SHANTONG SUN

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RESEARCH DESCRIPTION

Interests: large-scale ocean circulation, high-latitude ocean dynamics, climate change, sea ice, and global carbon cycle

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

Peer-reviewed

19. Zhang, R., **S. Sun**, Z. Chen, H. Yang, and L. Wu, 2023: Rapid 21st century weakening of the Agulhas Current in a warming climate. *Geophys. Res. Lett.*, *accepted*.
18. Wang, S., Z. Jing, L. Wu, **S. Sun**, Q. Peng, H. Wang, Y. Zhang, and J. Shi, 2023: Southern Hemisphere eastern boundary upwelling systems emerging as future hotspots of marine heatwaves under greenhouse warming. *Nat. Commun.*, 14, 28.
17. Zhang, R., **S. Sun**, Z. Chen, H. Yang, and L. Wu, 2023: On the decadal and muti-decadal variability of the Agulhas Current. *J. Phys. Oceanogr.*, *accepted*.
16. Bonan, D. B., A. F. Thompson, E. R. Newsom, **S. Sun**, and M. Rugenstein, 2022: 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, and **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.** , A. F. Thompson, S.-P. Xie, and S.-M. Long, 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 I. Eisenman, 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 A. F. Thompson, 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.** , A. F. Thompson, and I. Eisenman, 2020: Transient overturning compensation between Atlantic and Indo-Pacific basins. *J. Phys. Oceanogr.*, 50(8), 2151–2172

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

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

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

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

1. **Sun, S.** , L. Wu, and B. Qiu, 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

Sun, S. (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) UCLA AOS Dept. (*seminar*)

TEACHING EXPERIENCE

- Spring, 2023 (FSU): Ocean Circulation and the Carbon Cycle (Graduate course)

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 *Nature Climate Change*, *Nature Communications*, *Journal of Physical Oceanography*, *Journal of Climate*, *Geophysical Research Letters*, *Communications Earth & Environment*, *Journal of Geophysical Research: Oceans*, *Deep Sea Research I*, *Journal of Oceanography*, *Frontiers in Marine Science*, and *Frontiers in Climate*