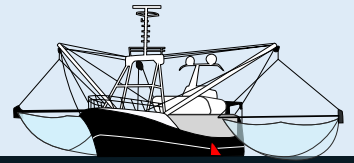

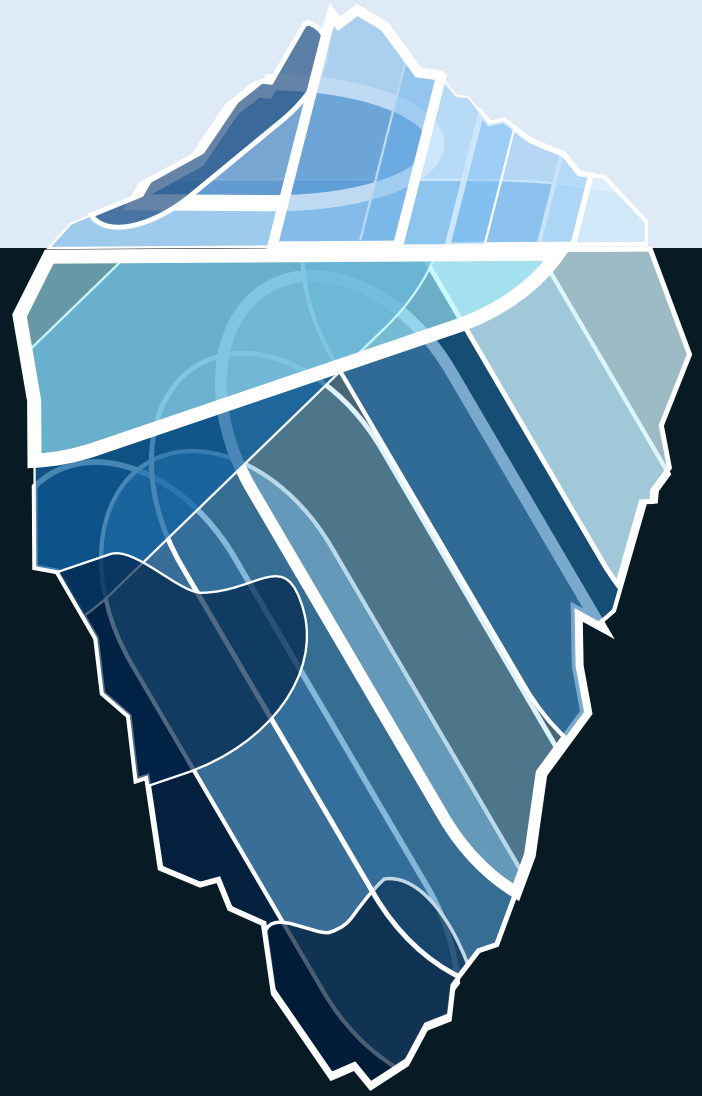

StrathE2EPolar

a strategic modelling tool for ecosystem-based fisheries management

Insights from the West Greenland case study

Matthew Hatton
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Natural Environment Research Council

SUPER Scottish Universities Partnership for Environmental Research

University of Strathclyde Glasgow

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What is StrathE2EPolar?

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Why another model?

