

Ocean Subsurface Has Significant Impacts on Tropical Cyclone Genesis



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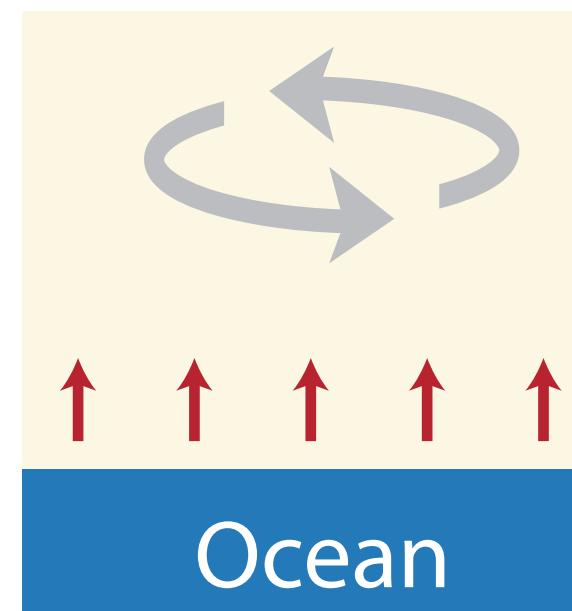
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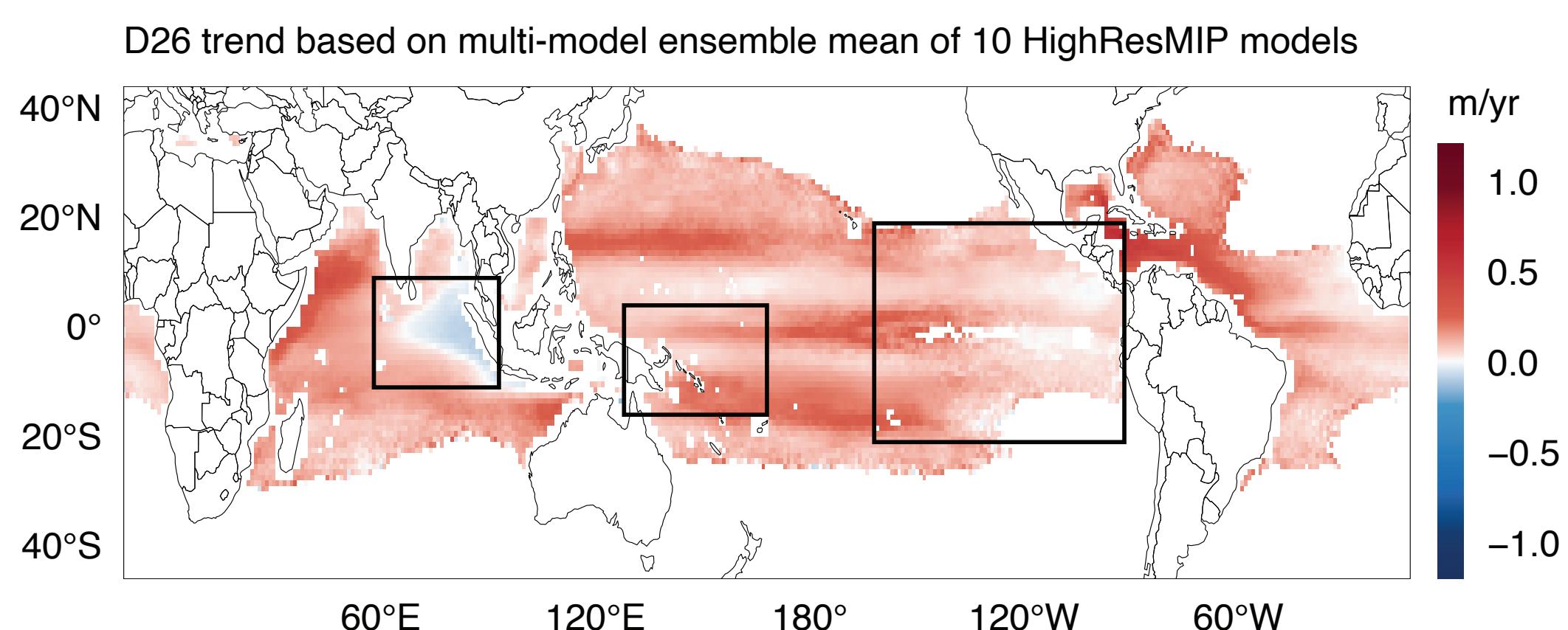
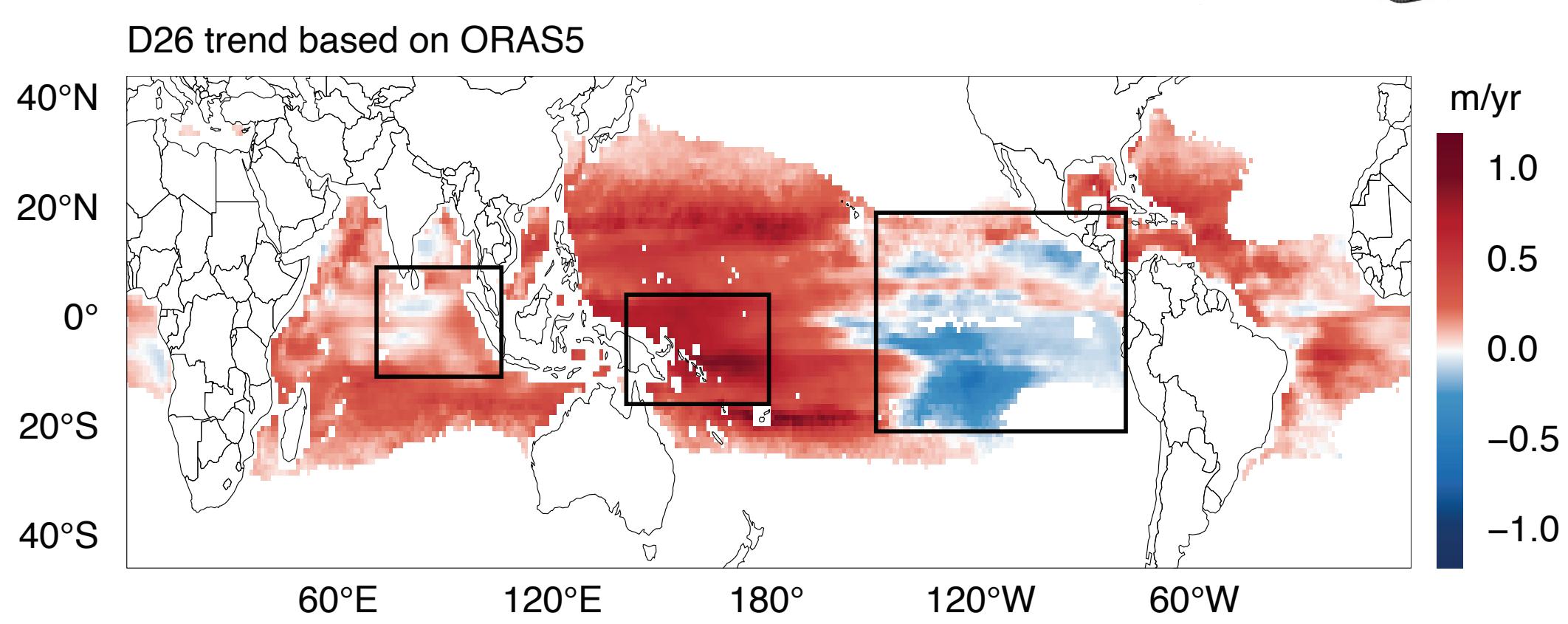
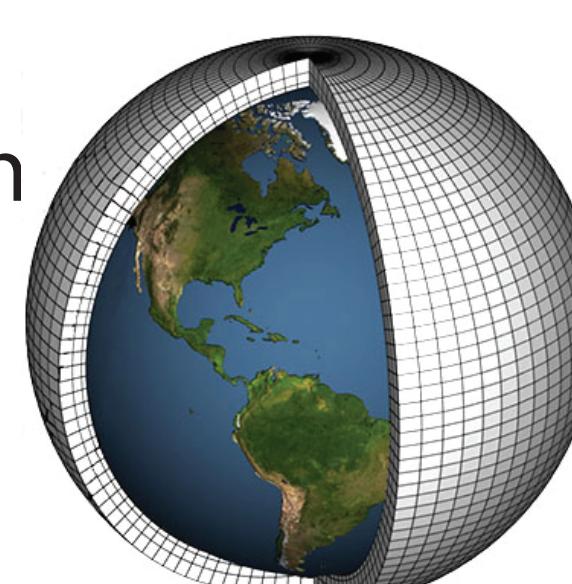
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Introduction

