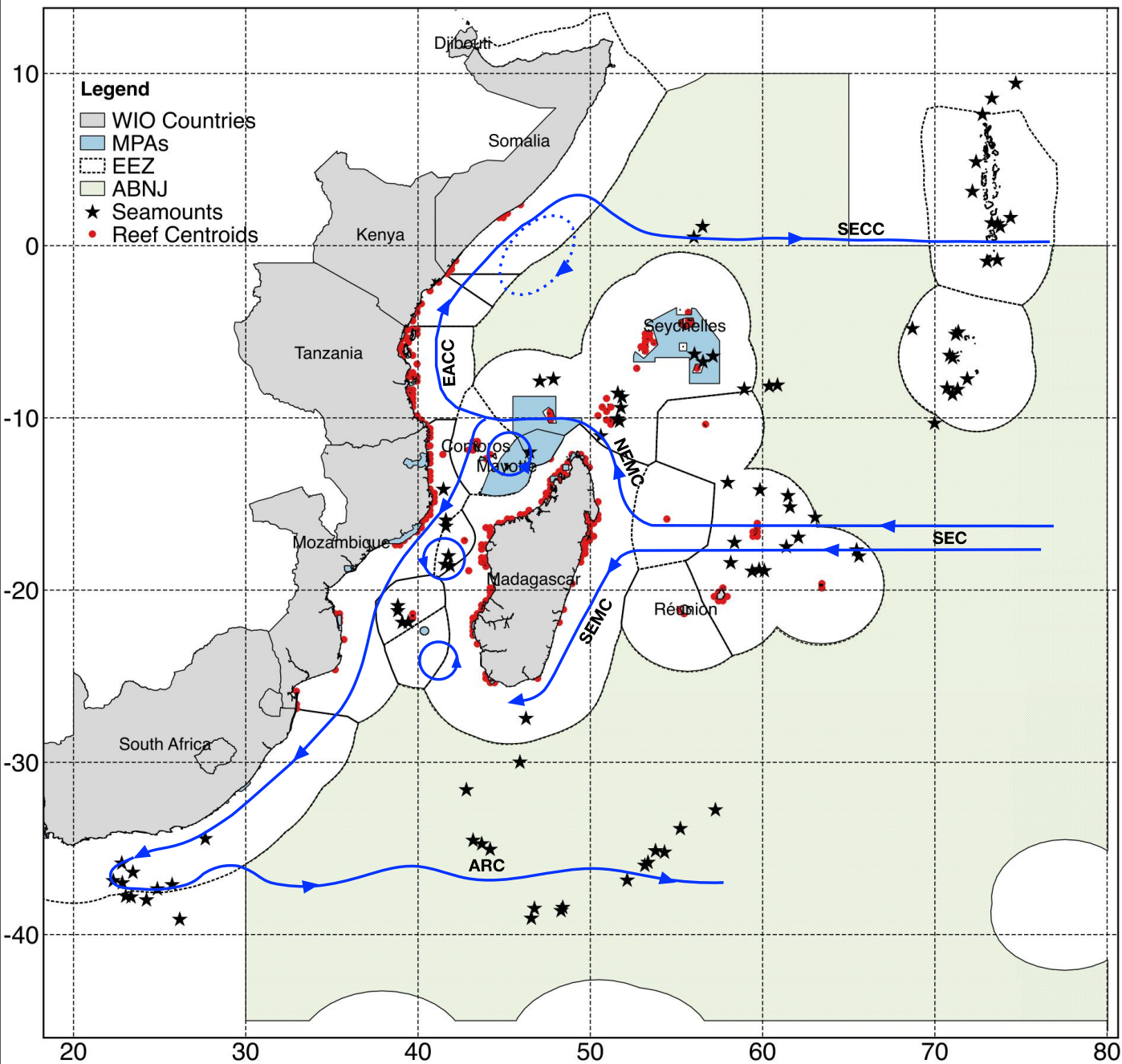# Aligning spatial conservation priorities with connectivity across management and maritime boundaries

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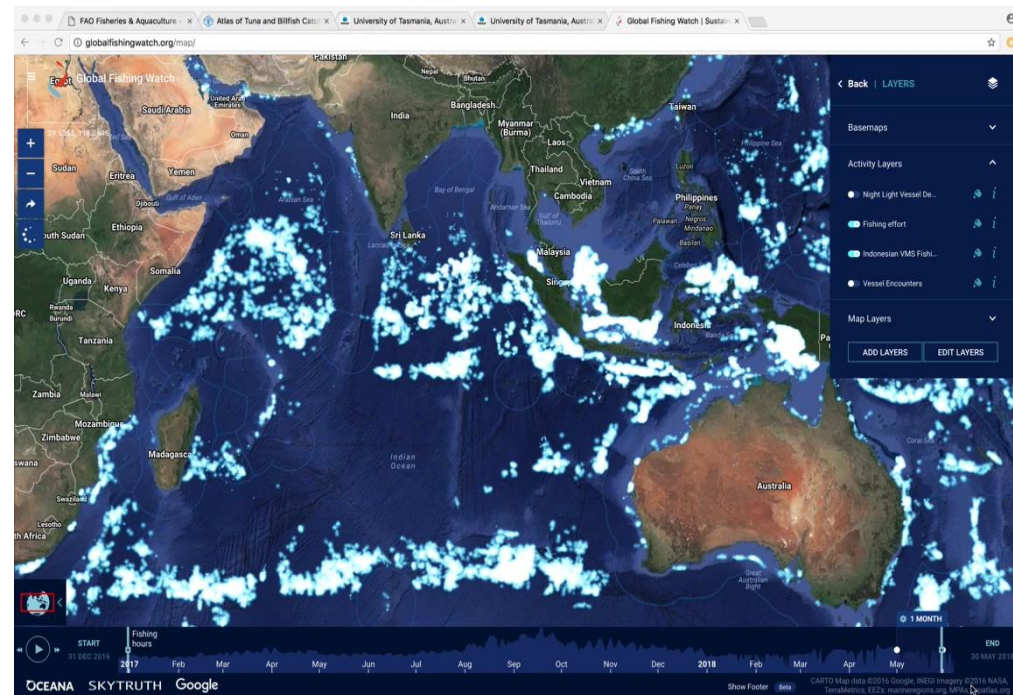**Report on ABNJ connectivity: WIOMSA/UNEP – Nairobi Convention**

