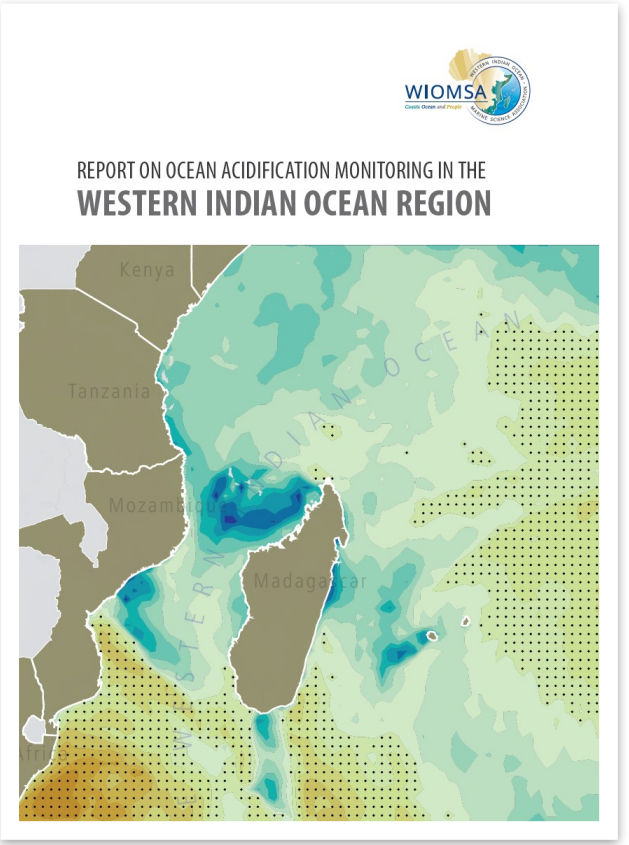
Ocean Acidification Monitoring in the Western Indian Ocean region: A Case of Tanzania

Validation workshop

27 January 2025, Dar es Salaam Tanzania



UN environment programme

Nairobi Convention

UNDP

ACPMEAs 3
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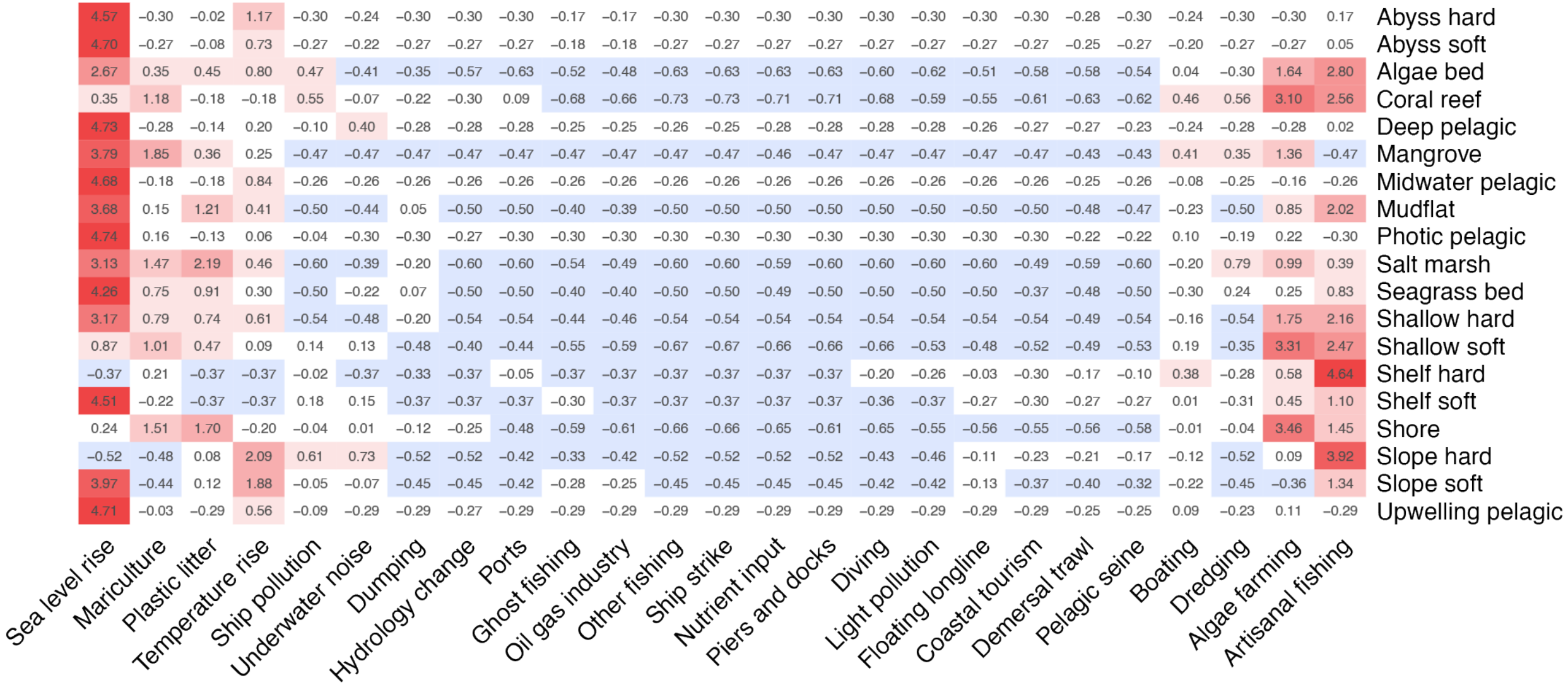
gef