1. Ocean is the energy source of tropical cyclones, but ocean heat content is generally simplified to sea surface temperature.



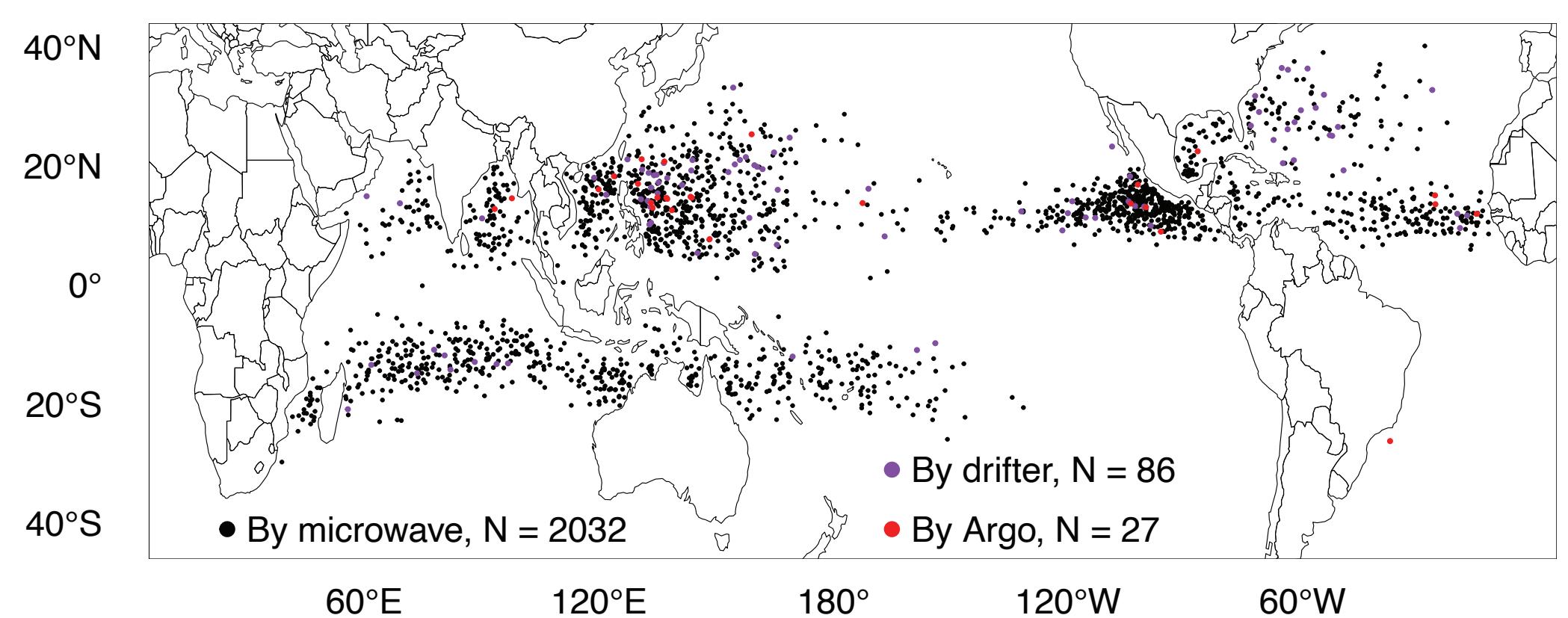
2. The HighResMIP models could not reproduce observed trend of ocean subsurface, i.e., the depth of 26°C isotherm (D26).