WIO-ABNJ
Spatial
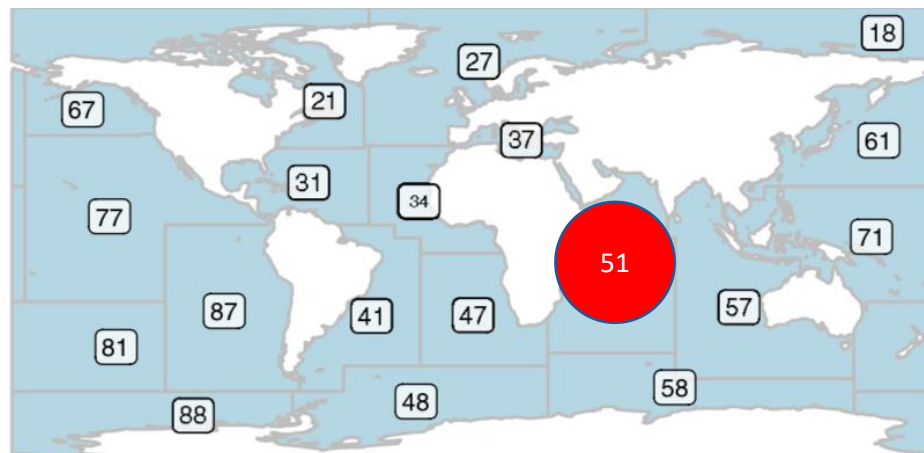definition

~15.5
Million
square km

Fisheries

- WIO ABNJ experience high intensity of fishing, with an estimated cumulative effort of **265000 hours** by **19 countries in 2016**, and a net revenue **$537 Million.**
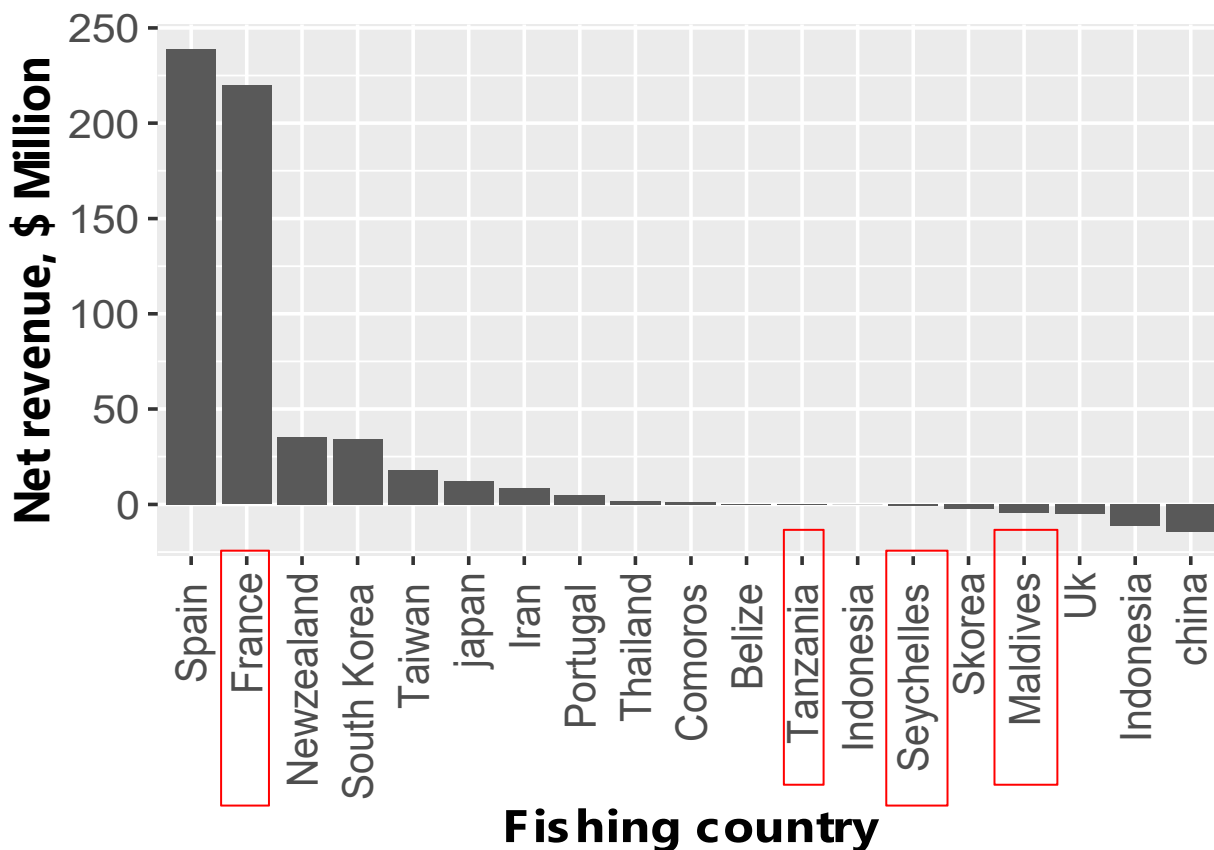
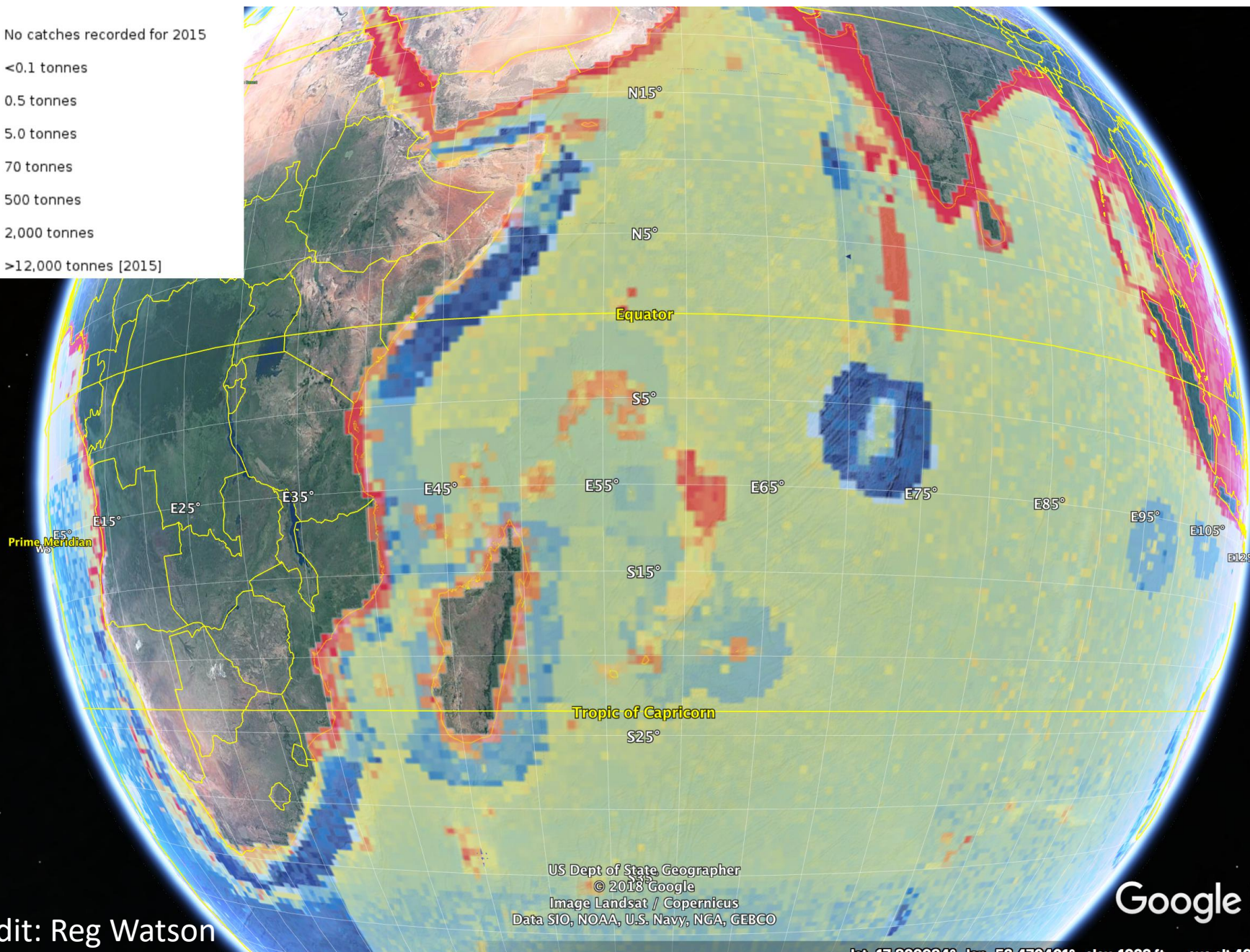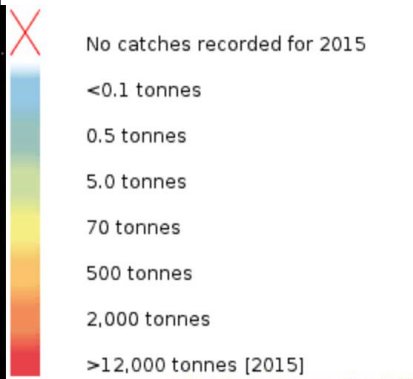GFW Fisheries vessel Tracking map