Why monitoring ocean acidification

- To understand the trends and dynamics of OA indicators (pH, DIC, TA, and pCO_2)
- To understand biodiversity shifts, therefore protect vulnerable species and habitats.
- Economic impacts of OA to coastal communities
- Adaptation and mitigation measures depends on reliable data of OA indicators (pH, DIC, TA, and pCO_2)
- Ecosystem health

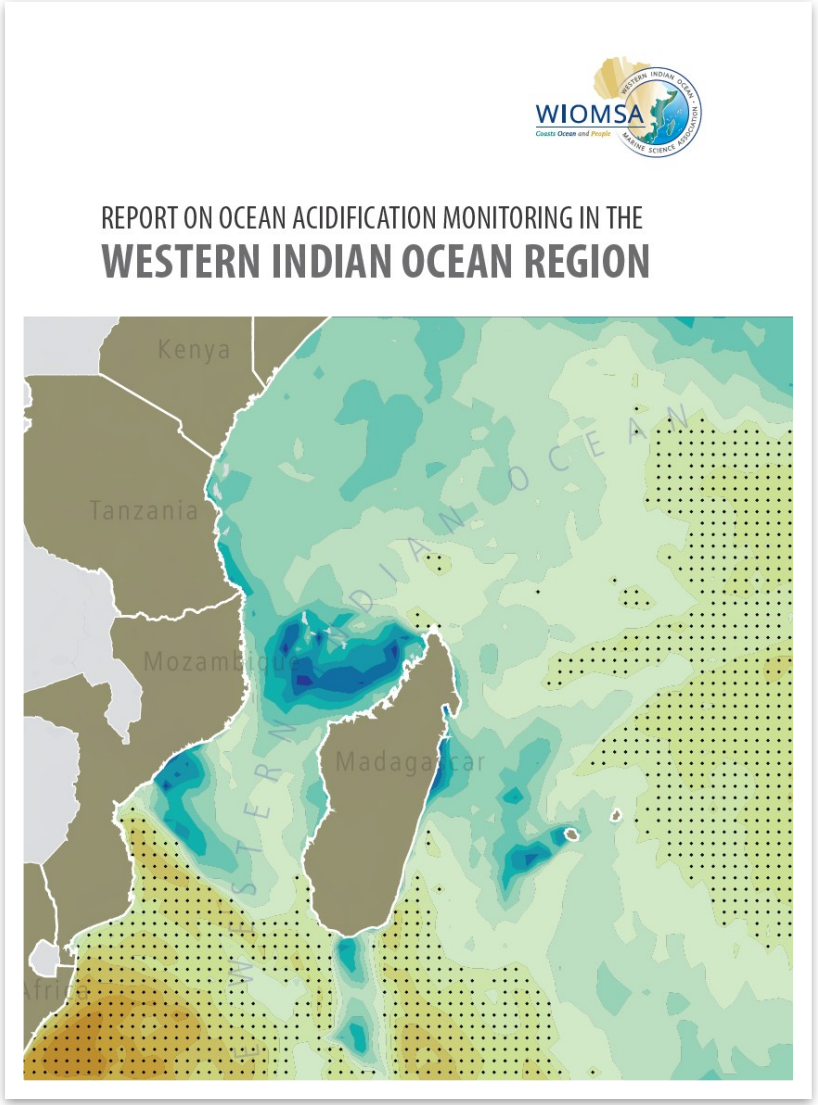
Why monitoring ocean acidification



Why monitoring ocean acidification

Data is crucial

- Reliable
- Standardized methodology