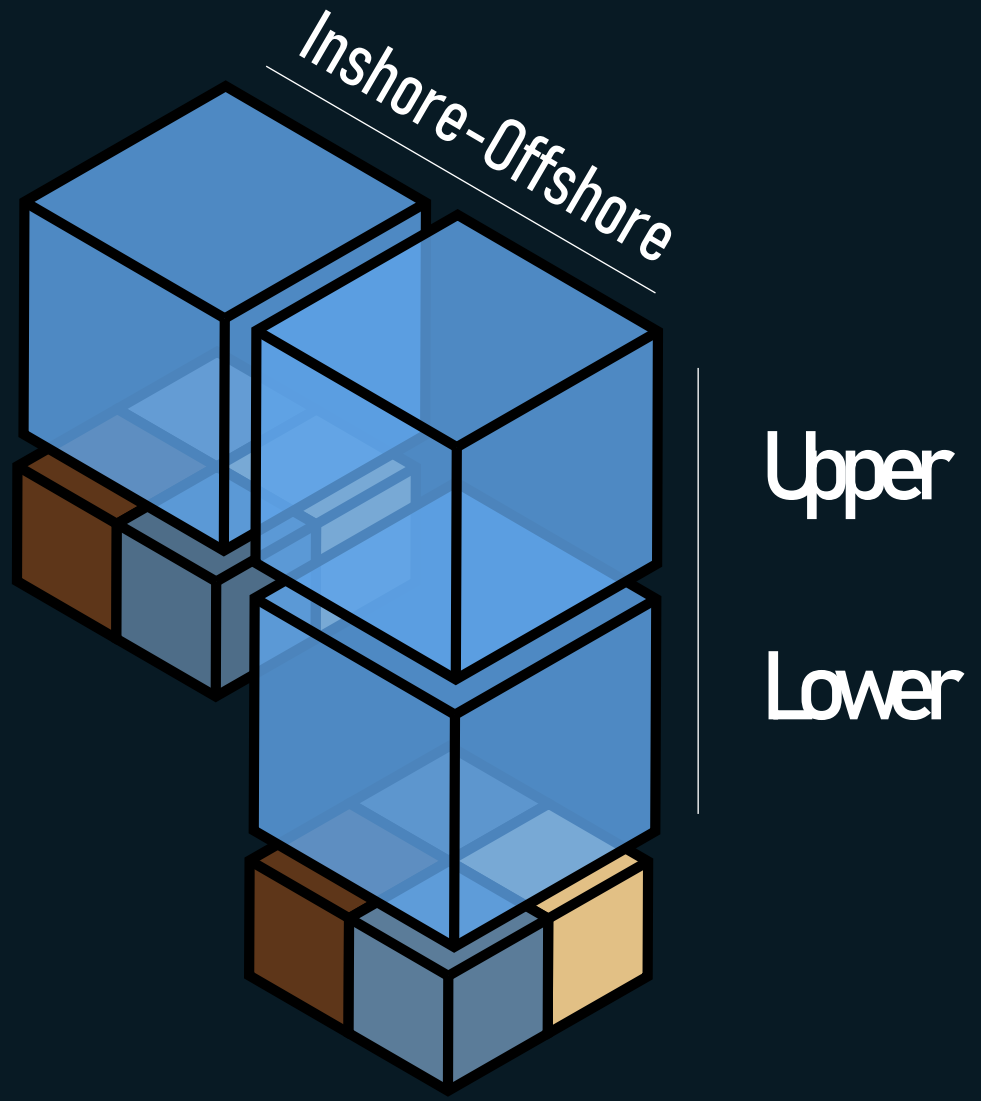
– StrathE2EPolar IS FAST –

Space is simplified to

3 ocean volumes

8 shelf sea habitats

- Rock
- Mud
- Sand
- Gravel



28 guilds

12 fleets

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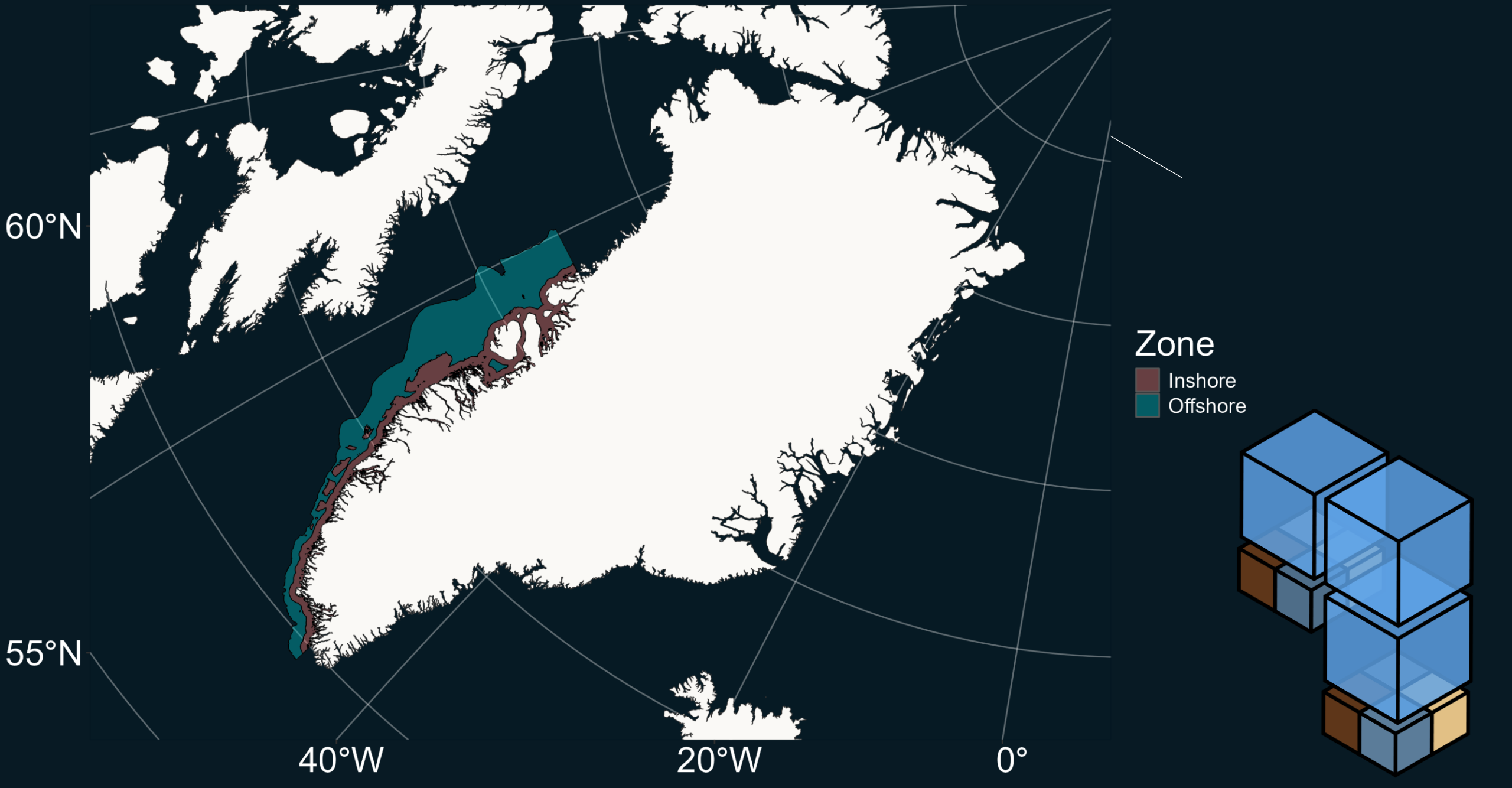

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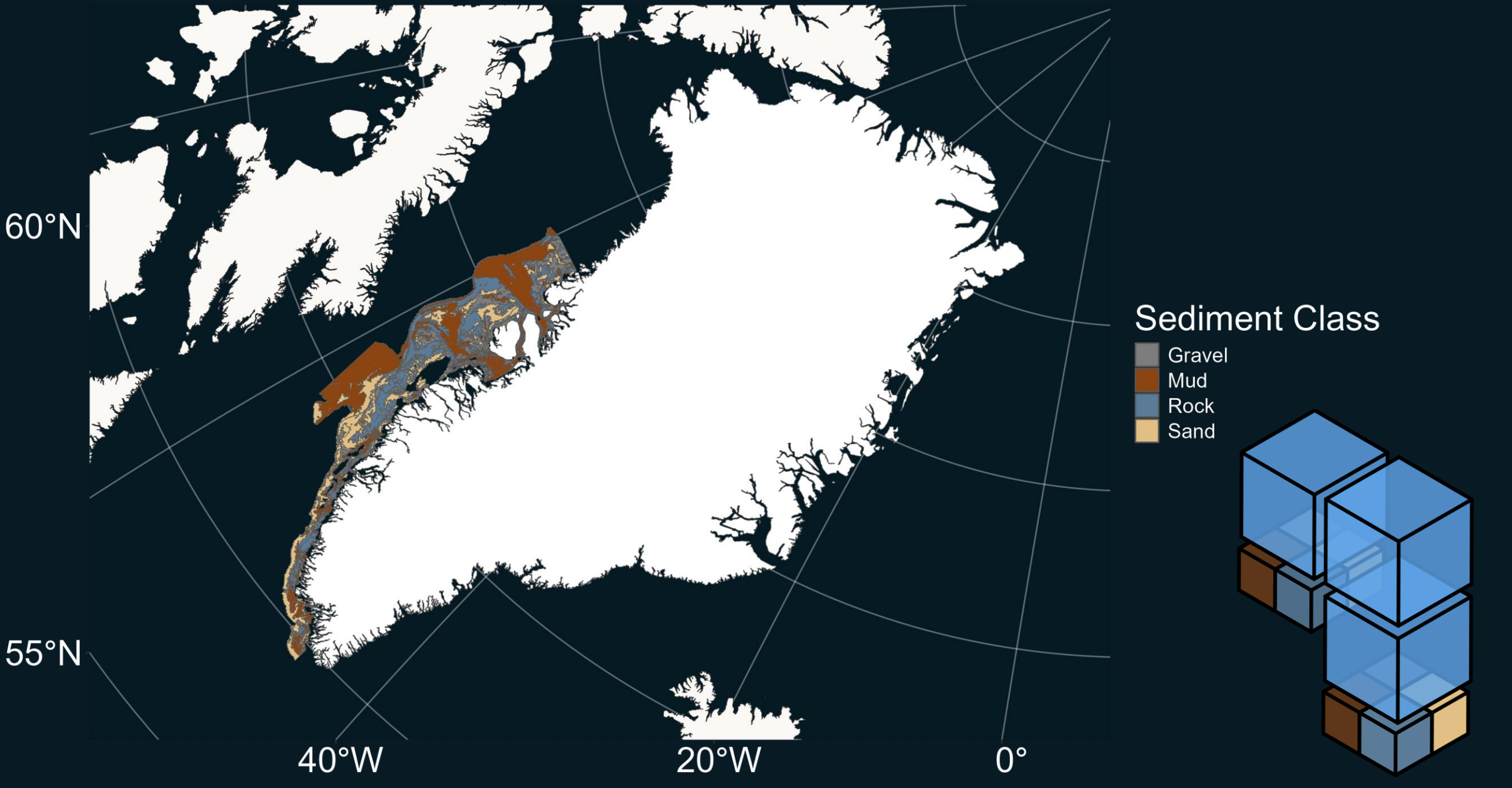