265000 hours

Spatial patterns of high-seas fishing profits for 2016

..Of the 19 countries that fished in high seas of FAO zone 51 in 2016, only 5 (*Tanzania, Seychelles, Comoros & Maldives, France*) have EEZ's adjoining ABNJ cumulatively earned ~$5 Million (excluding France)

Fisheries landing - 2015

No catches recorded for 2015
<0.1 tonnes
0.5 tonnes
5.0 tonnes
70 tonnes
500 tonnes
2,000 tonnes
>12,000 tonnes [2015]

Credit: Reg Watson

Google Earth

Management

- No mechanism for countries to establish marine reserves

- EBSAs

- RFMO's
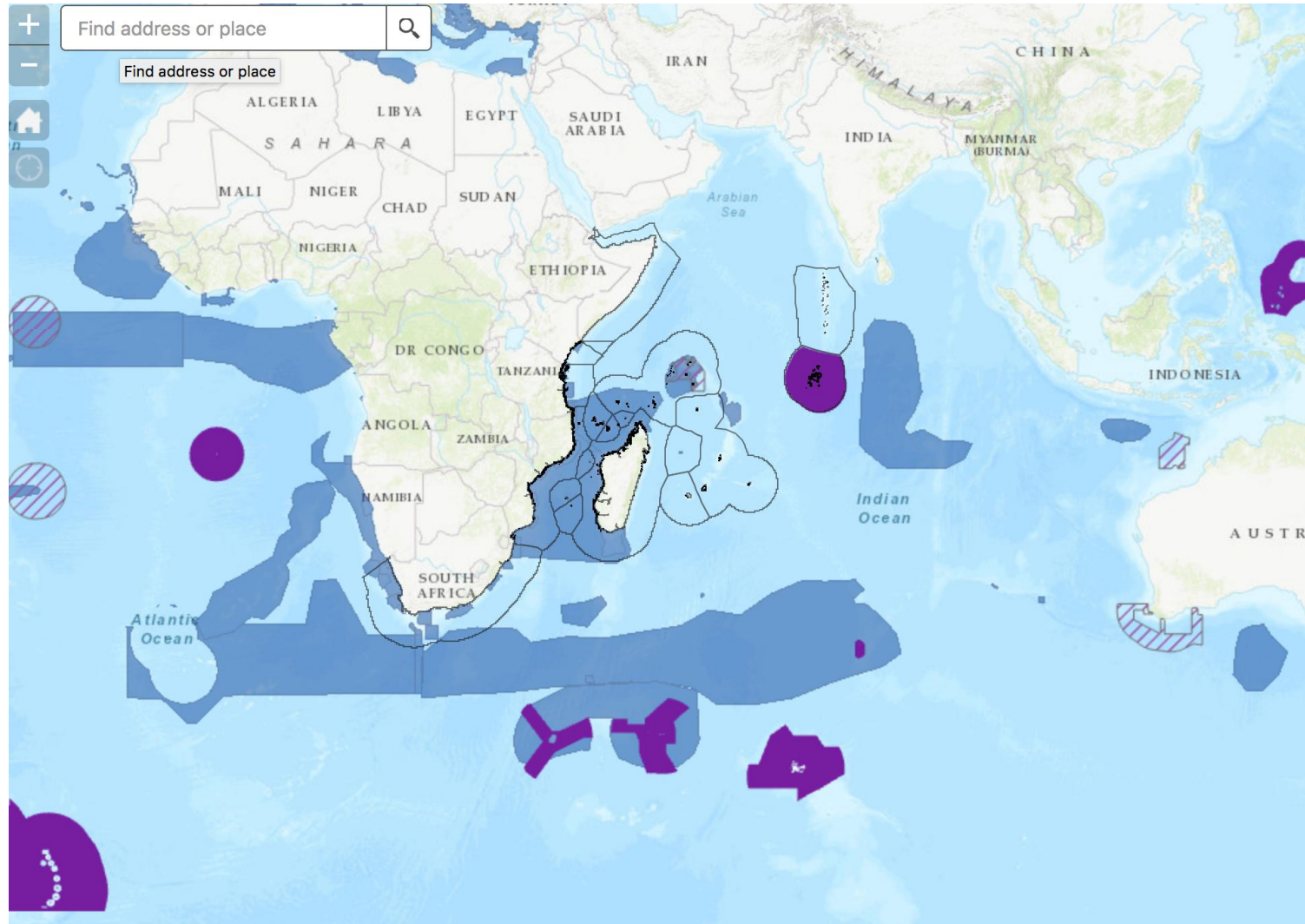
CDB – Aichi Target 11

By 2020, at least 17 per cent of terrestrial and inland water areas and **10 percent** of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved ecologically representative through effectively and equitably managed, and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascape.

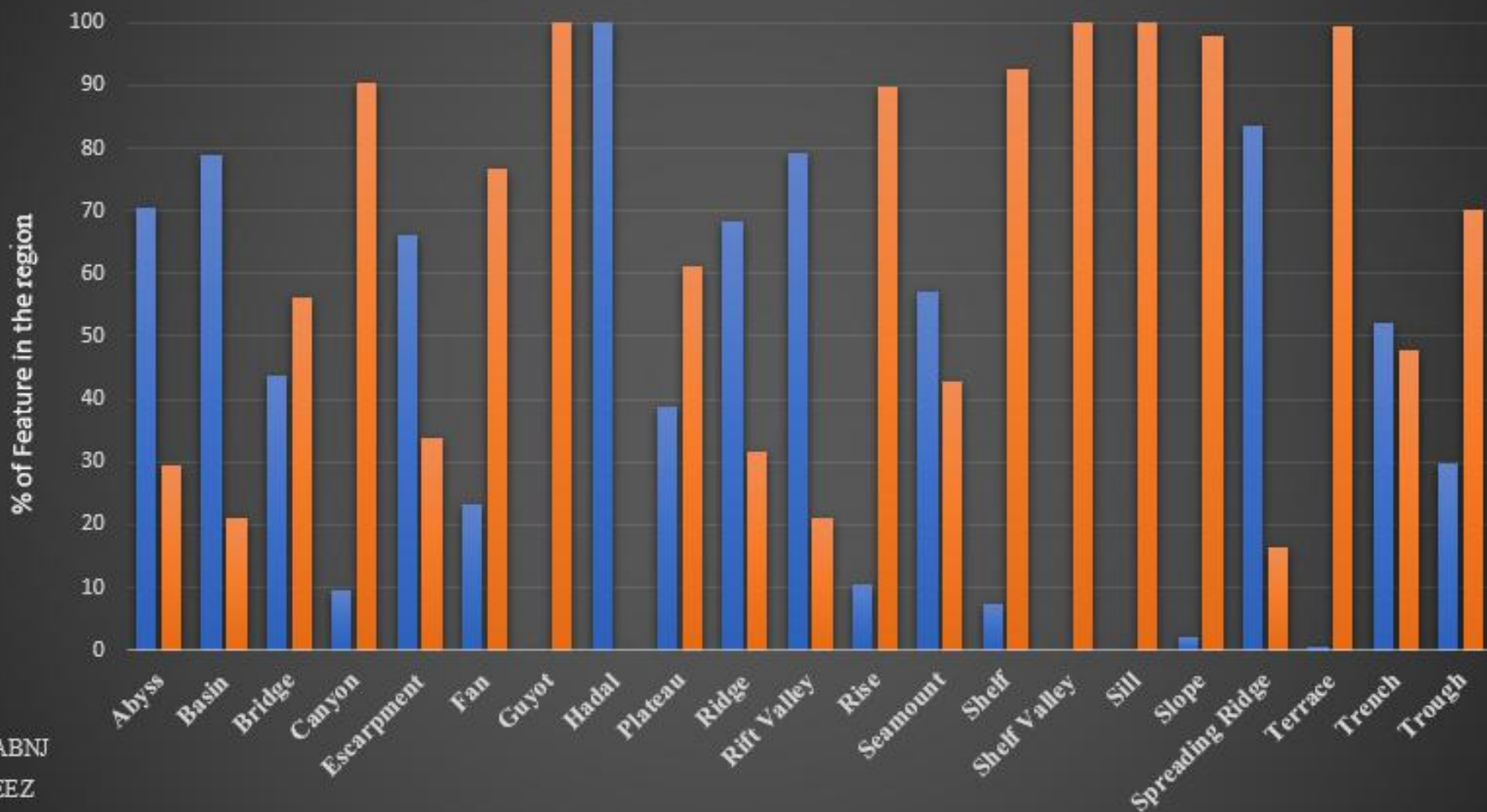# 1. Representativeness: geomorphic habitats
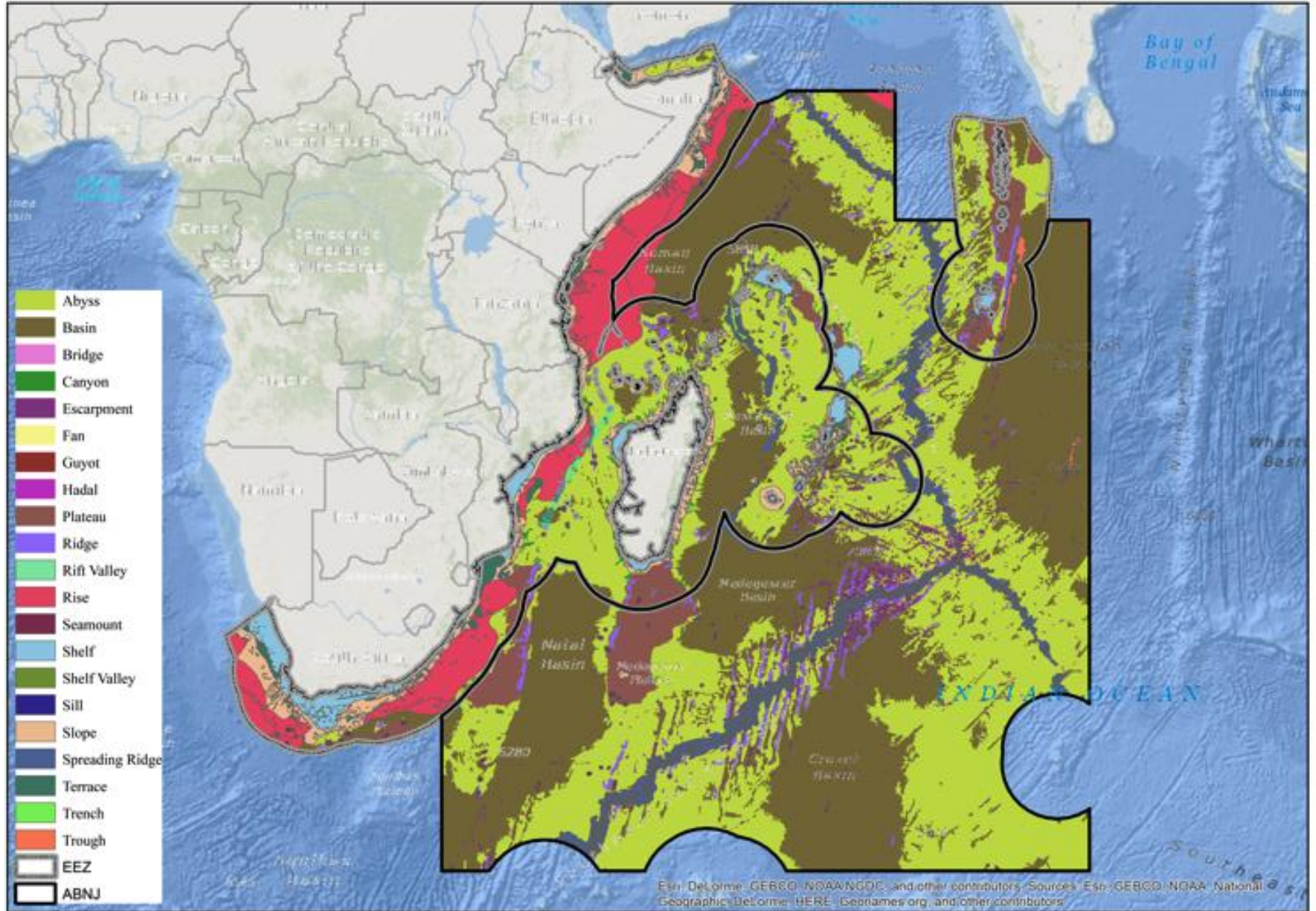
Representativeness: geomorphic habitats

