

Aligning spatial conservation priorities with connectivity across management and maritime boundaries

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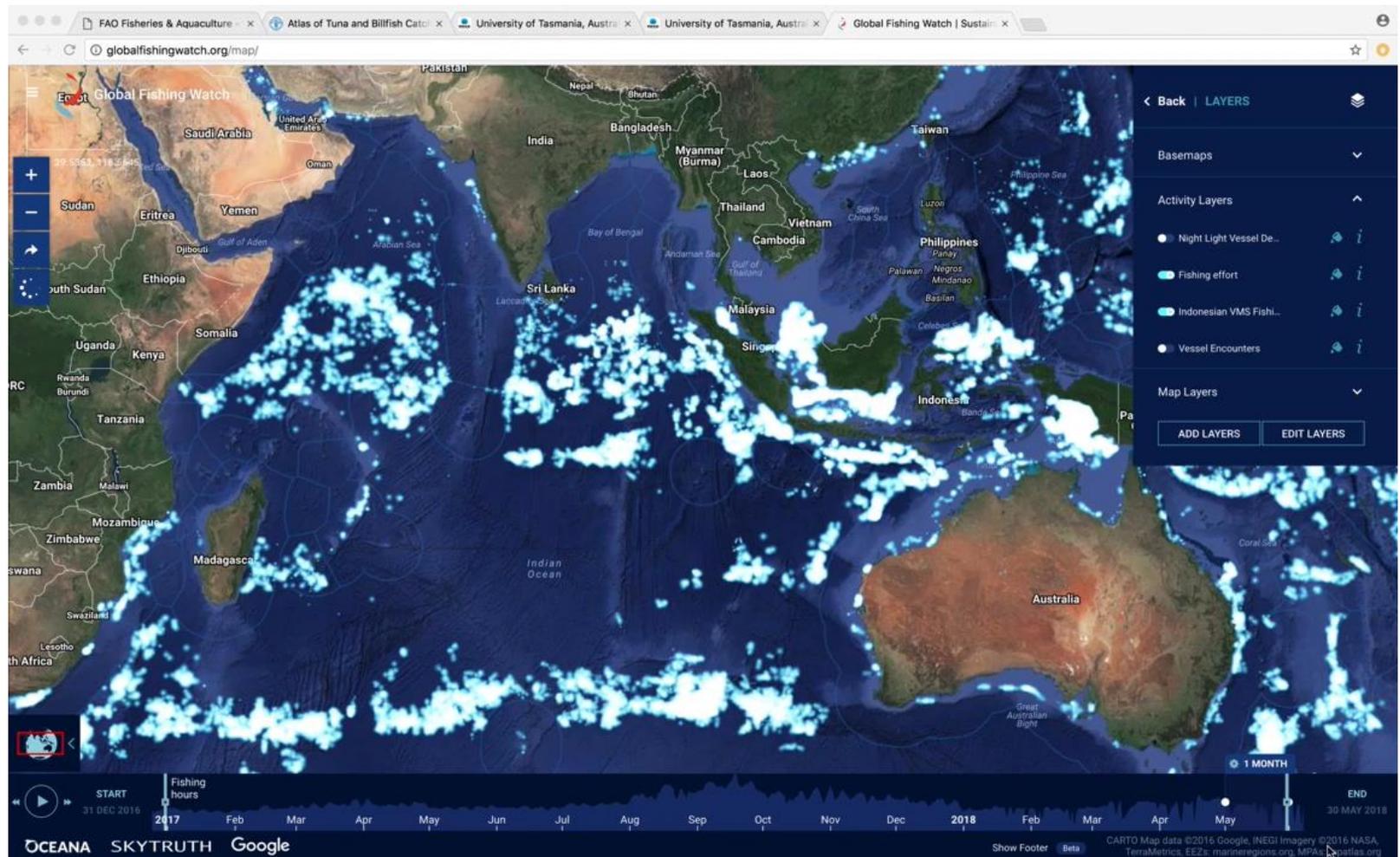
Report on ABNJ connectivity: WIOMSA/UNEP – Nairobi Convention