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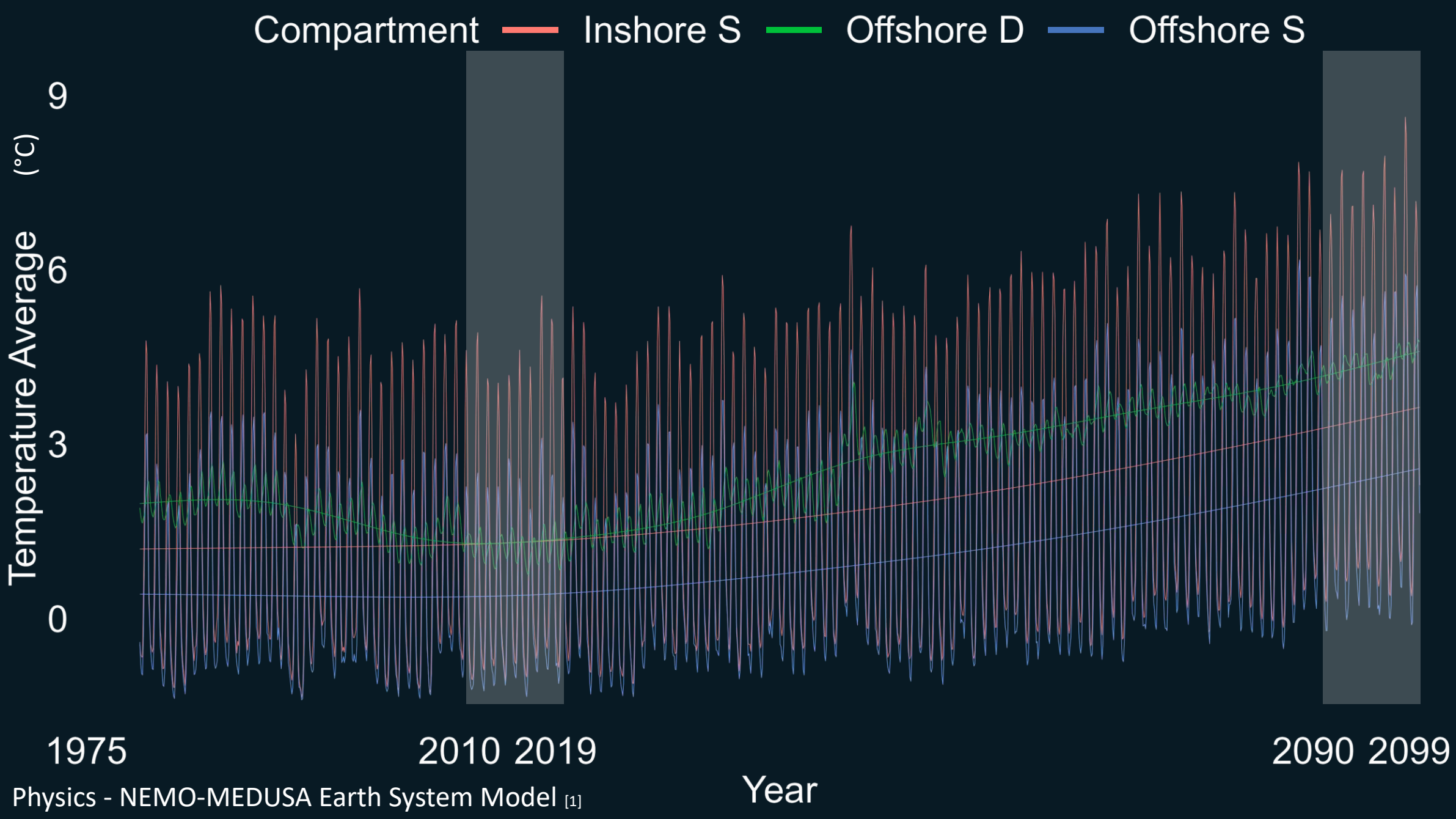
Model Parametrisation – Physics & Chemistry

MEDUSA

2010-2019
2090-2099

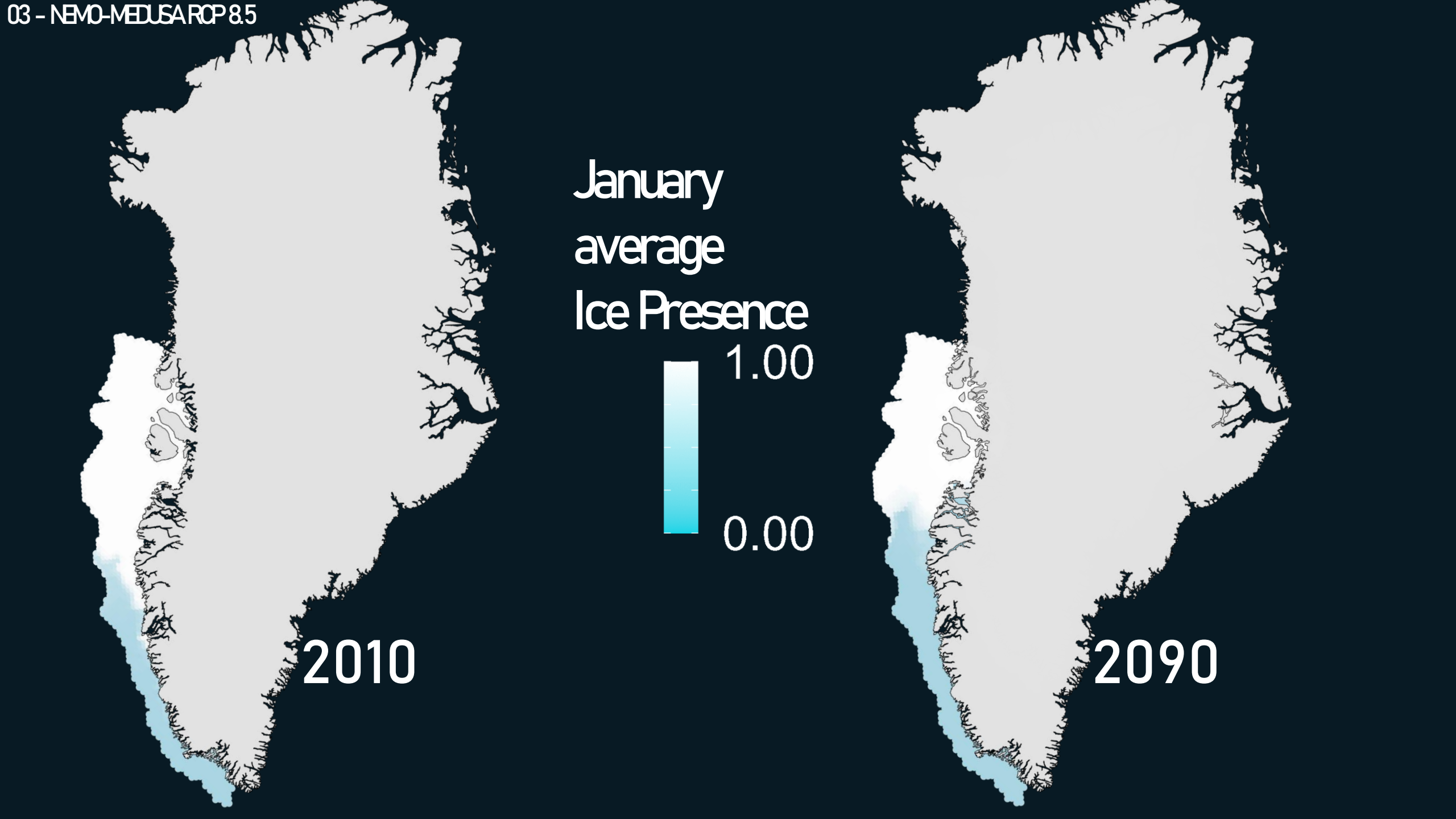
Ice Cover
Ice Thickness
Temperature
Ntrate
Ammonia
Detritus

