

The Kuroshio Current at the LGM and implications for coral palaeobiogeography

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Overview

The Kuroshio enters the East China Sea through a narrow sill, but it has been suggested that the current was diverted at the LGM due to sea-level fall.

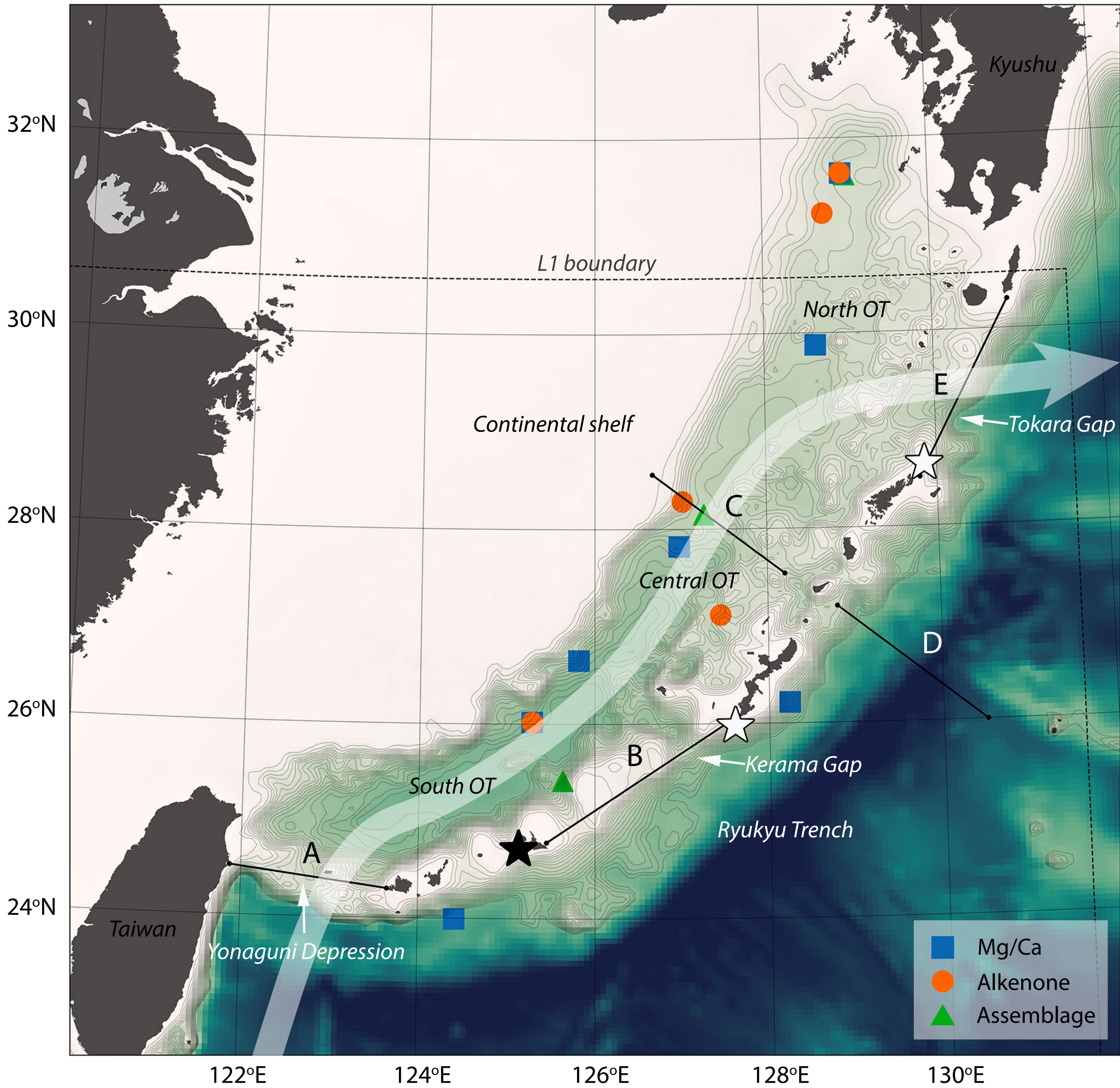
We ran a high-resolution (2km) simulation of the East China Sea forced by four PMIP3 models, and compared the output to an SST proxy compilation.

We found that the path of the Kuroshio is insensitive to both glacioeustatic sea level change, and tectonic shoaling of the silled entrance.