Seafloor geomorphic features - WIO region

2. Estimating functional connectivity: four scenarios

(i) How connected is the WIO ABNJ to the EEZ?

(ii) How connected is WIO MPA network?

(iii) How connected are WIO coral reefs?

(iv) How connected are WIO seamounts?

(v) How connected are seamounts, coral reefs and   MPAs?

(i) Marine connectivity: ABNJ to EEZ

Time: year 2000 month 01 day 01 at 12:00
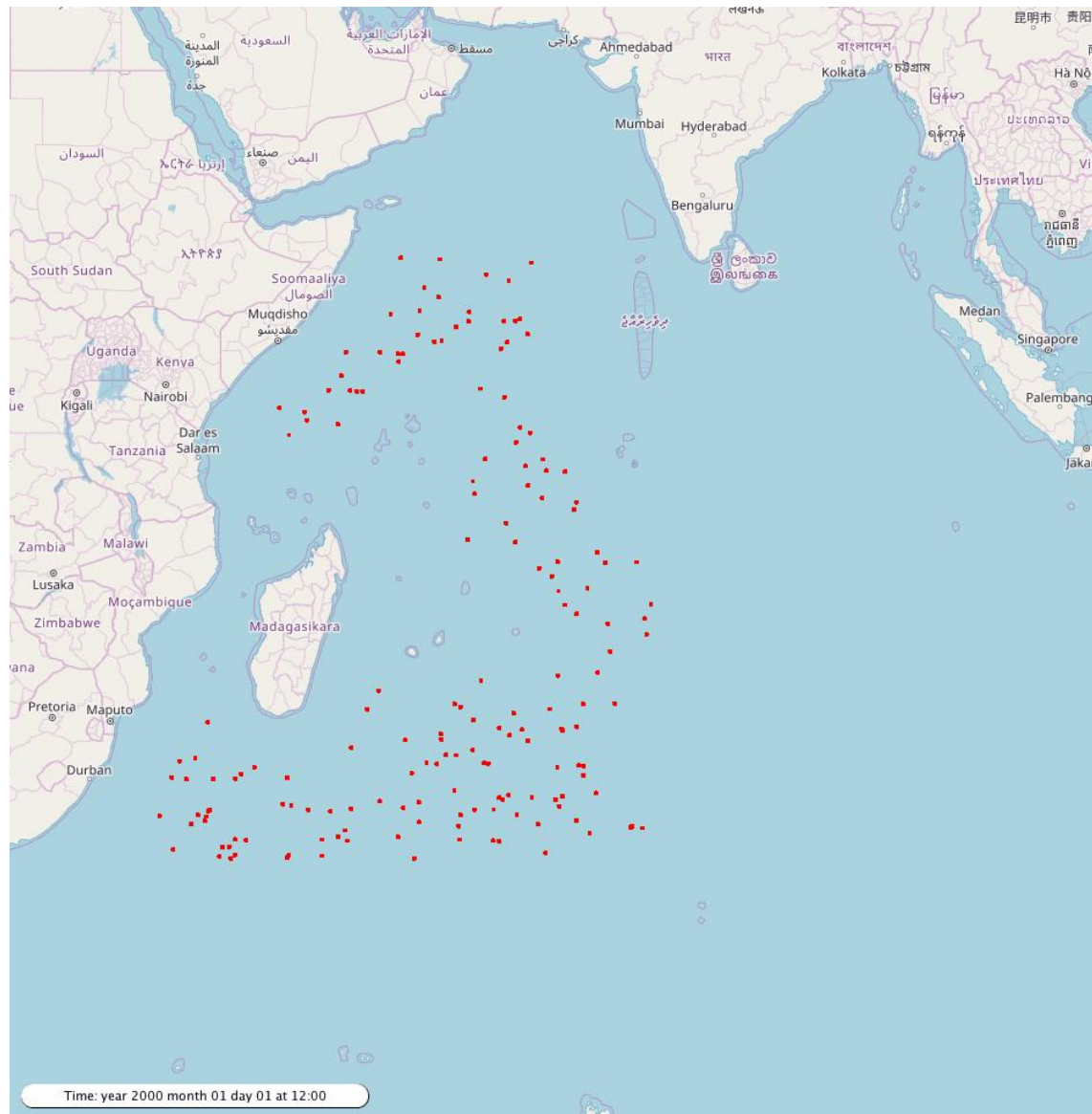
(ii) Larval density and settlement by EEZ
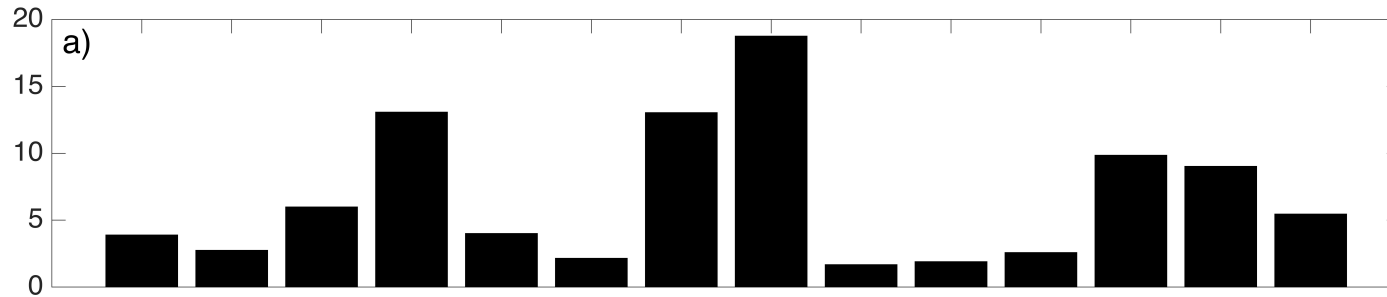
a) Proportion of larvae settling into EEZ from MPA
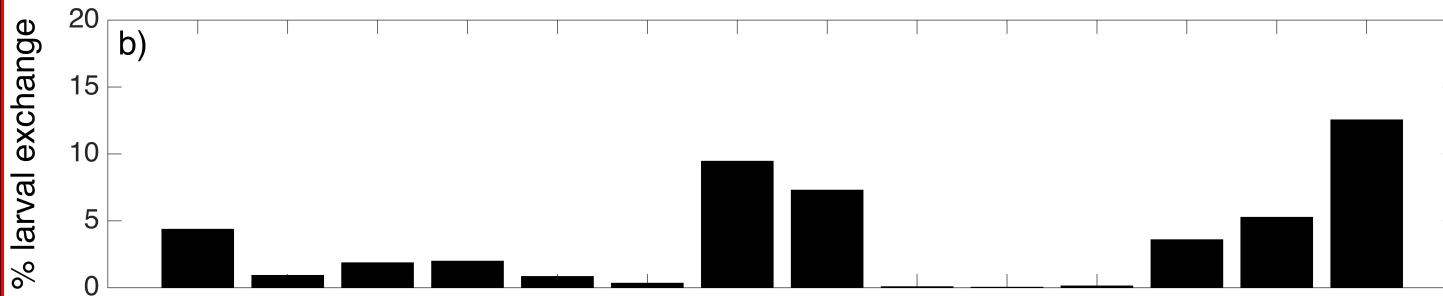
b) Proportion of larvae settling into EEZ from ABNJ
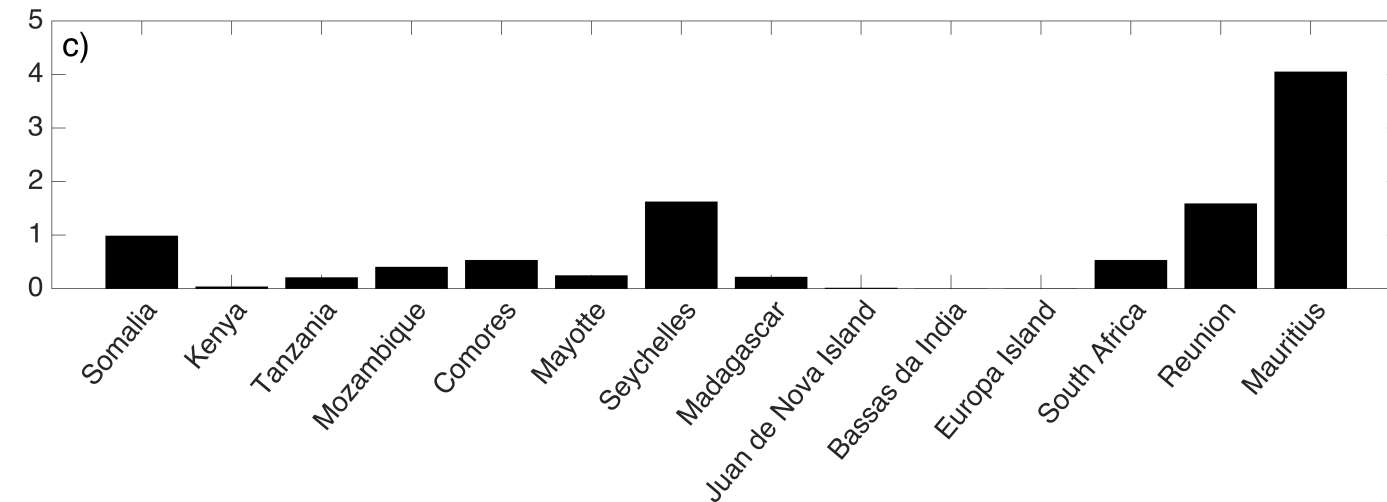
c) Proportion of larvae settling into EEZ from seamounts

(iii) How connected are WIO marine reserve networks?