03 - NEMO-MEDUSA RCP 8.5



Physics - NEMO-MEDUSA Earth System Model [1]

03 – NEMO-MEDUSA RCP 8.5



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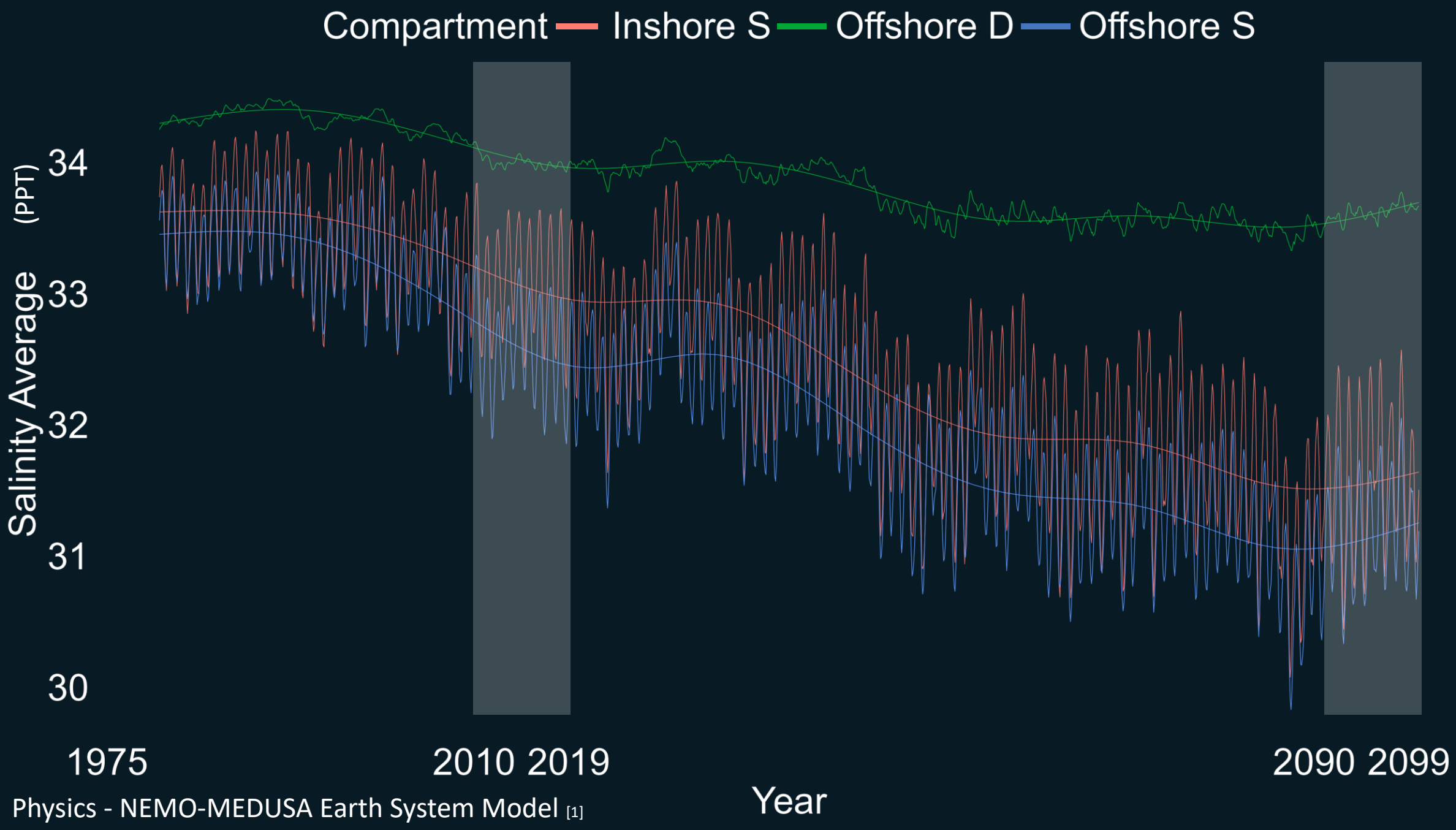

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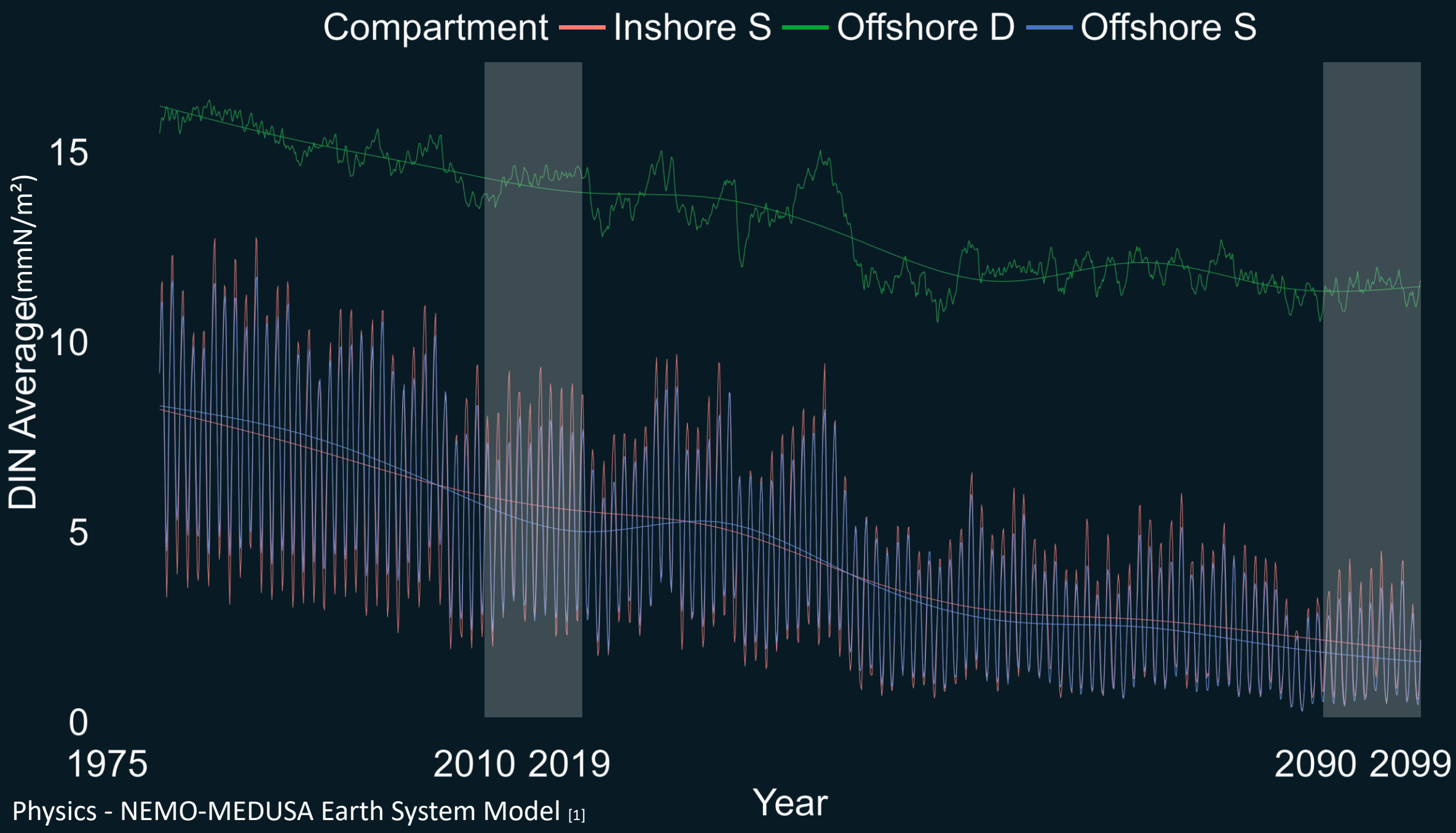