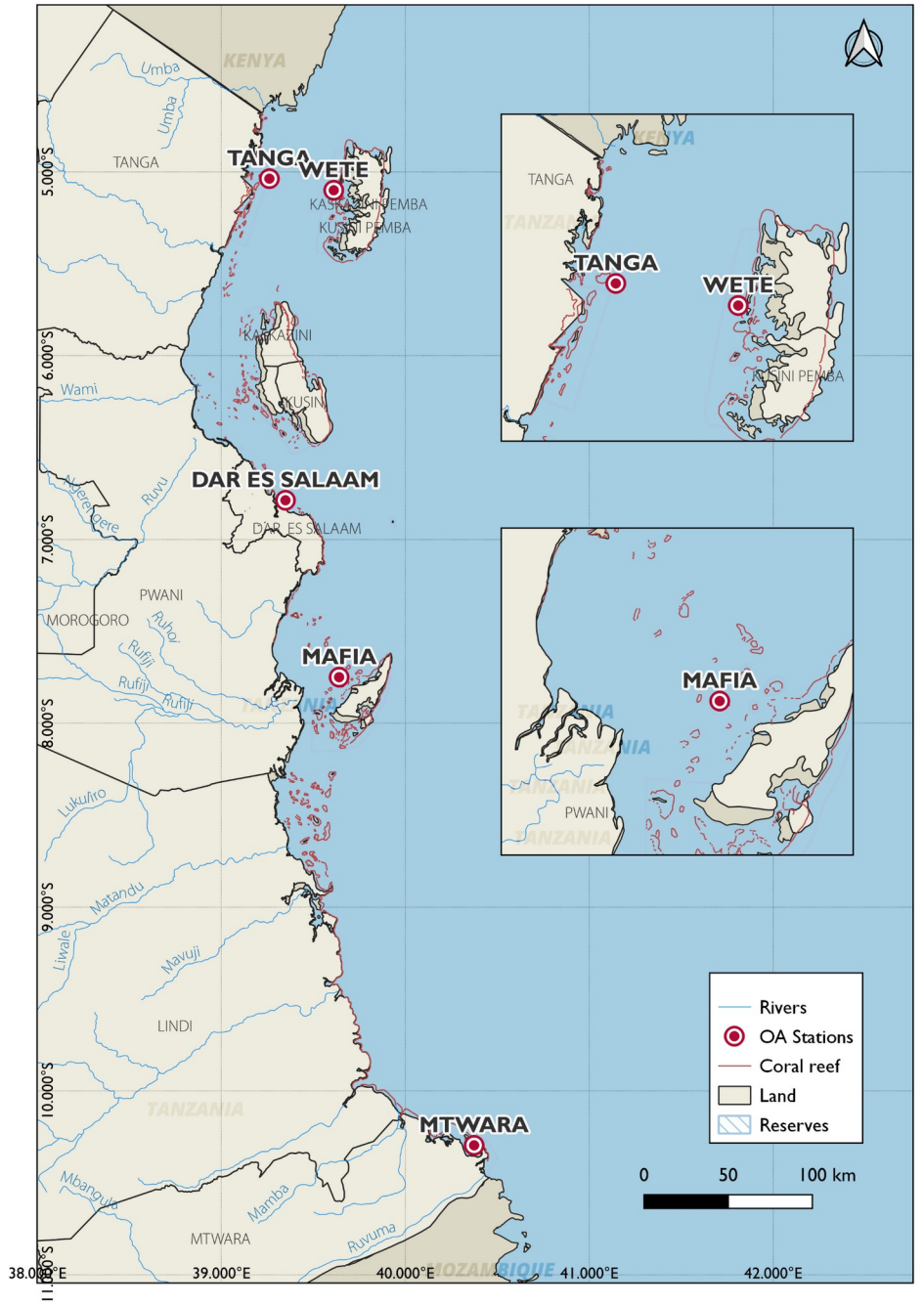
OA monitoring in Tanzania

OA monitoring stations

- The Pemba Channel (since 2022
- Zanzibar Channel (since 2017
- Mafia Channel (since 2024)

Next monitoring stations

- Mtwara
- Unguja



2019 | 2020 | 2021 | 2022 | 2023 | 2024

2019 | 2020 | 2021 | 2022 | 2023 | 2024

Challenge

- The monthly interval data were inadequate to establish trend and investigate dynamics of OA indicators

Solution

- Hence, in 2021, OA team decided to deploy a buoy to collect high frequency data