Connectivity

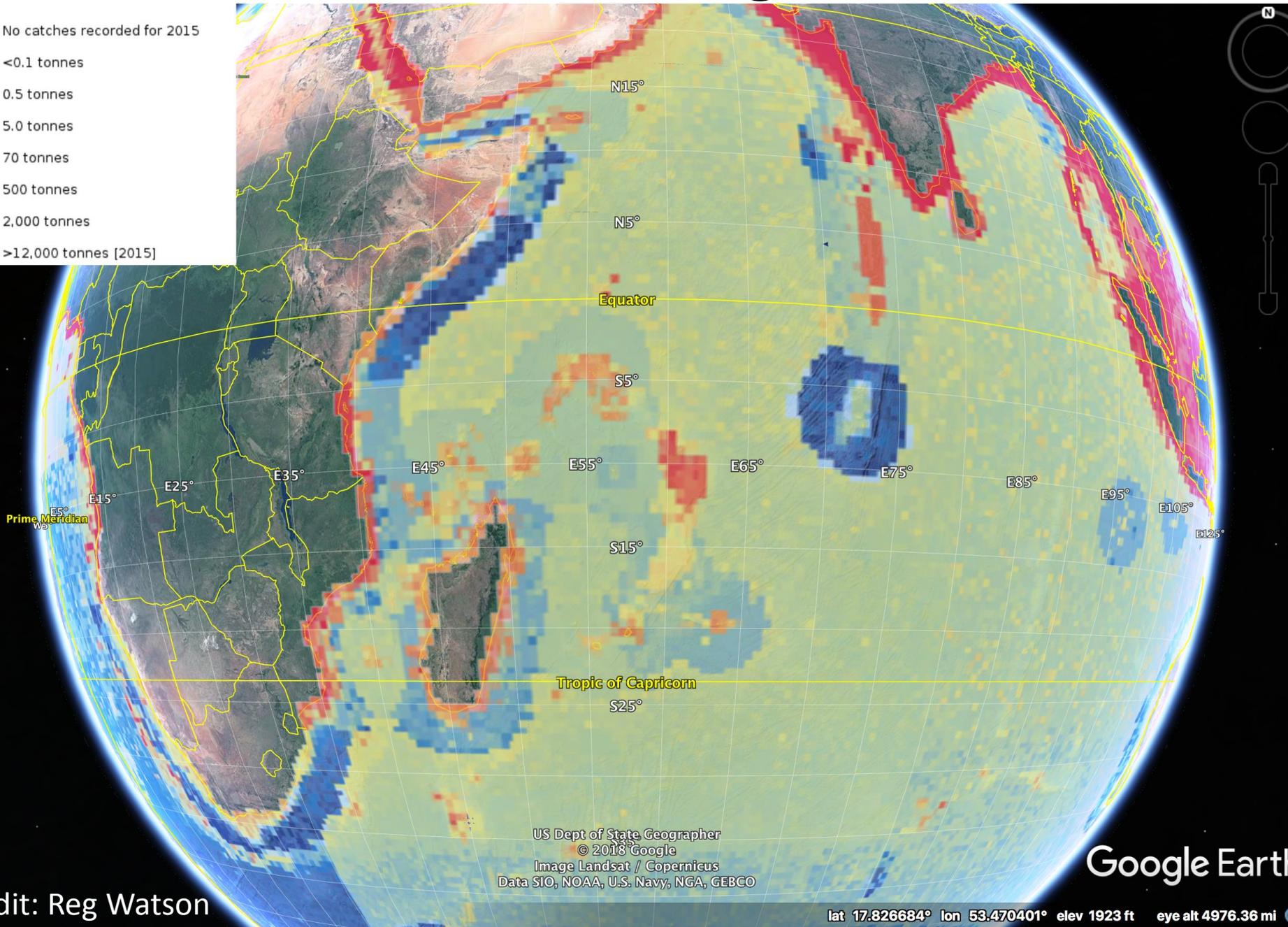
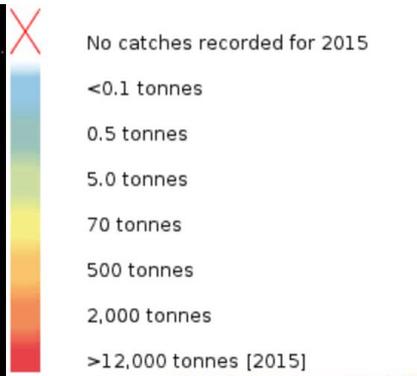
- Spatial insurance hypothesis indicates that *connectivity* is an important attribute of natural ecosystems that sustains both biodiversity and *ecosystem function*
- Maintaining connectivity can improve resilience to perturbations and promote genetic diversity

Fisheries occurs across maritime jurisdiction

Vessel Tracking map



Fisheries landing - 2015



US Dept of State Geographer
© 2018 Google
Image Landsat / Copernicus
Data SIO, NOAA, U.S. Navy, NGA, GEBCO