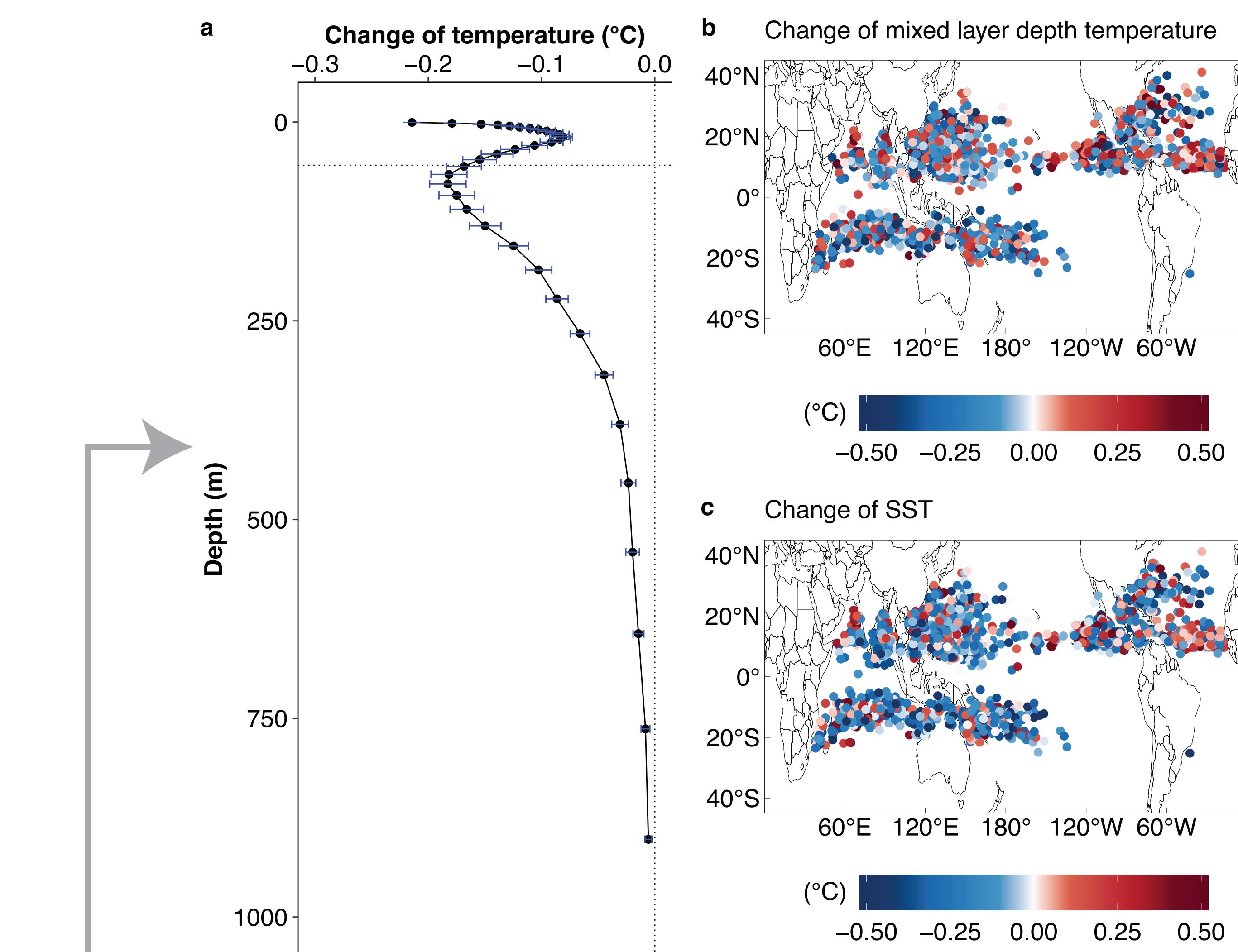
Methods

Pre-genesis tropical cyclones is defined by 30-knot intensity.