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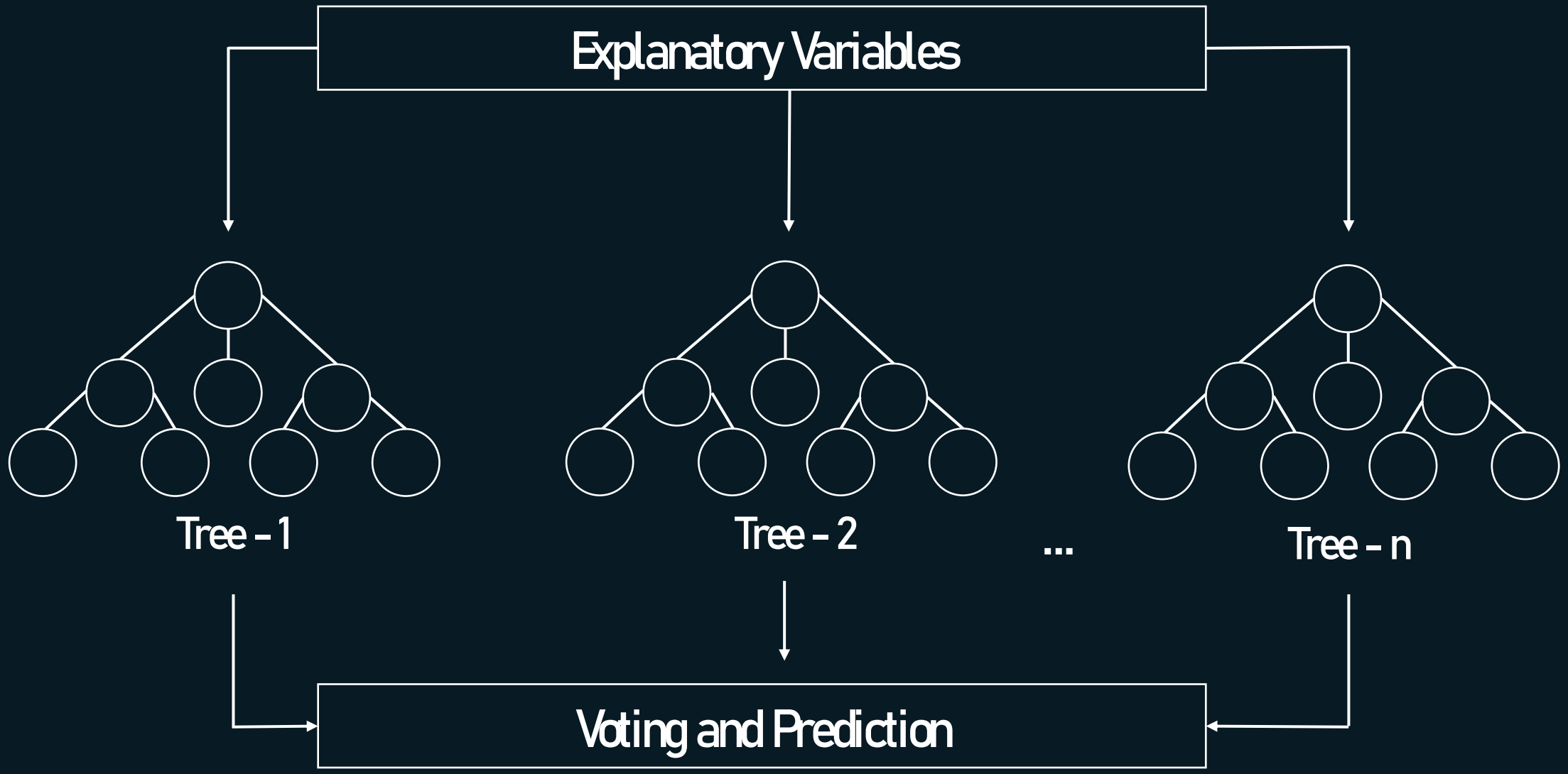

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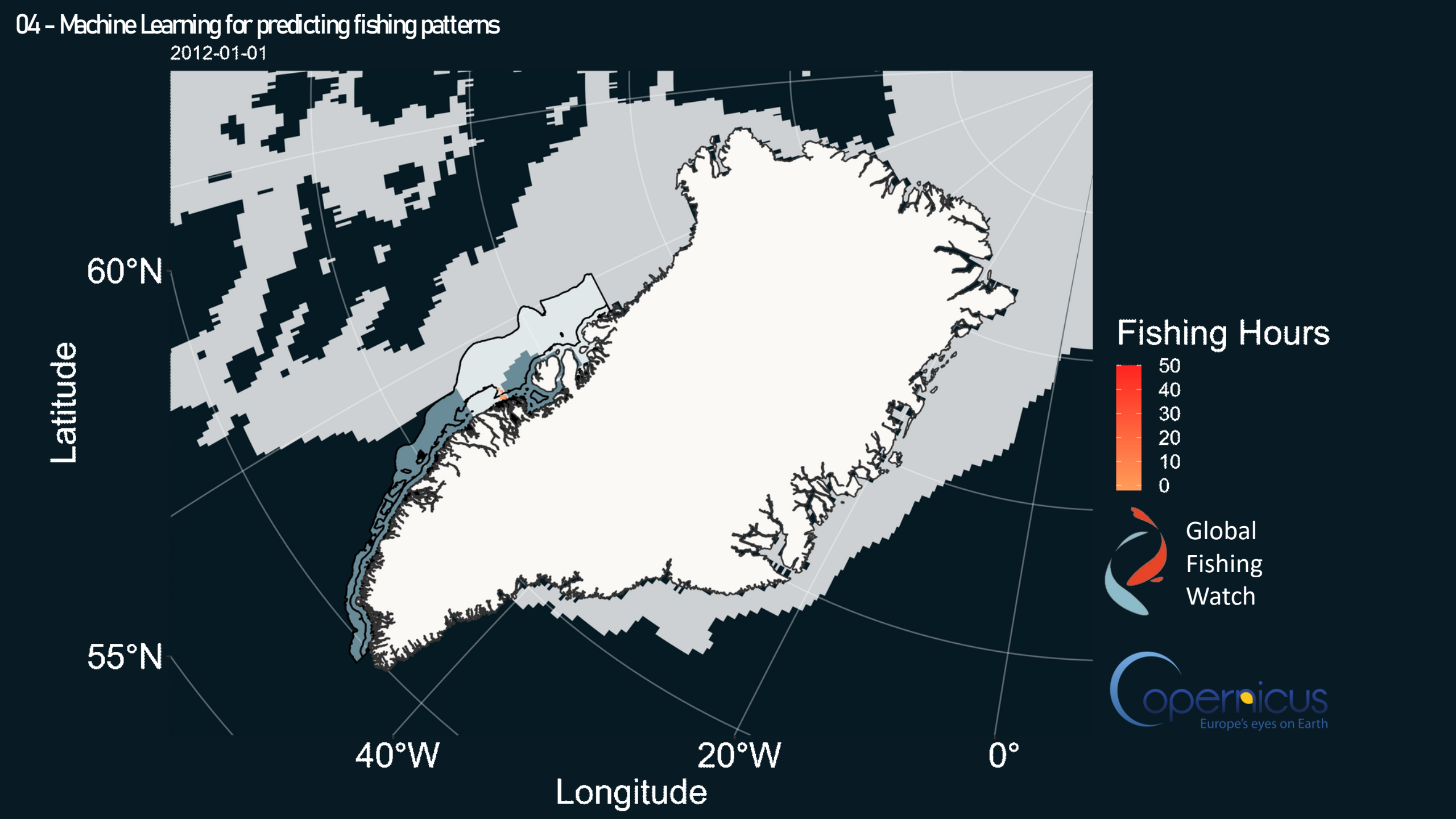