Google Earth

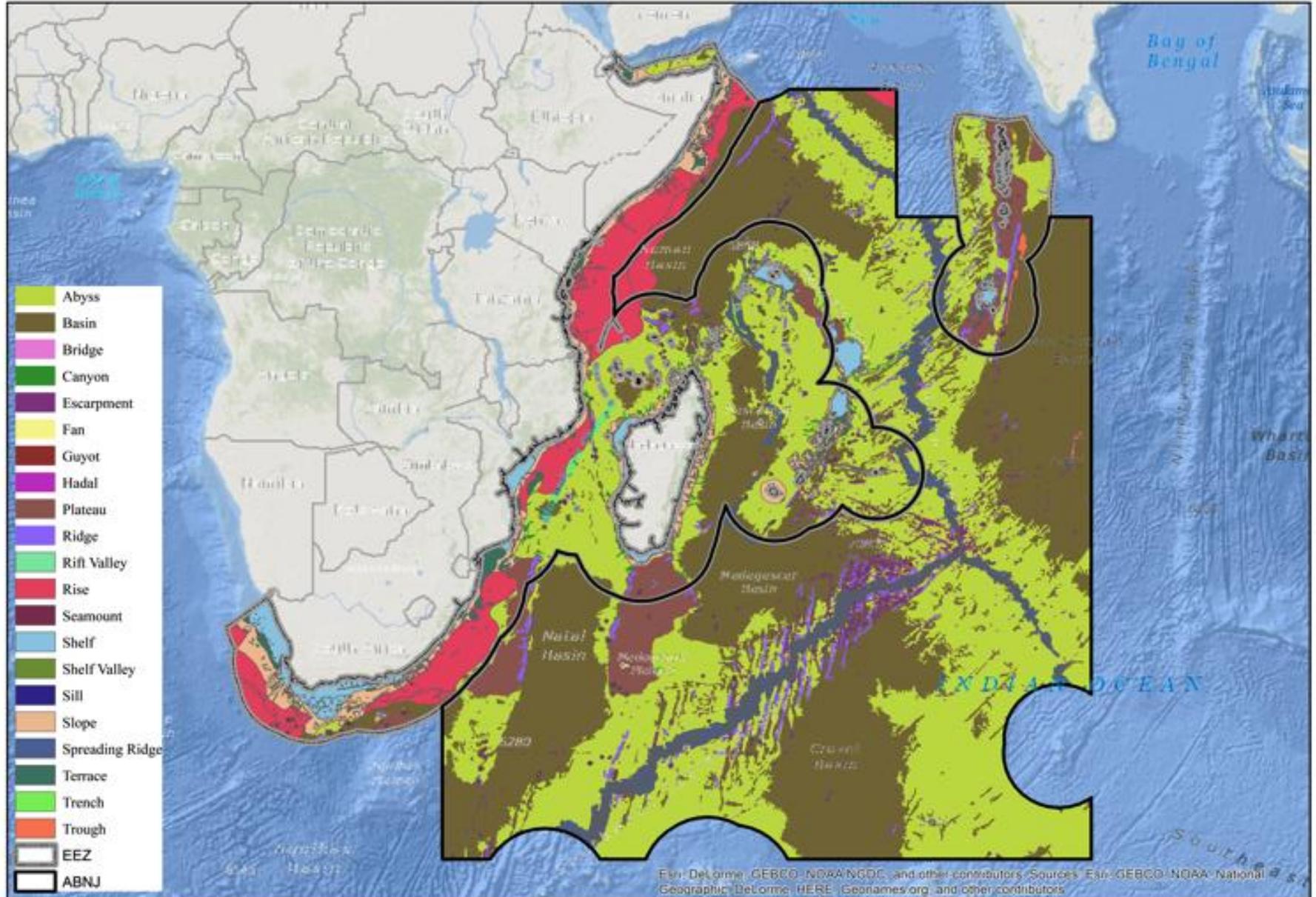
Credit: Reg Watson

lat 17.826684° lon 53.470401° elev 1923 ft eye alt 4976.36 mi

CDB - Aichi Target 11

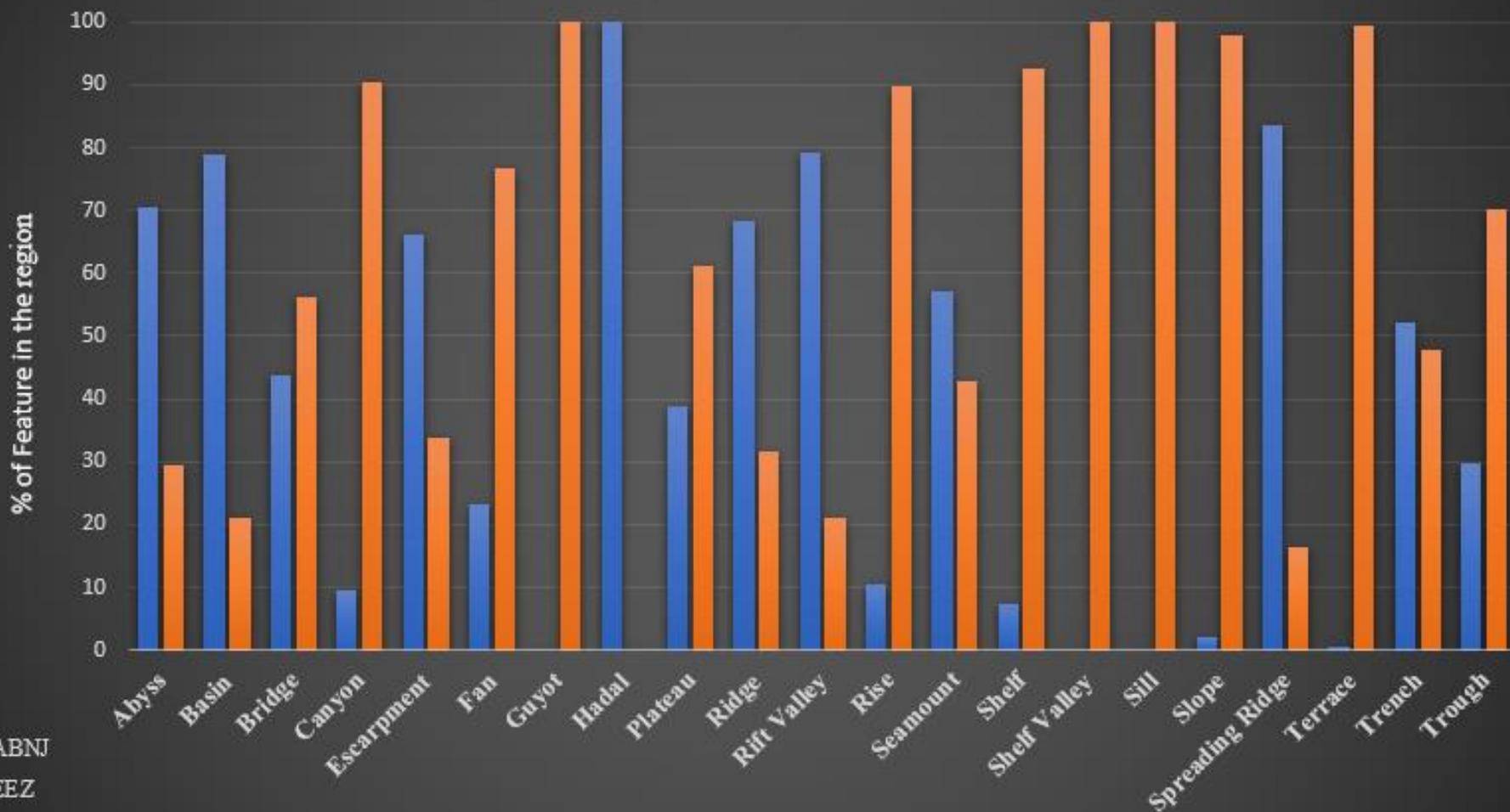
By 2020, at least 17 per cent of terrestrial and inland water areas and 10 per cent of **coastal and marine areas**, especially areas of particular importance for biodiversity and ecosystem services, are conserved **ecologically representative** through effectively and equitably managed, and **well-connected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