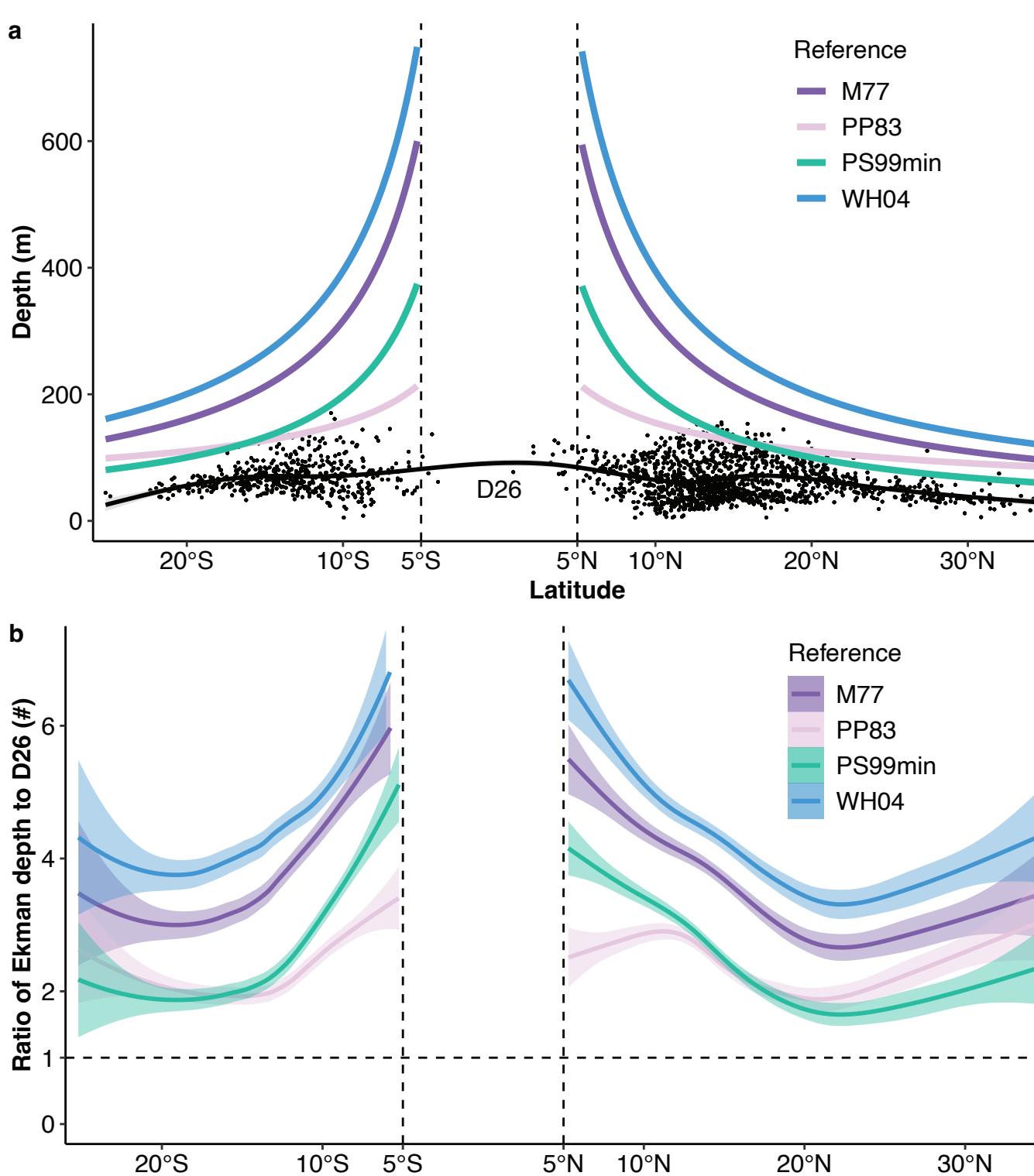
~ 2000 pre-genesis tropical cyclones with microwave observation are used to do composite analysis.