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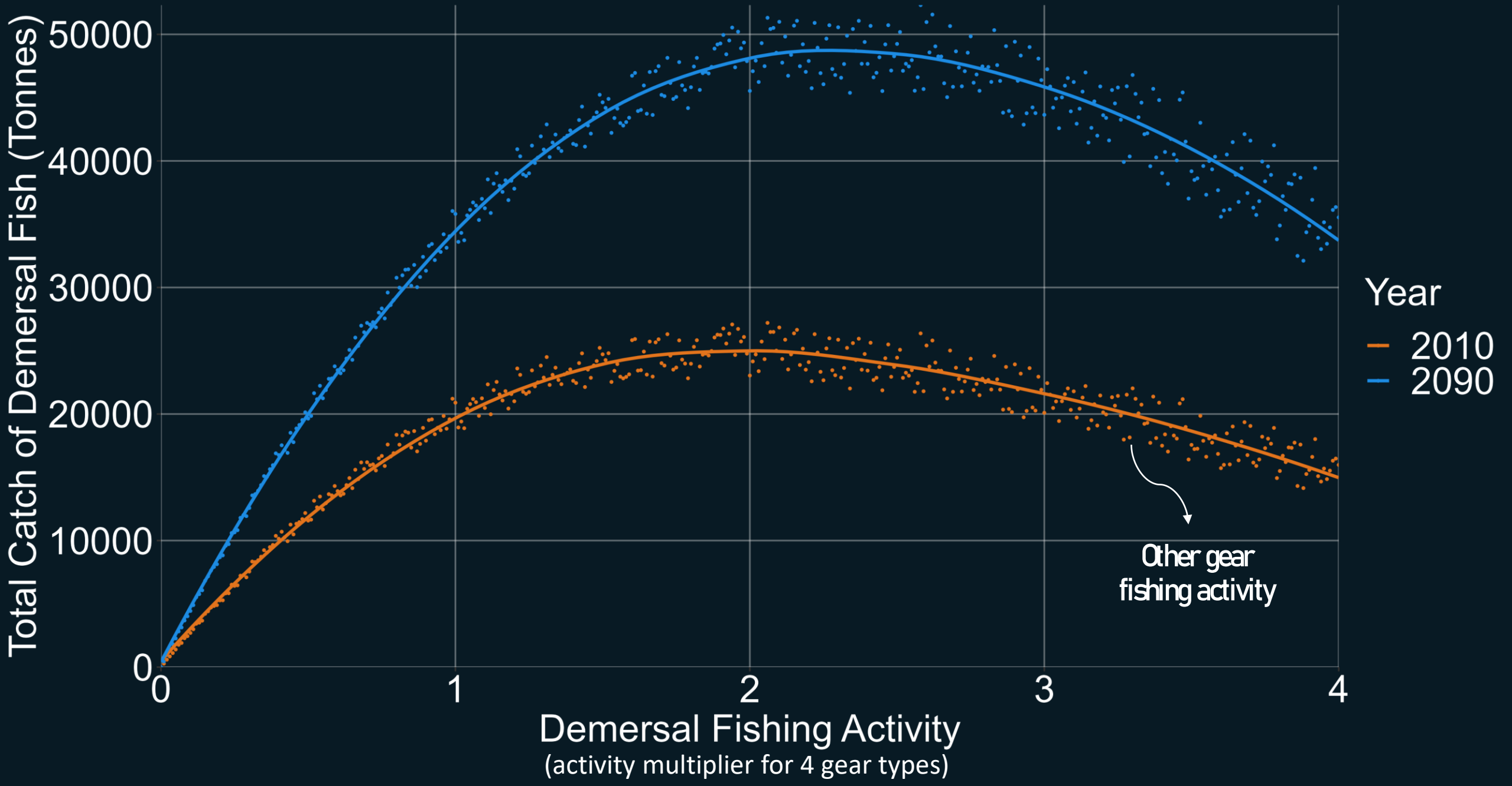
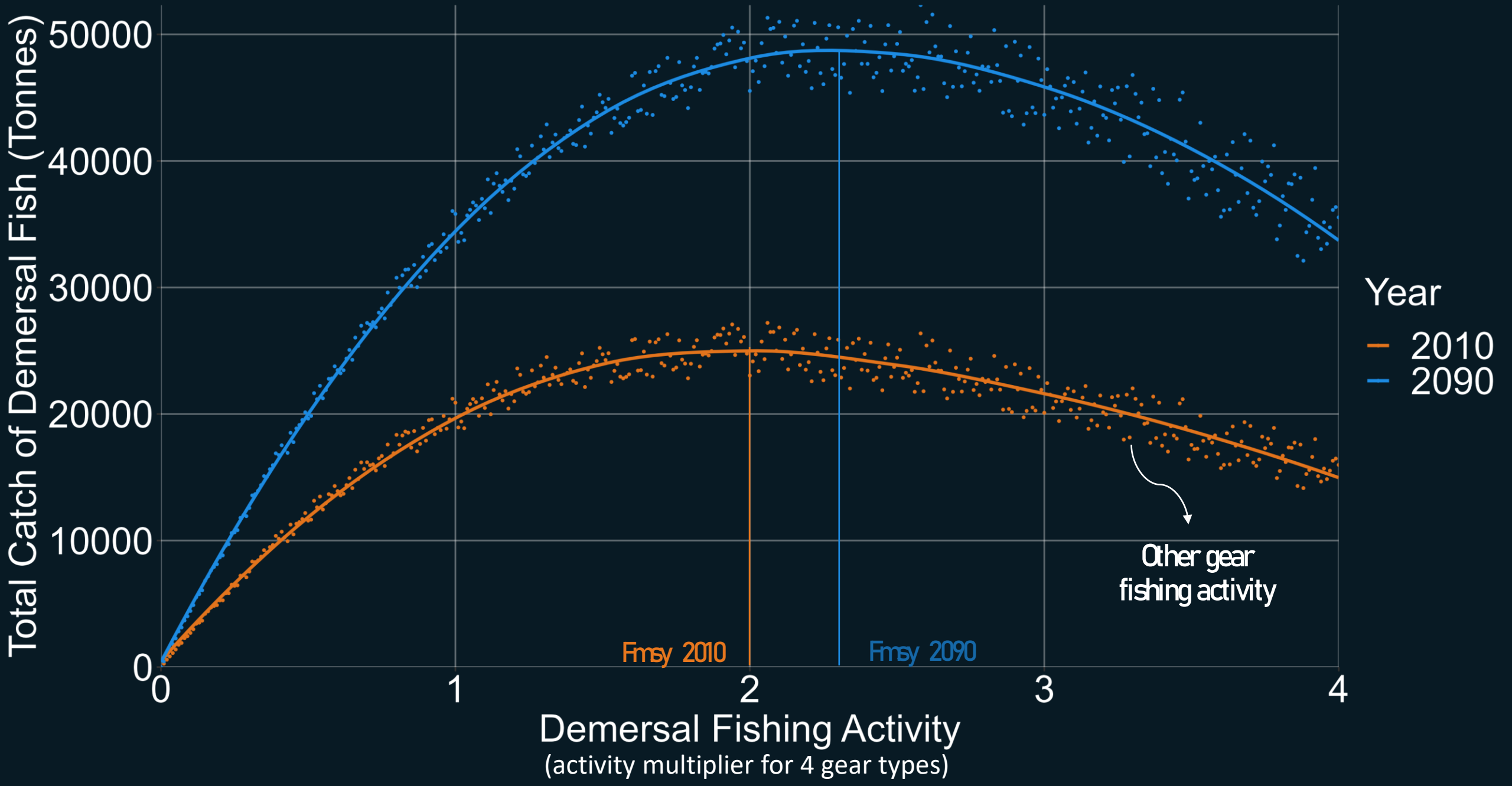