Representativeness: geomorphic habitats

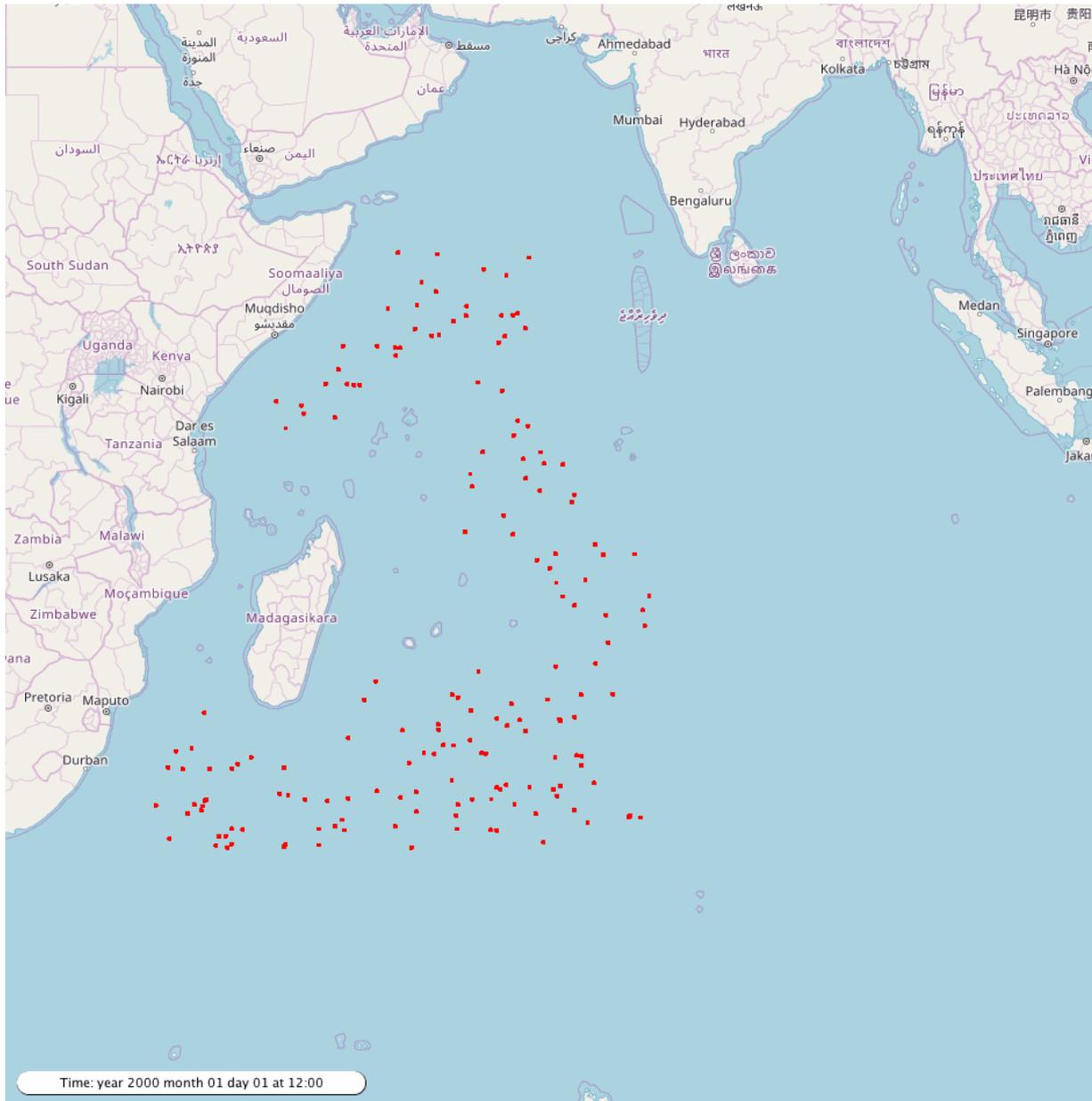


Representativeness: geomorphic habitats

Seafloor geomorphic features - WIO region



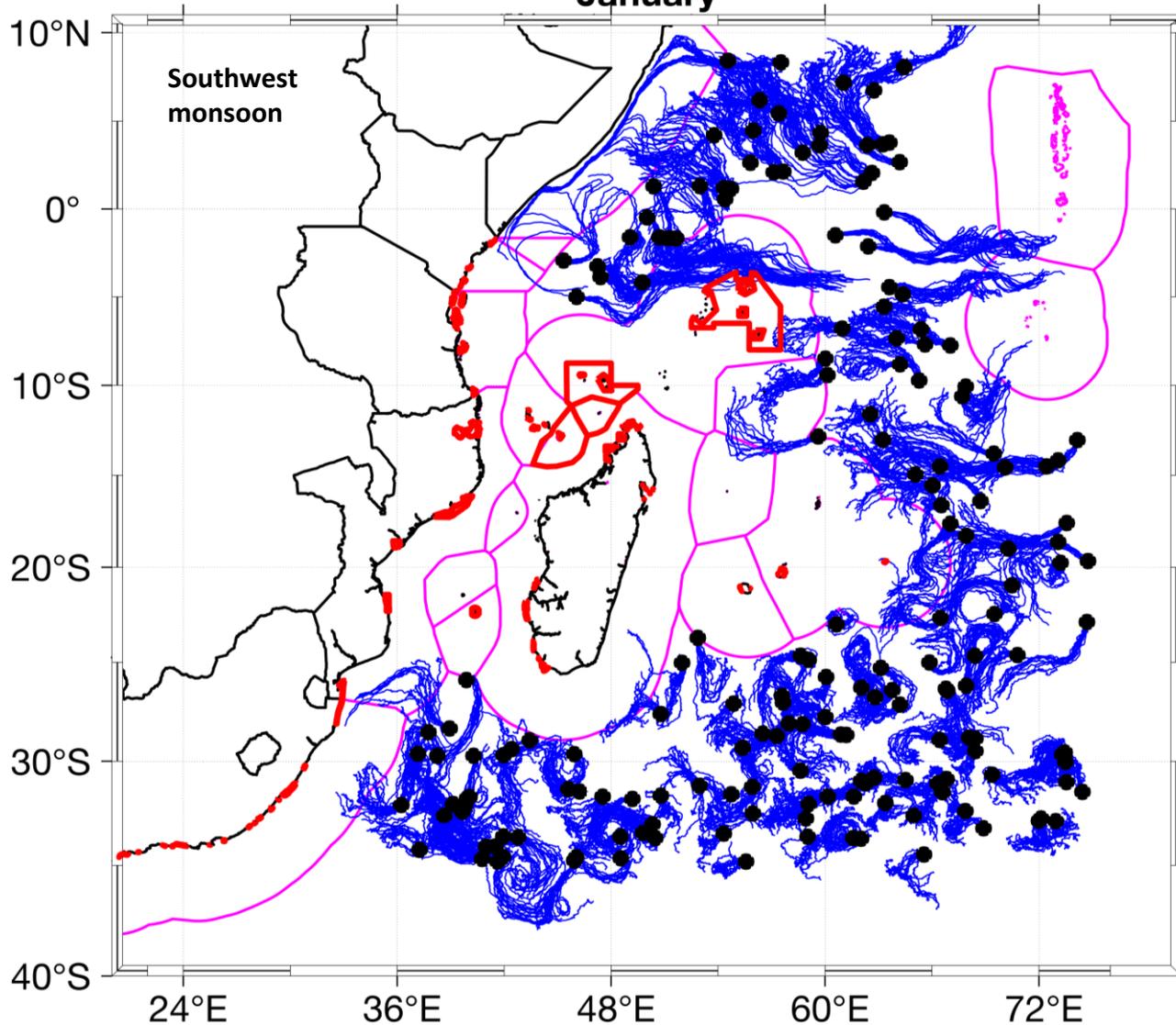
Measuring connectivity: ABNJ to other areas



How connected are the ABNJ to other areas?