2019 | 2020 | 2021 | 2022 | 2023 | 2024

Road to high frequency data

2019 | 2020 | 2021 | 2022 | 2023 | 2024

Road to high frequency data

2019 | 2020 | 2021 | 2022 | 2023 | 2024

Tanga – Pemba Sea Scape

2019 2020 2021 2022 2023 2024

Tanga – Pemba Sea Scape

Buoy video in Tanga

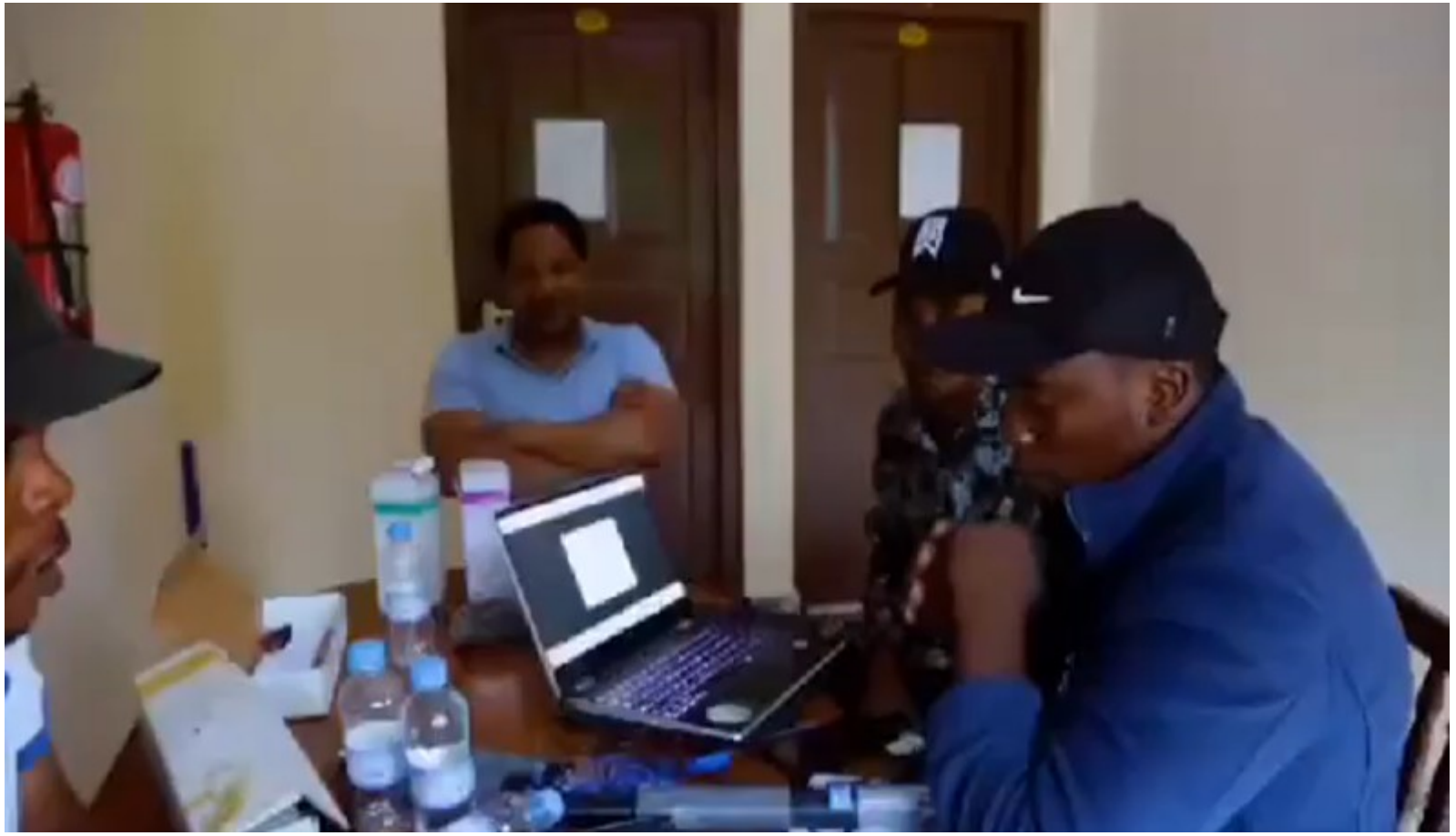
2019 2020 2021 2022 2023 2024

Pemba and Mafia

2019 | 2020 | 2021 | 2022 | 2023 | 2024

Pilot study in **Pemba**

- Trained scientists on sensor configurations



2019 | 2020 | 2021 | 2022 | 2023 | 2024

- Community level stakeholders' dissemination workshops

2019 | 2020 | 2021 | 2022 | 2023 | 2024

- High-level stakeholders' dissemination workshops

2019 | 2020 | 2021 | 2022 | 2023 | 2024

It documented occurrence of multiple upwelling events low level of DO, Temperature, and pH

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High-frequency dynamics of pH, dissolved oxygen, and temperature in the coastal ecosystems of the Tanga-Pemba Seascape: *implications for upwelling-enhanced ocean acidification and deoxygenation*

Rushingisha George[1]*, Samson Job[2], Masumbuko Semba[3], Elinasi Monga[4], Blandina Lugendo[2], Arthur Omondi Tuda[5] and Ismael Kimirei[1]