Today, the winter 18°C isotherm bounds the habitable range of warm-water coral reefs. Our simulations with the best model-proxy agreement predict **only limited contraction** of this isotherm, agreeing with the known distribution of LGM-aged coral reefs in the East China Sea.

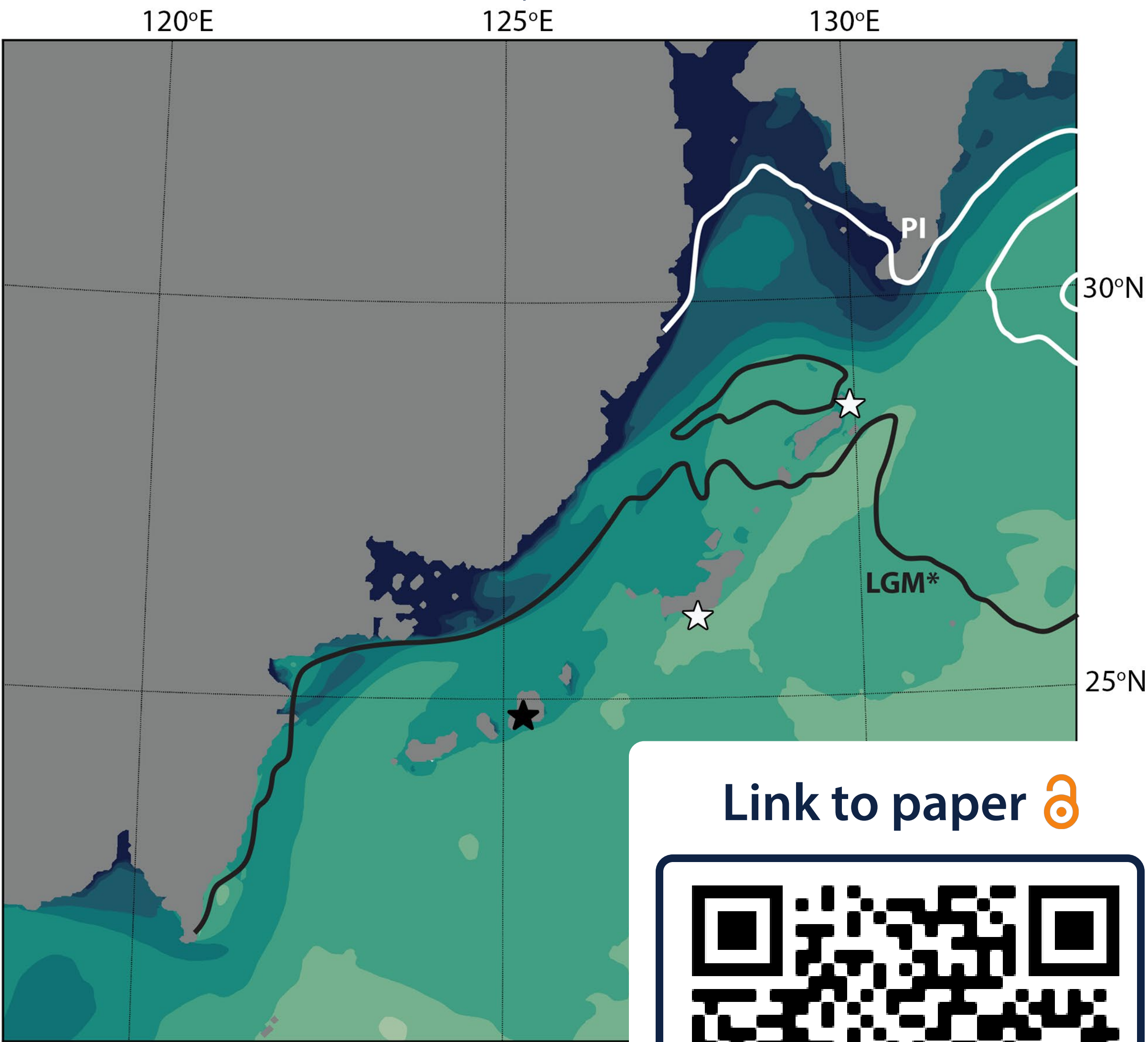
Modern Kuroshio path, and proxy locations

Stars indicate the locations of known (black) and suspected (white) LGM-aged reefs. Black lines are transects used for transport calculations in the paper.



LGM ΔSST and coral reef habitable range

For the simulation forced by boundary conditions from the MRI PMIP3 model, which had the best model-proxy agreement under one metric in our study. Colours show the change in SST (LGM-PI), and the black (white) lines show the predicted 18°C isotherm at the LGM (PI).



Link to paper 