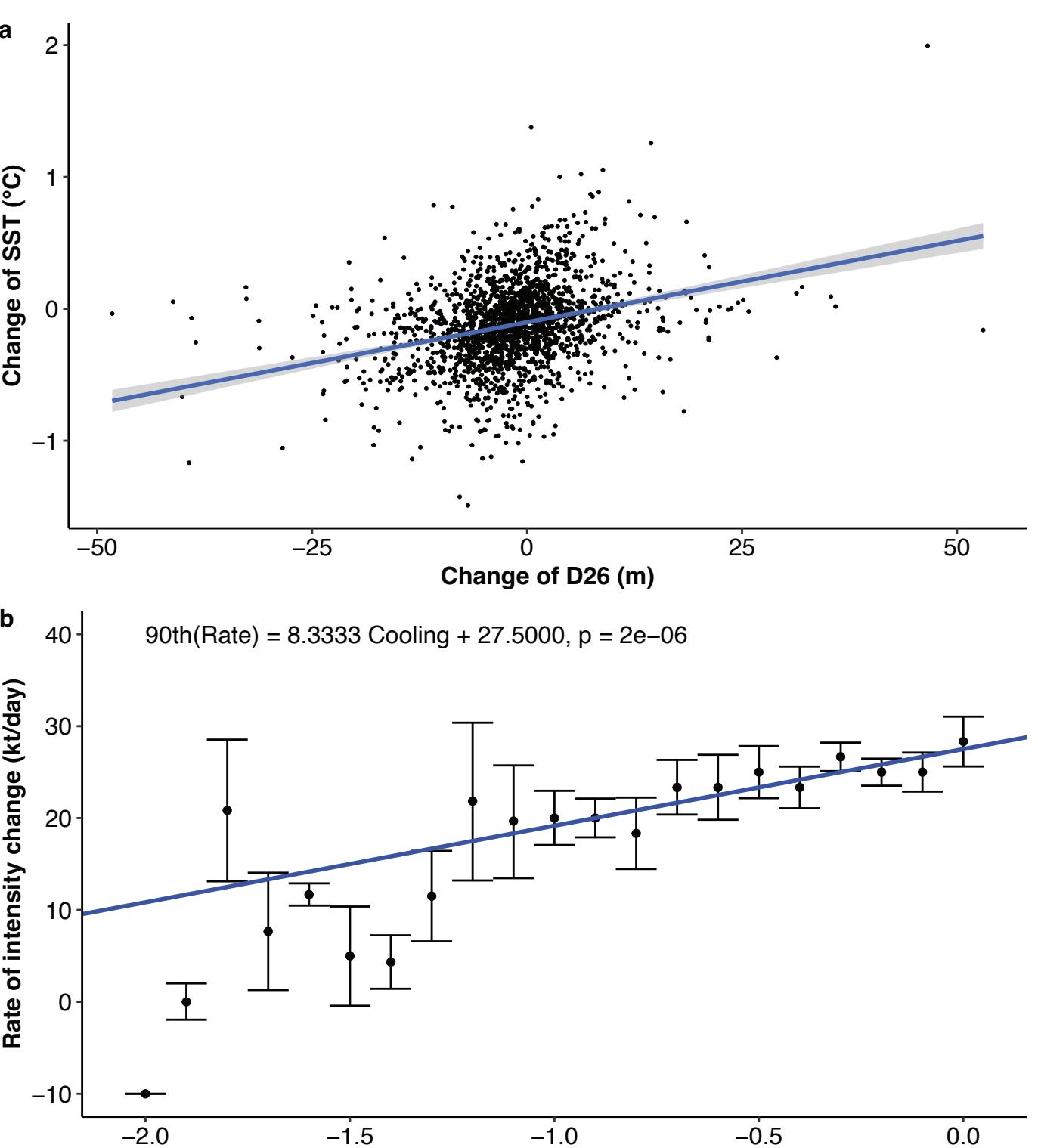
Results



Mechanism: Ekman Upwelling



Subsurface Changes Feedback



Conclusions

At the pre-genesis stage, tropical cyclones significantly modulate ocean subsurface by Ekman upwelling.

The modulated ocean subsurface feedbacks to sea surface and thus tropical cyclones.



References

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Acknowledgements

We acknowledge the support by the National Natural Science Foundation of China (Grant nos. 42125601 and 421925648), the National Key Research and Development Program of China (Grant nos. 2023YFF0805300 and 2019YFA0606701), the Strategic Priority Research Program of the Chinese Academy of Sciences (Grant no. XDB42000000), and the Development fund of South China Sea Institute of Oceanology of the Chinese Academy of Sciences (Grant no. SCSIO202208).