05 – Investigating the impacts of changing fishing pressure



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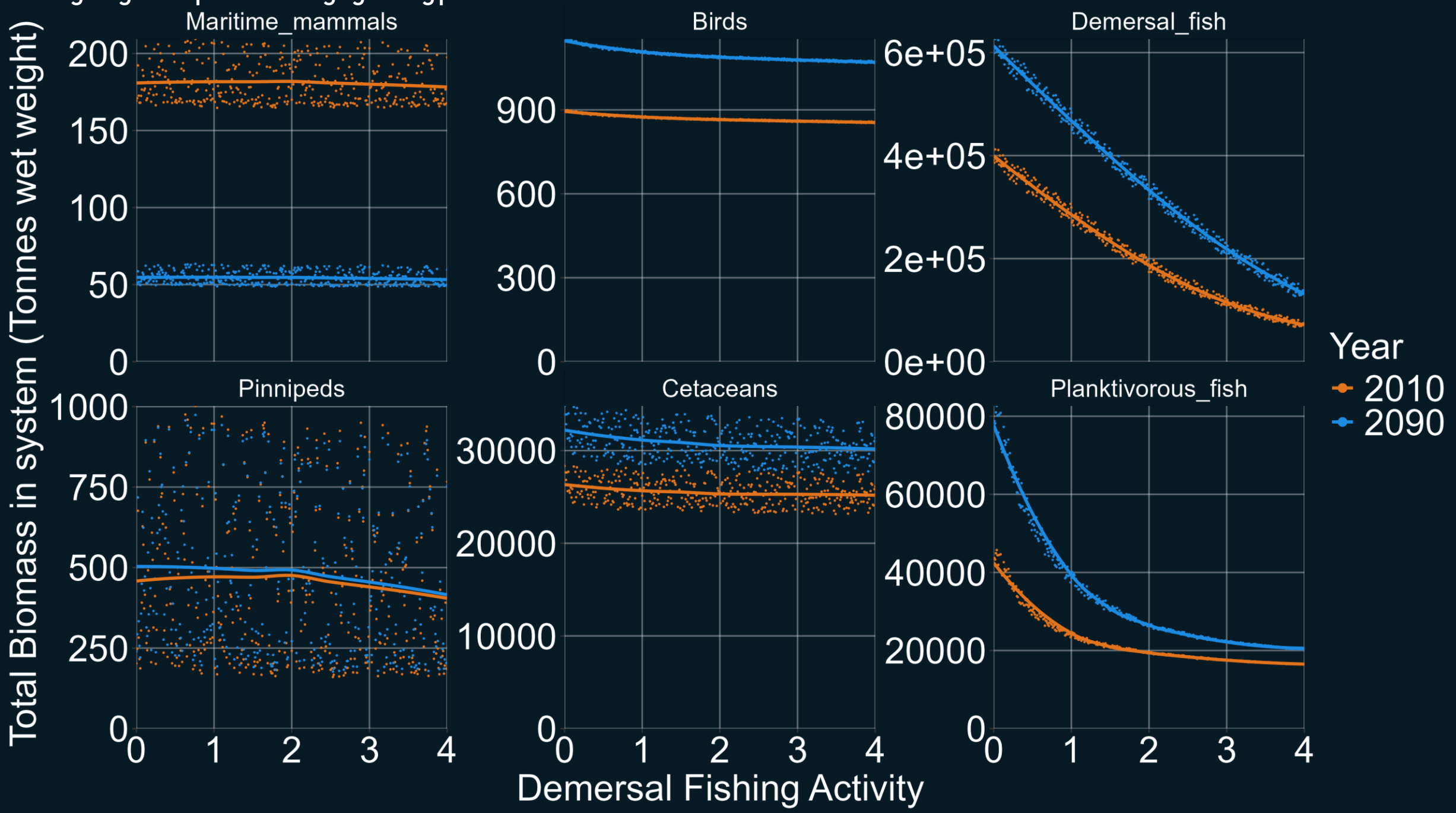