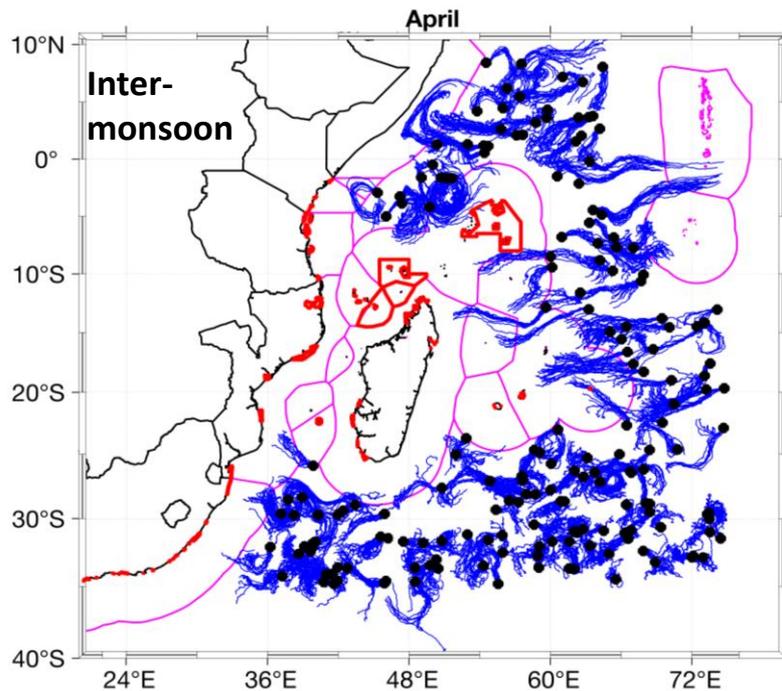
Larval dispersal experiment

January

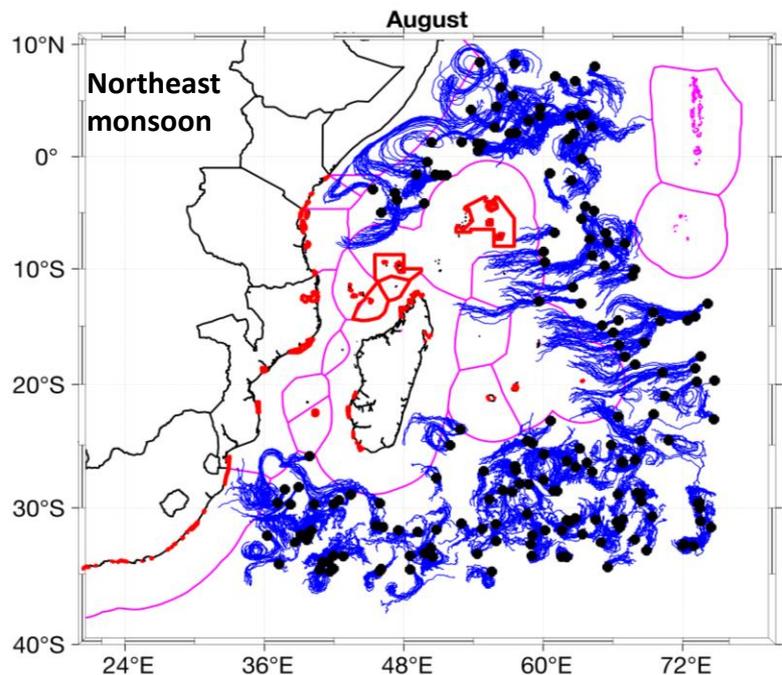


The dispersal of larvae from ABNJ areas are variable in the northwest Indian ocean due to effects of the monsoon