- Out of **14,280** possible paired connections, **248** connections were found
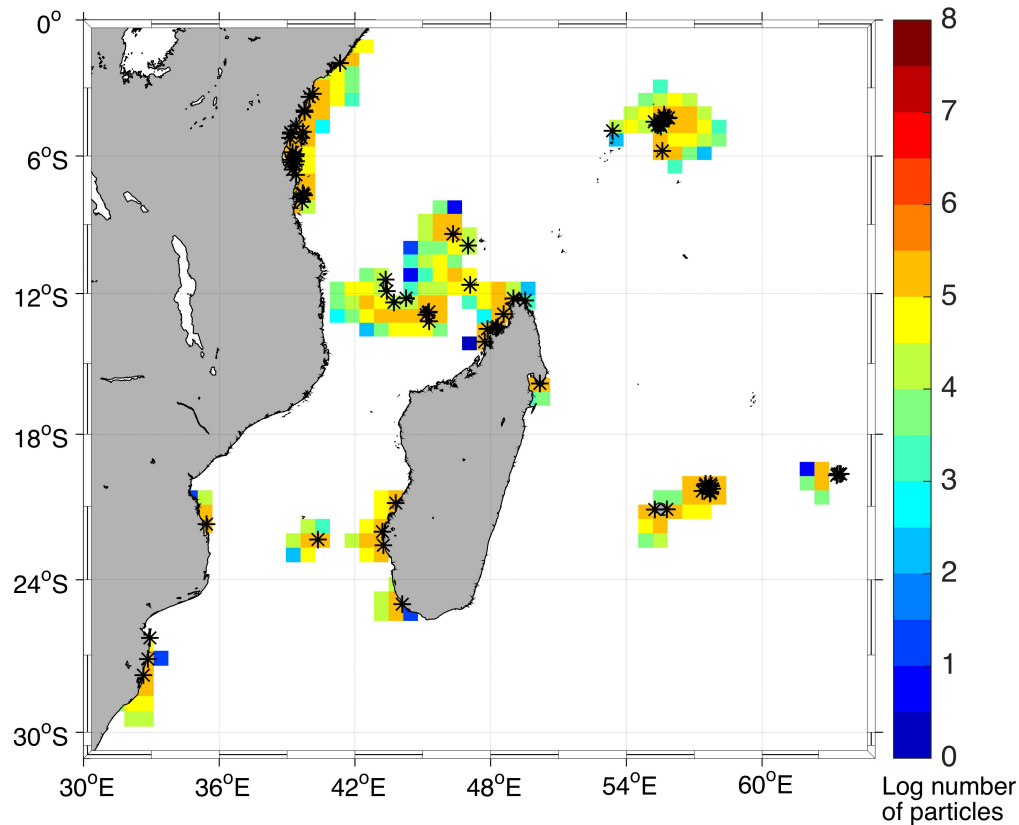
- High connectivity along East African coast; Comoros basin also connected to to west Madagascar

- 55 MPAs (46%) are not seeded by any other MPA , 62 (50%) do not seed any other MPA. Overall, 38 (28%) are completely isolated

Log number of particles

(iv) Coral reefs

- Overall, WIO reefs are fairly well connected, with 2,868 connections out of possible 57,840. **However, most (~40%) of the highly connected reefs were not MPAs!**

How will climate change impact on the connections?

Considerations:

- Reorganization patterns of species diversity driven by climate change

- Marine taxa track climate change velocity - the rate and direction that climate shifts across the seascape—can explain observed species shifts

- Changes in climate conditions are useful for predicting shifts in species distributions

- For example, regions with limits to climatic niche shift will adapt and persist or be replaced

Regional patterns of climate trajectory classes

Trajectory classes
- Slow moving
- Non-moving
- Internal Sink
- Boundary Sink
- Sink
- Convergence
- Corridor
- Divergence
- Source
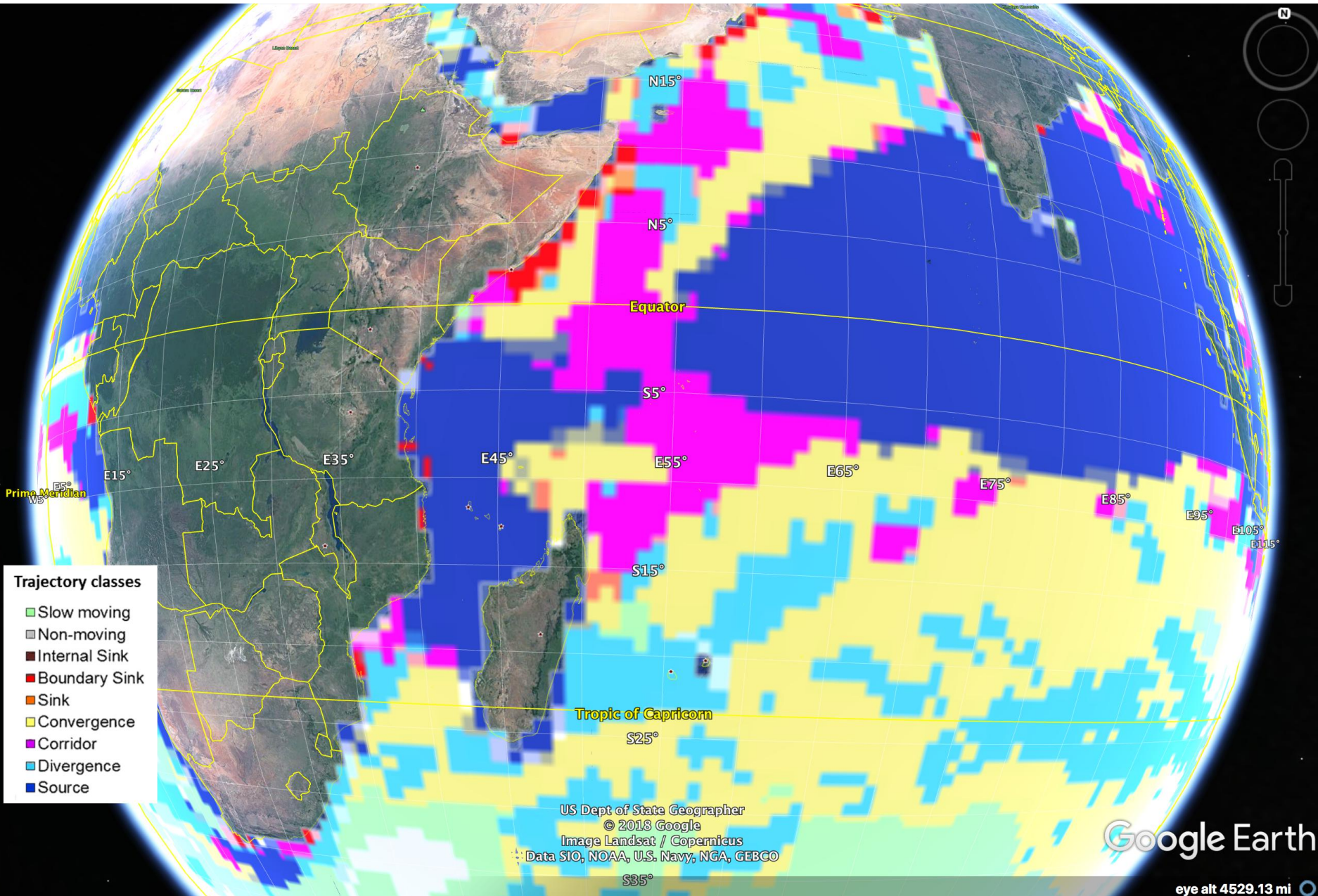
How can we maintain the connections?

