SHANTONG SUN

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RESEARCH DESCRIPTION

Interests: Large-scale ocean circulation, especially the global ocean overturning circulation and its role in carbon and heat uptake; Southern Ocean dynamics; Climate change

Methods: Numerical simulations using general circulation models (GCMs); development of idealized conceptual models

PREPARATION AND APPOINTMENTS

Assistant Professor 08/2022-
Earth, Ocean & Atmospheric Science Dept., Florida State University

Postdoctoral scholar (Advisor: Andrew F. Thompson) 2019-2022
Environmental Science & Engineering, California Institute of Technology

Ph.D., Physical Oceanography (Advisor: Ian Eisenman) 2019
Scripps Institution of Oceanography, UC San Diego

M.S., Physical Oceanography (Advisor: Lixin Wu) 2013
Ocean University of China

B.S., Marine Science 2011
Ocean University of China

PUBLICATIONS

In Progress

Zhang, R., S. Sun, Z. Chen, H. Yang, L. Wu. On the low-frequency variability of the Agulhas Current. *submitted.*

Peer-reviewed

16. Bonan, D. B., A. F. Thompson, E. R. Newsom, S. Sun, and M. Rugenstein. Transient and equilibrium responses of the Atlantic overturning circulation to warming in coupled climate models: the role of temperature and salinity. *J. Clim*, 35(15), 5173-5193.
15. Wilson, E. A., A. F. Thompson, A. Stewart, S. Sun, 2022. Bathymetric control of subpolar gyres and the overturning circulation in the Southern Ocean. *J. Phys. Oceanogr.*, 52(2), 205-223.
14. Sun, S., Thompson, A. F., Xie, S.-P., and Long, S.-M., 2022: Indo-Pacific warming induced by a weakening of the Atlantic Meridional Overturning Circulation. *J. Clim.*, 35(2), 815–832

13. Quan, Q., Z. Liu, S. Sun, Z. Cai, Y. Yang, G. Jin, Z. Li, and X.-S. Liang, 2021. Influence of the Kuroshio intrusion on deep flow intraseasonal variability in the northern South China Sea. *J. Geophys. Res. Oceans*, e2021JC017429.

12. Sun, S. and Eisenman, I., 2021: Observed Antarctic sea ice expansion reproduced in a climate model after correcting biases in sea ice drift velocity. *Nat. Commun.*, 12(1060)

11. Sun, S. and Thompson, A. F., 2020: Centennial changes in the Indonesian Throughflow connected to the Atlantic Meridional Overturning Circulation: the ocean's transient conveyor belt. *Geophys. Res. Lett.*, 47, e2020GL090615

10. Sun, S., Thompson, A. F., and Eisenman, I., 2020: Transient overturning compensation between Atlantic and Indo-Pacific basins. *J. Phys. Oceanogr.*, 50(8), 2151–2172

9. Sun, S., Eisenman, I., Zanna, L., and Stewart, A. L., 2020: Surface constraints on the depth of the Atlantic Meridional Overturning Circulation: Southern Ocean vs North Atlantic. *J. Clim.*, 33(8), 3125–3149

8. Sun, S., Eisenman, I., and Stewart, A. L., 2018: Does Southern Ocean surface forcing shape the global ocean overturning circulation? *Geophys. Res. Lett.*, 45(5), 2413–2423

7. Sun, S. and Liu, J., 2017: Sensitivity of the Antarctic Circumpolar Current transport to surface buoyancy conditions in the North Atlantic. *Ocean Modell.*, 118, 118–129

6. Yang, H., Wu, L., Sun, S., and Chen, Z., 2017: Role of the South China Sea in Regulating the North Pacific Double-Gyre System. *J. Phys. Oceanogr.*, 47(7), 1617–1635

5. Yang, H., Wu, L., Sun, S., and Chen, Z., 2017: Selective Response of the South China Sea Circulation to Summer Monsoon. *J. Phys. Oceanogr.*, 47(7), 1555–1568

4. Sun, S., Eisenman, I., and Stewart, A. L., 2016: The influence of Southern Ocean surface buoyancy forcing on glacial-interglacial changes in the global deep ocean stratification. *Geophys. Res. Lett.*, 43(15), 8124–8132

3. Yang, H., Wu, L., Sun, S., and Chen, Z., 2015: Low-frequency variability of monsoon-driven circulation with application to the south china sea. *J. Phys. Oceanogr.*, 45(6), 1632–1650

2. Chen, Z., Wu, L., Qiu, B., Sun, S., and Jia, F., 2014: Seasonal variation of the South Equatorial Current bifurcation off Madagascar. *J. Phys. Oceanogr.*, 44(2), 618–631

1. Sun, S., Wu, L., and Qiu, B., 2013: Response of the inertial recirculation to intensified stratification in a two-layer quasigeostrophic ocean circulation model. *J. Phys. Oceanogr.*, 43(7), 1254–1269

Non-refereed

S. Sun (2019). Surface constraints on the global ocean overturning circulation: Southern Ocean vs North Atlantic. PhD thesis, Scripps Institution of Oceanography, UC San Diego, 216 pages.

Blanchard-Wrigglesworth, E., I. Eisenman, S. Zhang, S. Sun, and A. Donohoe (2022), New perspectives on the enigma of expanding Antarctic sea ice, *Eos*, 103 (doi: 10.1029/2022EO220076).

SELECTED PRESENTATIONS

- (2015) AGU Fall Meeting (*talk*)
- (2017) Southern Ocean Workshop at NCAR (*talk*)
- (2018) Ocean Science Meeting (*poster*)
- (2019) 22nd AOFD (*talk*)

- (2020) Ocean Science Meeting (*talk*)
- (2020) JPL/Caltech (*seminar*)
- (2020) DAMTP/Cambridge (*seminar*)
- (2020) AGU Fall Meeting (*talk*)
- (2021) CalGFD (*talk*)
- (2022) Ocean Science Meeting (*talk*)
- (2022) UCI ESS (*seminar*)
- (2022) FSU EOAS (*seminar*)
- (2022) U. Southampton (*seminar*)
- (2022) Qingdao National Laboratory for Marine Science and Technology (*seminar*)
- (2022) UCLA AOS Dept. (*seminar*)

TEACHING EXPERIENCE

- Fall, 2016 (SIO): Teaching assistant for *Introduction to Physical Oceanography* (Instructor: Lynne Talley)
- Fall, 2017 (SIO): Guest Lecture for *Numerical Modelling of the Climate System* (Instructor: Ian Eisenman)
- Spring, 2021 (Caltech): Guest Lecture for *Ocean Dynamics* (Instructor: Andrew Thompson)

OTHER ACTIVITIES

- Educational outreach - Volunteer for Science Expo Day in San Diego (March, 2015)
- NASA Summer School on Satellite Observations and Climate Models (2019)
- Reviewer for *Journal of Physical Oceanography*, *Journal of Climate*, *Geophysical Research Letters*, *Nature Communications*, *Communications Earth & Environment*, *Journal of Geophysical Research: Oceans*, *Deep Sea Research I*, *Journal of Oceanography*, *Frontiers in Marine Science*, and *Frontiers in Climate*