Connectivity: ABNJ-EEZ

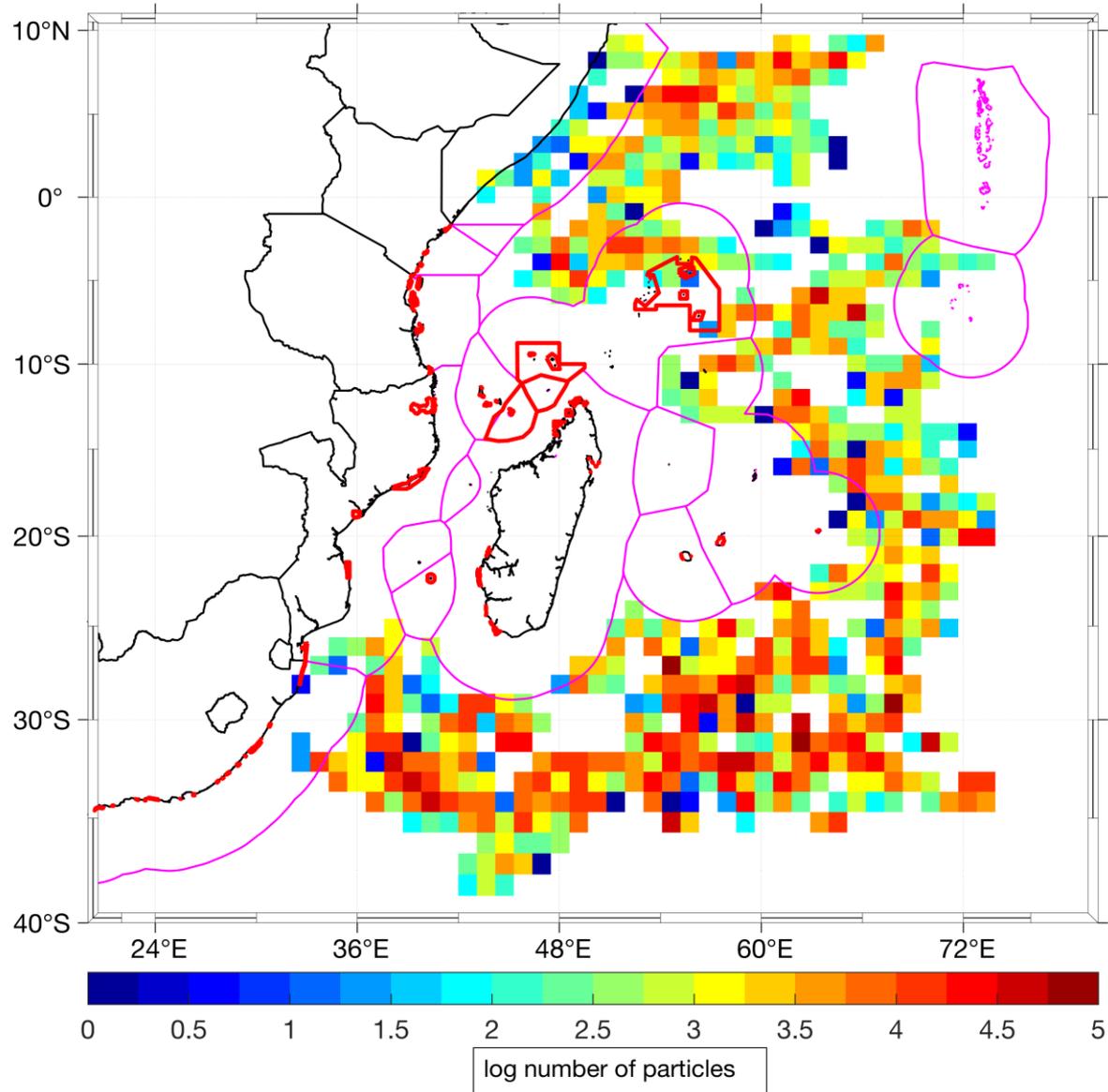


- The general circulation plays an important role in dispersing larvae towards EEZ & MPAs
- North of WIO, the Somalia, Seychelles & Chagos EEZ are supplied with larvae from ABNJ

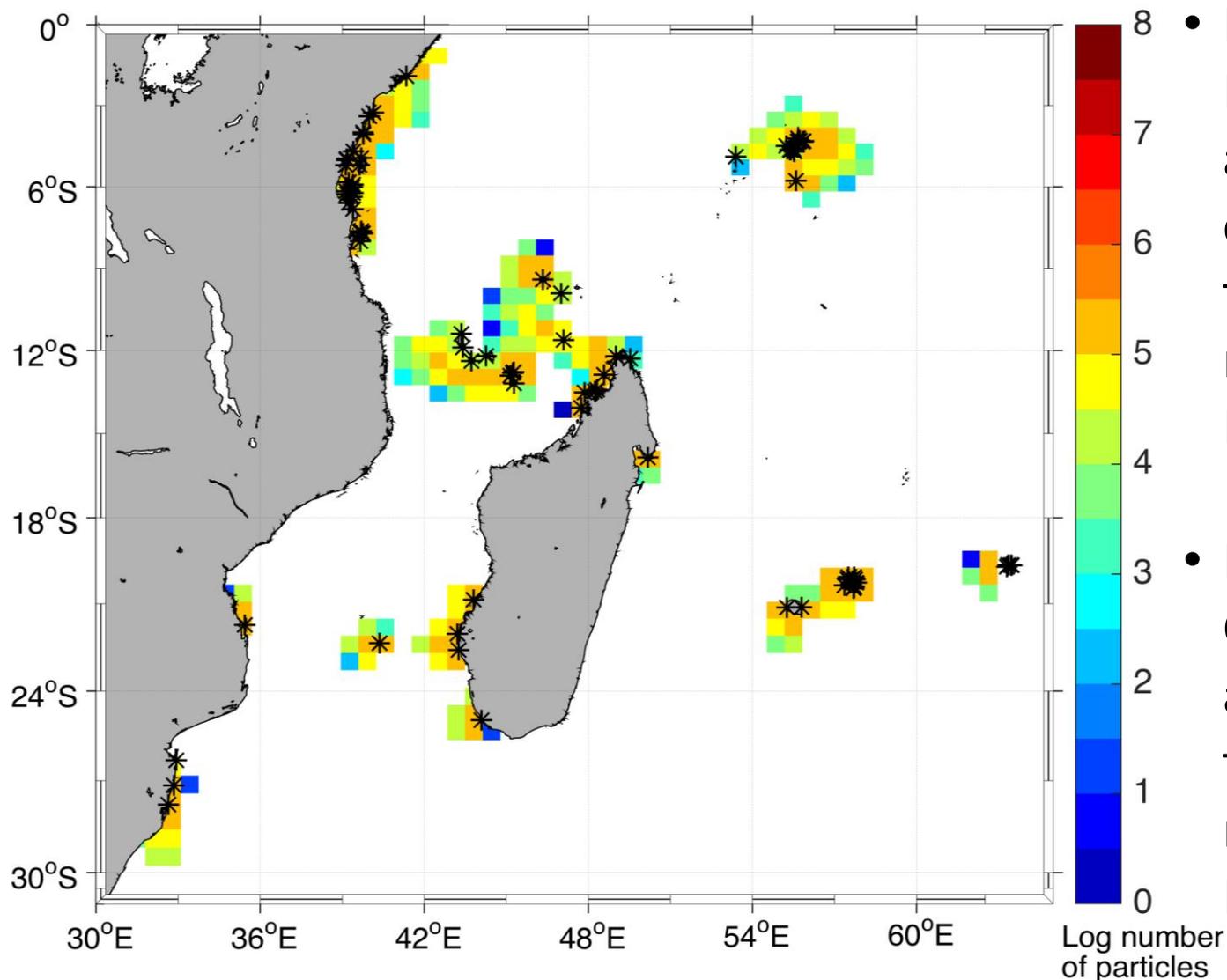


- Central of WIO republic of Mauritius EEZ seem well connected to ABNJ
- South of WIO, Mozambique & South Africa are also connected

Particle density map



Assessments: how connected are WIO marine reserve networks?