Designing a **well-connected** systems of protected areas and other effective area-based conservation measures across **maritime jurisdiction**

i.e. Marine Spatial planning with explicit planning goals on enhancing connectivity

MSP scenario 1

MSP goals

1. Representativeness:
(i) Protect 10% of seafloor habitats across ALL marine areas

2. Connectivity
(ii) to prioritize coral reef and seamounts habitats which receive and/or seed other habitats,
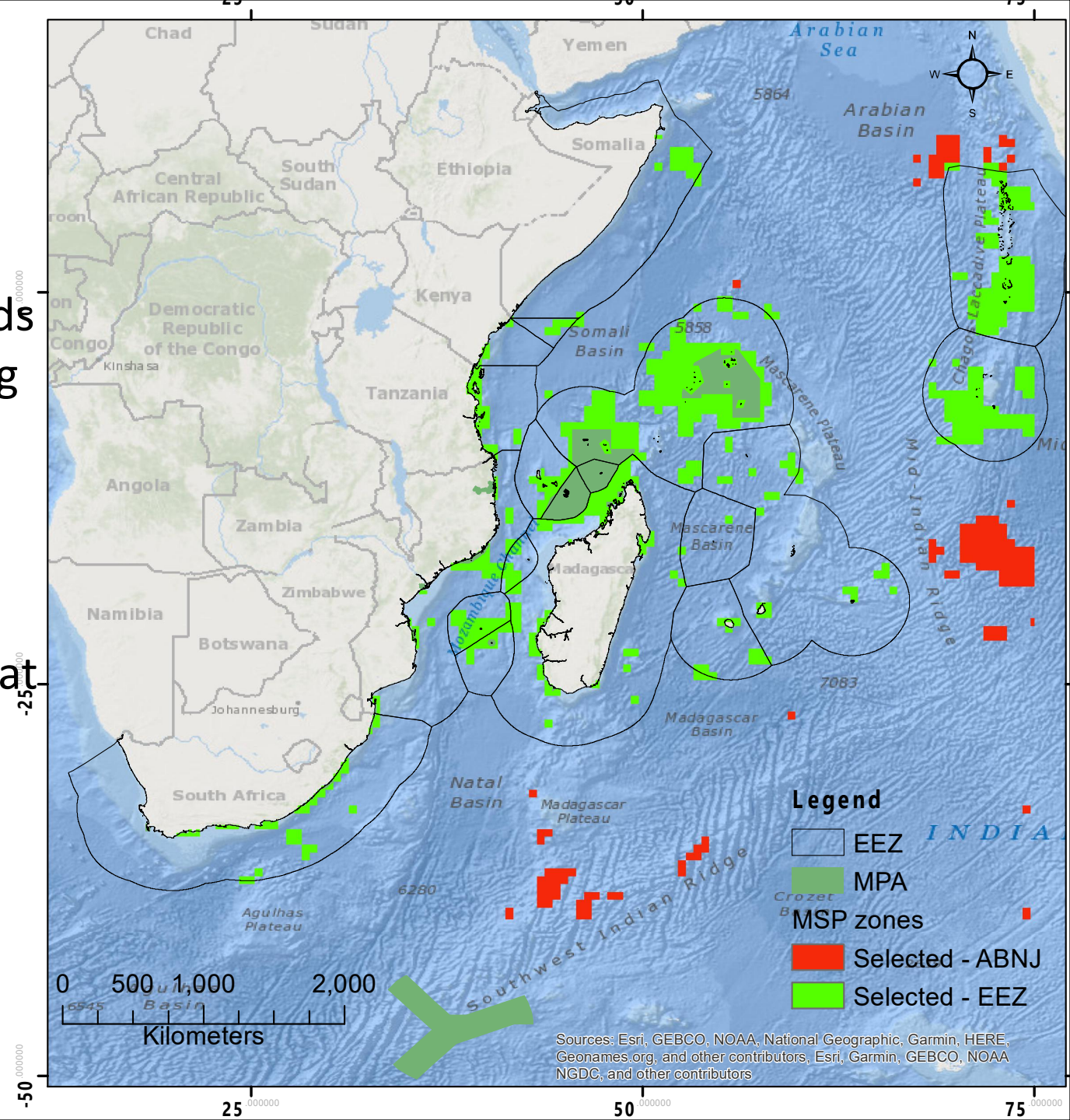(iii) that may act as important stepping stones/corridors

3. Cost based Objective
(iv) Reduce human pressure on ecosystems (i.e. gravity of markets/ecological footprint of cities)
(v) Improve consensus by **avoiding highly fished areas**

MSP Scenario 1

- The scenario avoids conflicts by staying away from high fishing intensity regions,

- most of the habitat representation is achieved within EEZ

Legend

- ☐ EEZ
- ▨ MPA
- MSP zones
- ▮ Selected - ABNJ
- ▮ Selected - EEZ

Sources: Esri, GEBCO, NOAA, National Geographic, Garmin, HERE, Geonames.org, and other contributors, Esri, Garmin, GEBCO, NOAA NGDC, and other contributors

Decisions (on the draft)

- Proposed decisions

Thank you