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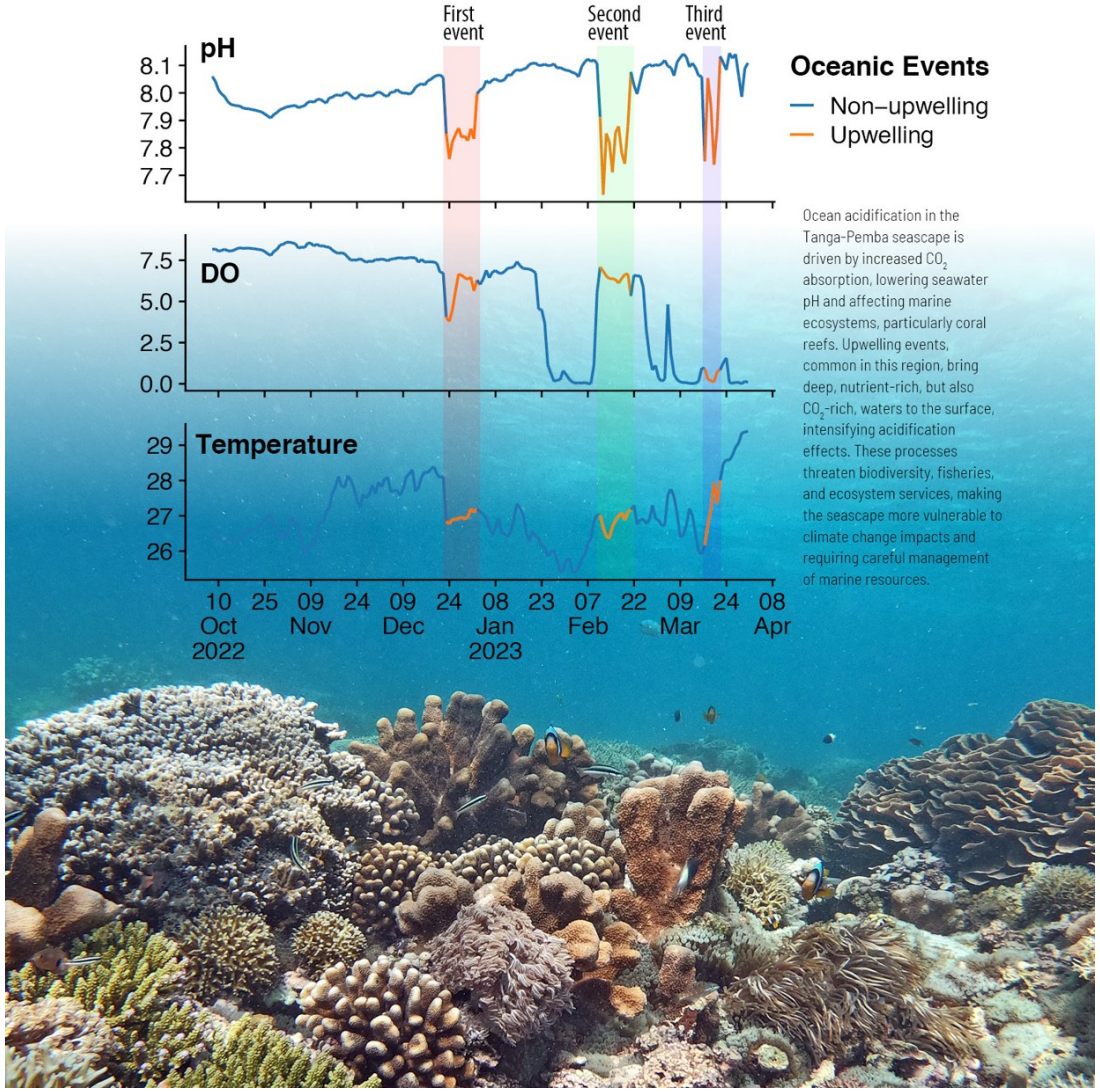
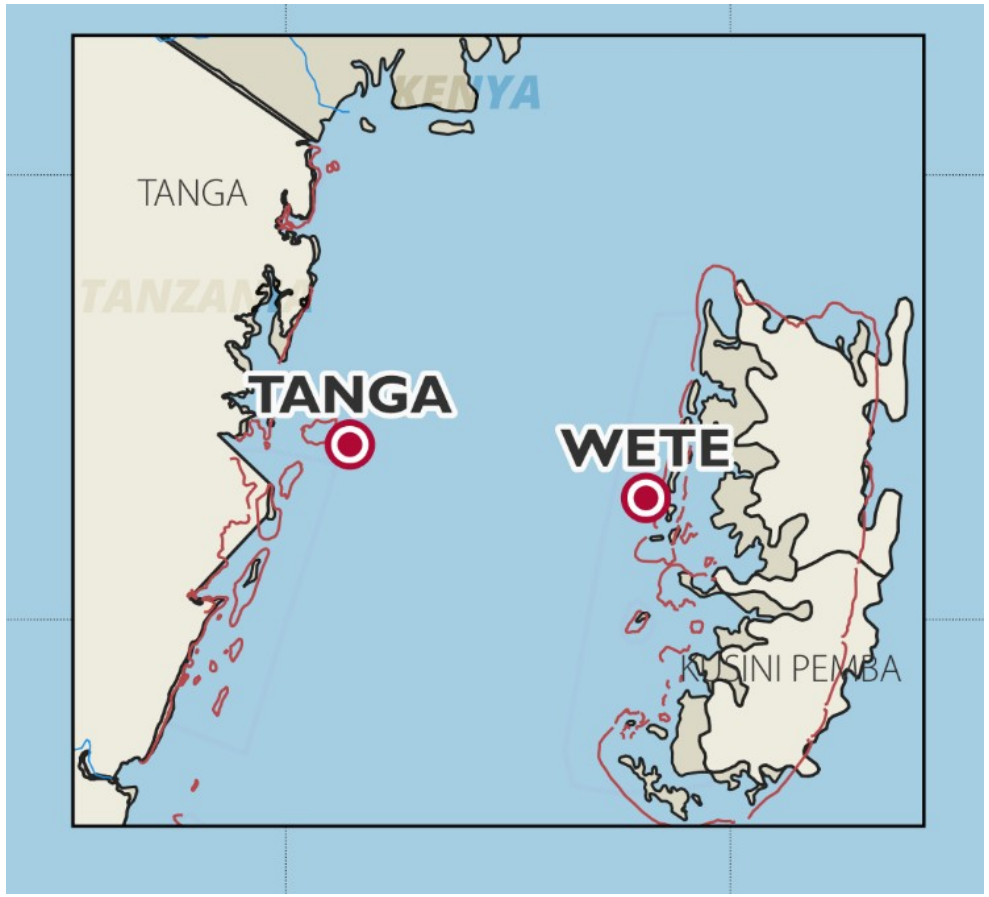


