

Oral presentation

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**The movement of murky waters jeopardizes marine life nurseries: a study of the circulation of water in the Torres Strait marine ecosystem.**

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A model of Torres Strait has been developed by Geoscience Australia and CSIRO Marine research to investigate the interactions of currents and sediment movements with the ecosystem, with a view to better understand the significant dieback of sea-grasses in northern parts.

The most recent atmospheric and oceanographic reanalysis products have been used to force the latest release of the hydrodynamic code. This model has been calibrated to obtain the best quality correlations with available data, including temperature and salinity profiles, tidal predictions, and long term tide gauge records.

The resulting 5-year simulation provides time series sufficient to investigate the seasonal variability of the circulation. The results reveal that seasonal currents are typically around 10% of the tidal current magnitude, with westward flow prevailing for more than 9 months of the year and producing a net inflow into the Gulf of Carpentaria. The seasonal flow across the strait is southward during the monsoon and northward during the trade, with a potential "stagnation zone" in the north of the Strait near Kai reef. This zone is likely to define the southernmost latitude reached by turbid waters encroaching along the coast of Papua New Guinea. This hypothesis appears to be supported by field measurements and remote sensing observations, and will be further tested using a sediment transport model currently under development.

Future work will focus on analysing the variability of modelled suspended sediment in northern Torres Strait to assess the potential for sustained encroachment of high turbidity water and its likely impact on the light environment and seagrass health.

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