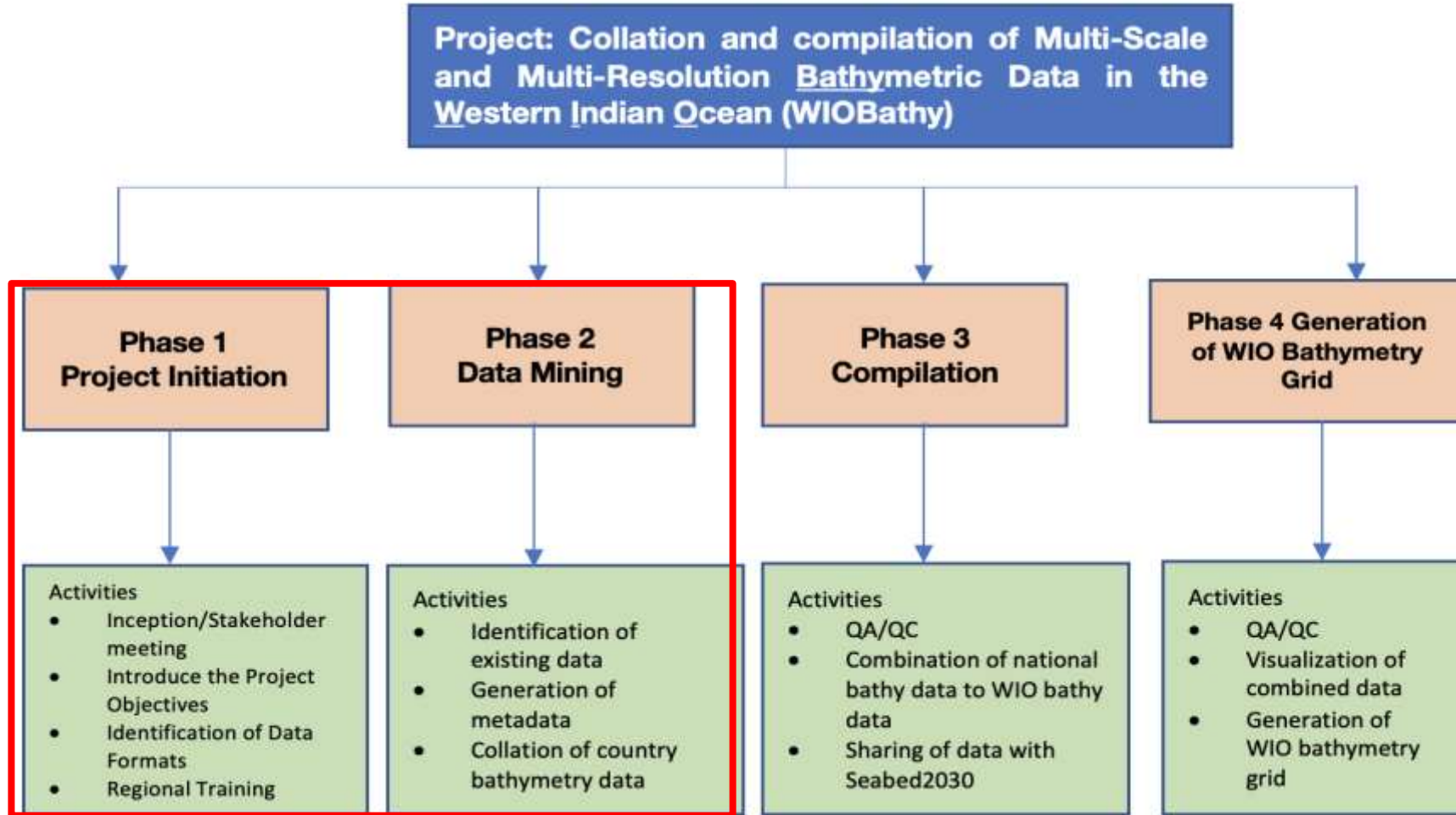
To conduct a regional data mining effort to identify existing bathymetry data, consolidate it to produce the first-ever bathymetry map of the WIO region.



## Methodology:

1. Compile available multi-scale and multi-resolution data (SBES, MBES, LiDAR).
2. Digitize official paper charts to extract soundings (\*.xyz) and contours (official navigation charts).
3. Undertake quality control (QC) as per the Seabed2030 Atlantic and Indian Ocean Regional Center (AIORC) workflows.

# PROJECT BREAKDOWN STRUCTURE UNDER DIFFERENT PHASES



# Project Outputs:



First WIO region compiled bathymetry grid.



Compiled and quality controlled bathymetric data.



Enriched GEBCO grid through addition of new data from WIO region.

# Project Team & Roles

Country	Name	Role
Kenya	Amon Kimeli	Project Lead & coordinator
	Victoria Obura	Data Manager and Kenya Liaison
	Daina Mathai	Data manager/Logistics and Administrative Support
Tanzania	Fadhili Malesa	Data manager and Tanzania Liaison
Mauritius	Sattiaburuth Seeboruth	Data Manager and Mauritius Liaison
	Hemanaden Runghen	Data Manager
	Keshav Sauba	Data Manager
Madagascar	Tina Martin	Data manager and Madagascar Liaison.
Mozambique	Noca Bernardo Furaca Da Silva	Data Manager and Mozambique Liaison
	Fialho P.J. Nehama	Data Manager and Mozambique Liaison
South Africa	Prof Andrew Green	Data Manager
	Dr Hayley Cawthra	Data Manager
<b>Partners &amp; collaborators</b>		
Madagascar	Andry H Rasolomaharavo	Collaborator
South Africa	Rochelle Wigley	Collaborator
	Neil Tinmouth	Collaborator

# Roles and responsibilities

<b>Co-opted Team Members (None GEBCO Alumni)</b>		
<b>Country</b>	<b>Name</b>	<b>Roles</b>
USA	Dr Vicki Ferrini	Project Co-Lead, responsible for assisting the team through the sharing of tools and workflows. Will ensure the integration of data within the regional compilation built by the Atlantic and Indian Ocean Regional Center.
South Africa	Prof Andrew Green	Professor - University of KwaZulu-Natal, South Africa
South Africa	Dr Hayley Cawthra	Council for Geoscience, and a Research Associate at the Nelson Mandela University in the African Centre for Coastal Palaeoscience.
Mozambique	Noca Bernado Furaca Da Silva	Lecturer - Eduardo Mondlane University, Mozambique
<b>Countries still to co-opt (No GEBCO Alumni)</b>		
Somalia	?	?
Seychelles	?	?
Comoros	?	?
France (La Re-Union)	?	?

# Expanding the scope and collaboration

## Invitation of other GEBCO Alumni from countries bordering the Indian Ocean

- Sri Lanka
- India
- Philippines
- Indonesia
- India
- Bangladesh
- Australia