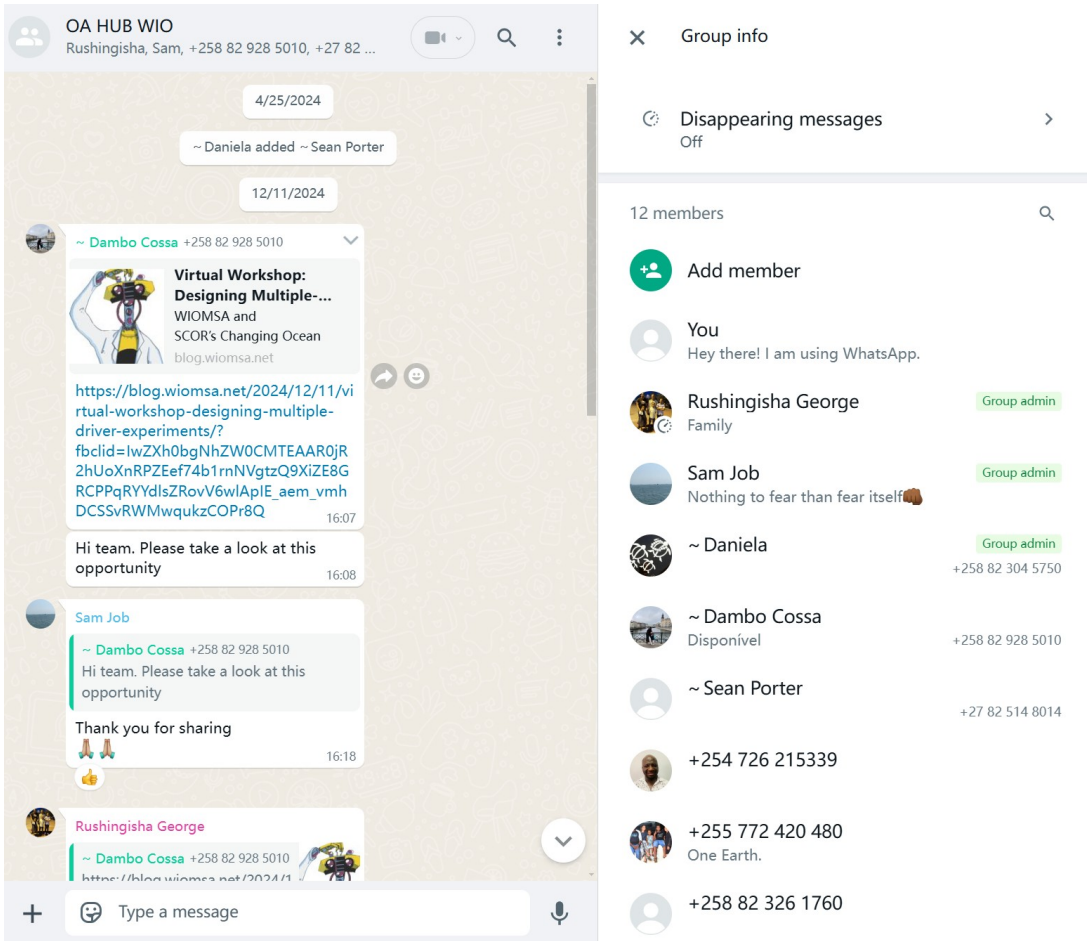
2019 | 2020 | 2021 | 2022 | 2023 | 2024

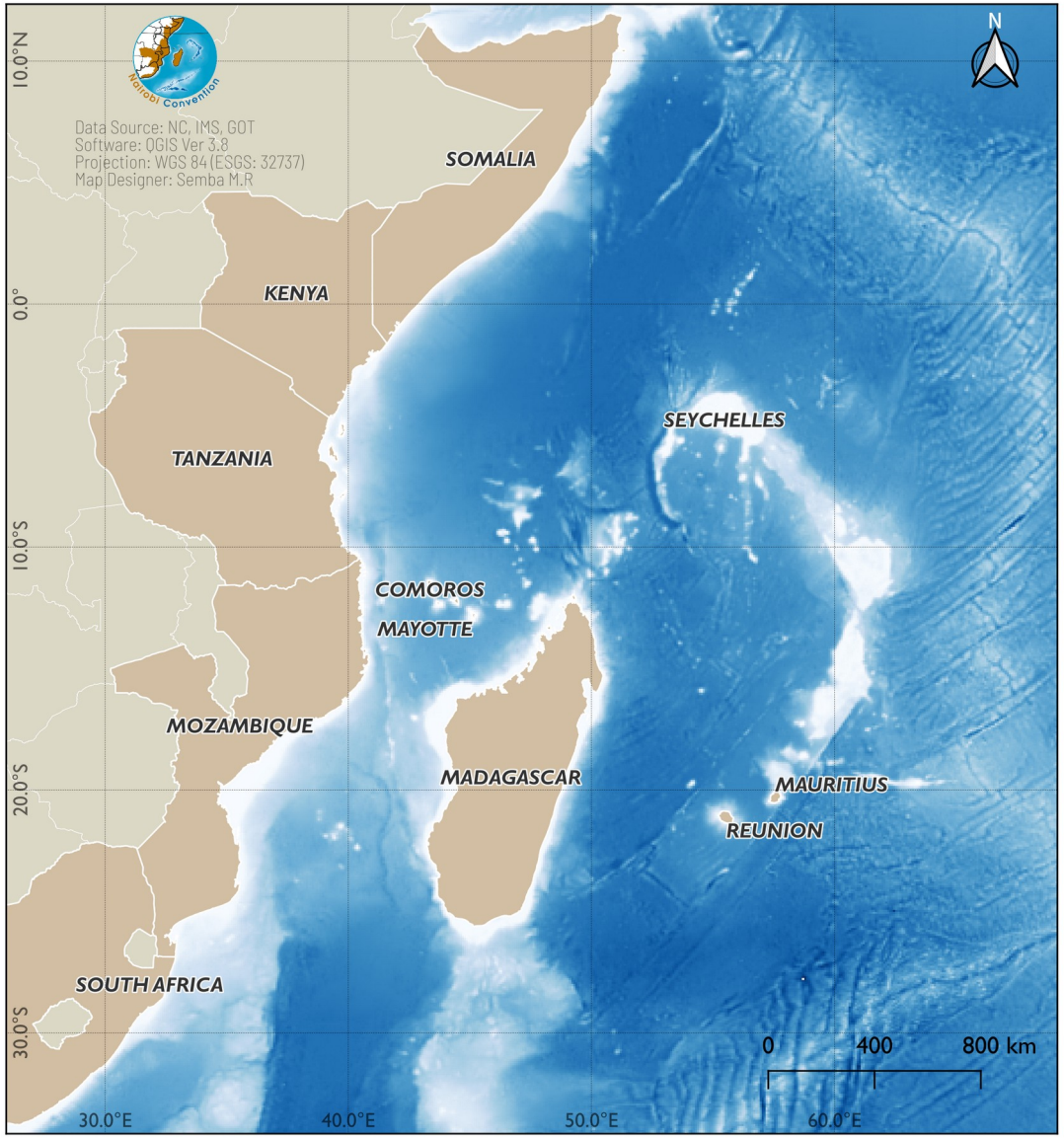


Fiber - coated buoy to increase salt resistance

Tanga – Pemba Sea Scape

OA hub WIO


OA HUB WIO
Rushingisha, Sam, +258 82 928 5010, +27 82 ...
4/25/2024
~ Daniela added ~ Sean Porter
12/11/2024
~ Dambo Cossa +258 82 928 5010
Virtual Workshop: Designing Multiple-...
WIOMSA and SCOR's Changing Ocean
blog.wiomsa.net
https://blog.wiomsa.net/2024/12/11/virtual-workshop-designing-multiple-driver-experiments/?fbclid=IwZXh0bgNhZW0CMTEAAR0jR2hUoXnRPZEef74b1rnNVgtzQ9XiZE8GRCPPqRYYdlsZRovV6wIApIE_aem_vmhDCSSvRWMwqukzCOPr8Q
16:07
Hi team. Please take a look at this opportunity
16:08
Sam Job
~ Dambo Cossa +258 82 928 5010
Hi team. Please take a look at this opportunity
Thank you for sharing
16:18
Rushingisha George