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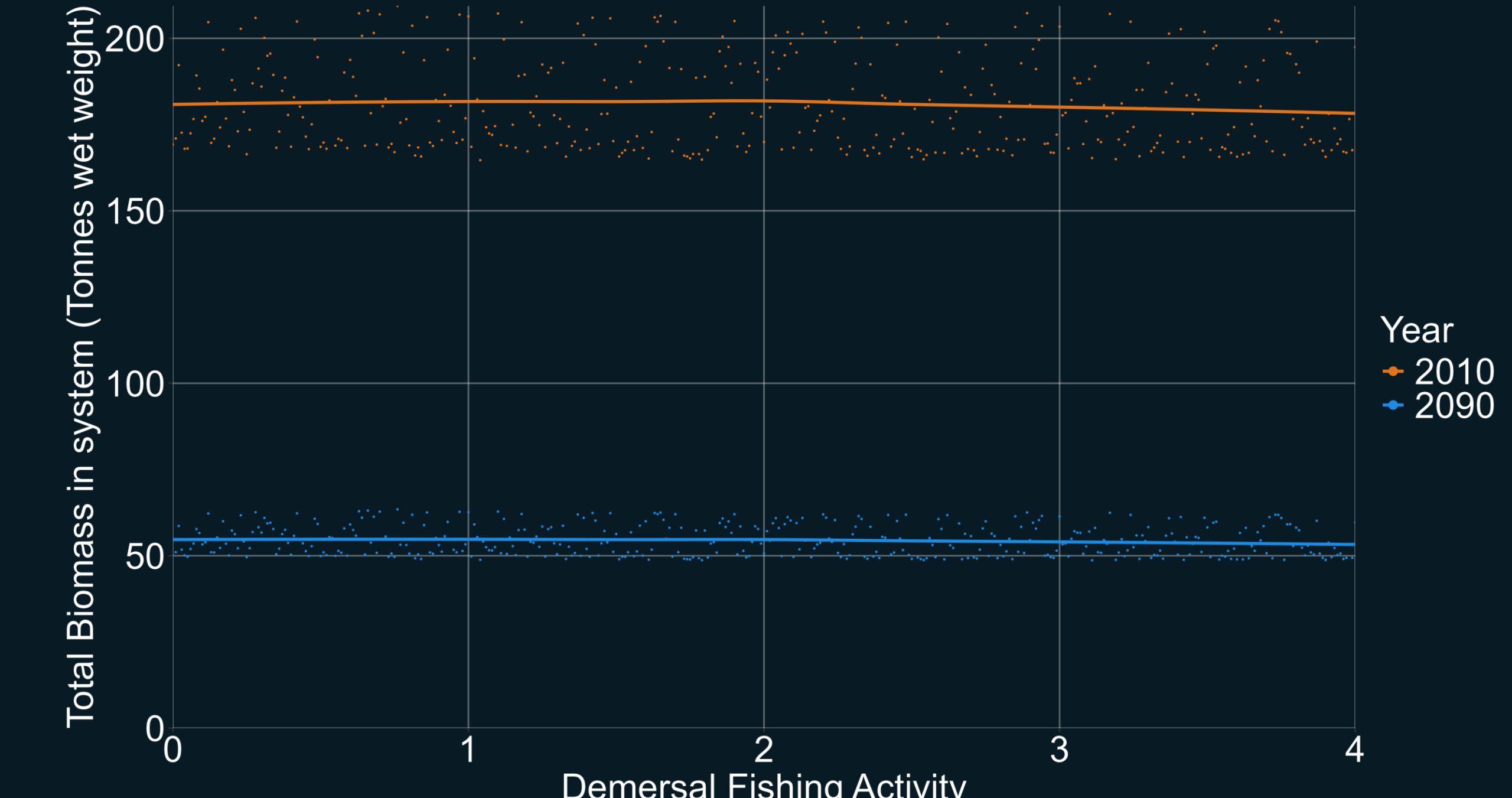

Summary

- The coupled effects of climate change and Demersal fishing is minimal on some upper trophic levels (Birds and Cetaceans) but has a larger effect further down the food web (Demersal/Planktivorous)
- Shifts in climate are causing larger variations of biomass when using non-Demersal fishing gears
- Significant decrease in maritime mammal biomass within the system between the two decadal periods

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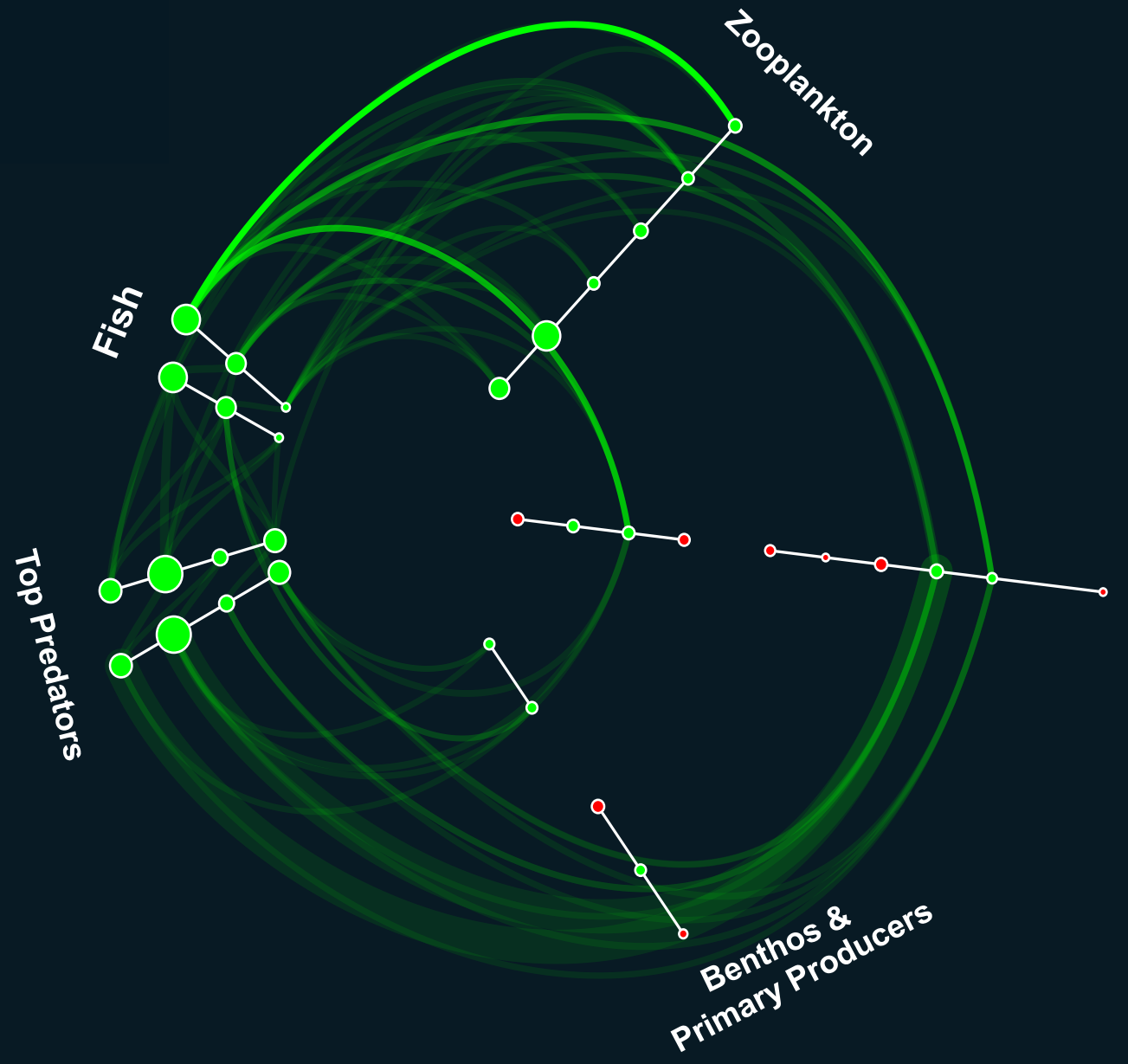

Questions for you

What would you like to see implemented into StrathE2EPolar?

How could we tell a local story through StrathE2EPolar?

How would you like to see StrathE2EPolar used?

Email your suggestions to

matthew.hatton@strath.ac.uk

Thank you for listening

References

[1] Long, Stephen, and Peter JS Jones. "Greenland's offshore Greenland halibut fishery and role of the Marine Stewardship Council certification: A governance case study." *Marine Policy* 127 (2021): 104095.

[2] Yool, Andrew, Ekaterina E. Popova, and Tom R. Anderson. "MEDUSA-2.0: an intermediate complexity biogeochemical model of the marine carbon cycle for climate change and ocean acidification studies." *Geoscientific Model Development* 6.5 (2013): 1767-1811.

[3] Heath, Michael R., et al. "Ecosystem approach to harvesting in the Arctic: Walking the tightrope between exploitation and conservation in the Barents Sea." *Ambio* 51 (2022): 456-470.

[4] Nogueira, A. "Assessment of the Greenland Halibut Stock Component in NAFO Subarea 0+ 1 (Offshore) MA Treble Fisheries and Oceans Canada, Freshwater Institute, 501 University Cres., Winnipeg, Manitoba, Canada R3T 2N6."

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