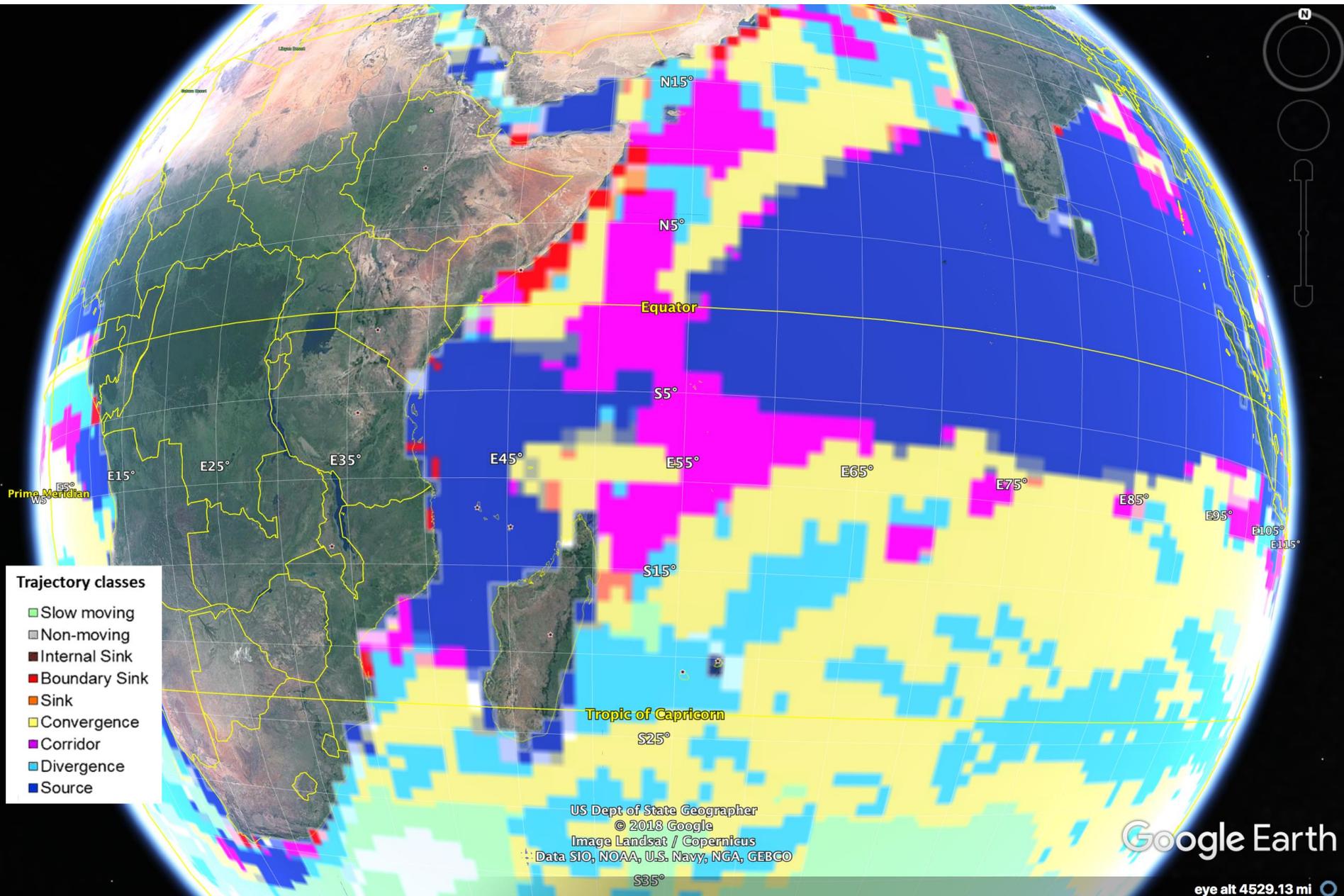
- MPAs along the East African coast are fairly connected due to the constant northward flowing EACC.
- MPAs within the Comoros basin are also connected to those of northwest Madagascar

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



How can we maintain the connections?

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

Guidelines (or objectives):

1. Protect the 'focus areas' e.g. existing protected areas, critical habitat for endangered species, and/or otherwise important habitats for connectivity.
2. Prioritize areas which receive input from other larger areas (convergence zones) (However, receiving areas may be susceptible to outbreaks and invasive species)
3. Prioritize areas which may act as important 'corridors' or stepping stones among other areas under consideration.

Thank you