~ Dambo Cossa +258 82 928 5010
Type a message
Group info
Disappearing messages
Off
12 members
Add member
You
Hey there! I am using WhatsApp.
Rushingisha George
Family
Group admin
Sam Job
Nothing to fear than fear itself
Group admin
~ Daniela
Group admin
+258 82 304 5750
~ Dambo Cossa
Disponível
+258 82 928 5010
~ Sean Porter
+27 82 514 8014
+254 726 215339
+255 772 420 480
One Earth.
+258 82 326 1760


Nairobi Convention
Data Source: NC, IMS, GOT
Software: QGIS Ver 3.8
Projection: WGS 84 (ESGS: 32737)
Map Designer: Semba M.R
N
10.0°N
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SOMALIA
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TANZANIA
SEYCHELLES
COMOROS
MAYOTTE
MOZAMBIQUE
MADAGASCAR
MAURITIUS
REUNION
SOUTH AFRICA
0
400
800 km

FAR4 ViBE 2024

SIDE EVENT

30th Oct 2024, Wed
1100H – 1400H
Room 2 – AICC

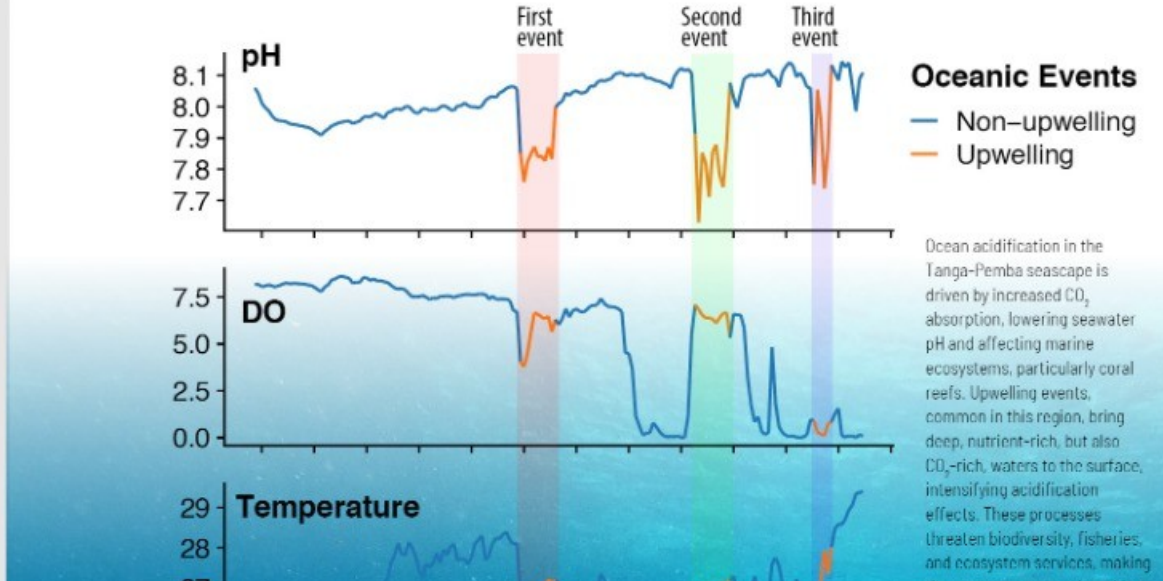
MONITORING OCEAN ACIDIFICATION IN THE TANGA-PEMBA SEASCAPE: PROGRESS, CHALLENGES AND OPPORTUNITIES

Rushingisha George

Samson Job

Masumbuko Semba

Scan to register



Ocean acidification in the Tanga-Pemba seascape is driven by increased CO_2 absorption, lowering seawater pH and affecting marine ecosystems, particularly coral reefs. Upwelling events, common in this region, bring deep, nutrient-rich, but also CO_2-rich, waters to the surface, intensifying acidification effects. These processes threaten biodiversity, fisheries, and ecosystem services, making the seascape more vulnerable to climate change impacts and requiring careful management of marine resources.

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Ocean acidification

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