

# Dr Shuai Wang | Assistant Professor | University of Delaware

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EMPLOYMENT **University of Delaware - Department of Geography and Spatial Sciences**  
2023 - Assistant Professor (Tenure-Track)  
Undergraduate Program Director (Meteorology & Climate Science)  
**Princeton University - Program in Atmospheric and Oceanic Sciences (AOS)**  
**NOAA - Geophysical Fluid Dynamics Laboratory (GFDL)**  
2022 - 2023 Associate Research Scholar  
**Princeton University - Department of Civil and Environmental Engineering**  
2020 - 2021 Postdoctoral Research Associate  
**Imperial College London - Department of Physics**  
2017 - 2019 Postdoctoral Research Associate  
**SOAS University of London - School of Finance and Management**  
2018 - 2019 Joint Research Fellow (Environmental Management)

EDUCATION **Imperial College London, UK**  
2013 - 2017 Ph.D. in Atmospheric Science  
**Ocean University of China, China**  
2011 - 2013 M.S. in Meteorology  
**Ocean University of China, China**  
2007 - 2011 B.S. in Atmospheric Science

RESEARCH INTERESTS Extreme Weather | Climate Modeling | Tropical Cyclones | Climate Risk & Service

GRANTS **NOAA, PI**, 2022 - 2023, "Coastal Tropical Cyclone Activity and Climate Change", Award #: NA18OAR4320123  
**Singapore Green Finance Center, Co-I**, 2021 - 2022, "Downscaling of Physical Risks for Climate Scenario Design"  
**European Space Agency, Co-I**, 2020 - 2021, "Big Data Intelligent Mining and Coupling Analysis of Eddy and Cyclone"

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FULL PUBLICATION Google Scholar statistics [link]. Citations: 718. *h*-index: 16.

**2024** (on-going, 3 peer-reviewed papers)

33. Shukla, P., Nath, P., **Wang, S.**, and Quilodr an-Casas, C.. Forecasting tropical cyclones with cascaded diffusion models. [link]. *2024 International Conference on Learning Representations (ICLR) workshop paper.*
32. **Wang, S.**, Murakami, H., and Cooke, W.. Anthropogenic Effects on Tropical Cyclones near Western Europe. [link]. *npj Climate and Atmospheric Science.*
31. Murakami, H., Cooke, W., Mizuta, R., Endo, H., Yoshida, K., **Wang, S.**, and Hsu, P.. Robust future projections of global spatial distribution of major tropical cyclones and sea level pressure gradients [link]. *Communications Earth & Environment.*

**2023** (4 peer-reviewed papers)

30. **Wang, S.**, Murakami, H., and Cooke, W.. Anthropogenic forcing changes coastal tropical cyclone frequency. [link]. *npj Climate and Atmospheric Science*.
29. Li, Y., Tang, Y., **Wang, S.**, Toumi, R., Song, X., and Wang, Q.. Recent Increases in Tropical Cyclone Rapid Intensification Events in Global Offshore Regions [link]. *Nature Communications*.
28. Xi, D., **Wang, S.**, and Lin, N.. Relationship Between Tropical Cyclone Intensity and Rain Rate [link]. *Journal of Climate*.
27. Li, Y., Tang, Y., **Wang, S.**, and Li, X.. Rapid growth of tropical cyclone outer size over the western North Pacific [link]. *Remote Sensing*.

**2022** (9 peer-reviewed papers + 1 white paper)

26. **Wang, S.**, Lin, N., and Gori, A.. Investigation of hurricane complete wind models and application in storm surge simulation [link]. *Journal of Geophysical Research - Atmospheres*.
25. Li, Y., Tang, Y., Toumi, R., and **Wang, S.**. Revisiting the definition of rapid intensification of tropical cyclones by clustering the initial intensity and inner-core size [link]. *Journal of Geophysical Research - Atmospheres*.
24. Tian, D., Zhang, H., **Wang, S.**, Zhang, W., Sun, X., Zhou, Y., Yang, S., and Zhou, F. Sea surface wind structure observed by wave gliders during tropical cyclones [link]. *Journal of Geophysical Research - Atmospheres*.
23. Biffis, E. and **Wang, S.** (2022). Downscaling of physical risks for climate scenario design [link]. *White Paper* published by the Singapore Management University.
22. Li, Y., Tang, Y. and **Wang, S.**. Rapid growth of outer size of tropical cyclones: A new perspective on their destructive potential [link]. *Geophysical Research Letters*. **Editor's Highlight** on EOS [link].
21. **Wang, S.** and Toumi, R.. An analytic model of tropical cyclone outer size [link]. *npj Climate and Atmospheric Science*.
20. Xu, H., Tian, Z., Sun, L., Ragno, E., Bricker, J., Mao, G., Ye, Q., Tan, J., Wang, J., Ke, Q., **Wang, S.** and Toumi, R.. Compound flood impact of water level and rainfall during tropical cyclone period in a coastal city: The case of Shanghai [link]. *Natural Hazards and Earth System Sciences*.
19. **Wang, S.** and Toumi, R. (2022). More tropical cyclones are striking coasts with major intensities at landfall [link]. *Scientific Reports*.
18. **Wang, S.** and Toumi, R. (2022). On the intensity decay of tropical cyclones before landfall [link]. *Scientific Reports*.
17. Meng Q., Zhou F., Ma X., Xuan J., Zhang H., **Wang, S.** et al.. Response Process of Coastal Hypoxia to a Passing Typhoon in the East China Sea [link]. *Frontiers in Marine Science*.

**2021** (4 peer-reviewed papers)

16. **Wang, S.** and Toumi, R. (2021). Recent Migration of Tropical Cyclones toward Coasts [link]. *Science*.
15. **Wang, S.** and Toumi, R. (2021). Recent tropical cyclone changes inferred from ocean surface temperature cold wakes [link]. *Scientific Reports*.
14. **Wang, S.**, Toumi, R., Ye, Q., Ke, Q., Bricker, J., Tian, Z.\* and Sun, L. (2021). Is the tropical cyclone surge in Shanghai more sensitive to landfall location or intensity change? [link] *Atmospheric Science Letters*.
13. Ke, Q., Yin, J., Bricker, J., Buonomo, E., Ye, Q., Visser, P., Dong, G., **Wang, S.**, Tian, Z., Sun, L., Toumi, R. and Jonkman, S. (2021). An integrated framework of coastal flood modelling under the failures of sea dikes: a case study in Shanghai [link]. *Natural Hazards*.

**2020** (2 peer-reviewed papers)

12. **Wang, S.**, Rashid, T., Throp, H. and Toumi, R. (2020). A shortening of the intensity life-cycle of major tropical cyclones [link]. *Geophysical Research Letters*.
11. Bruneau, N., **Wang, S.** and Toumi, R. (2020). Long memory impact of ocean mesoscale temperature anomalies on tropical cyclone size [link]. *Geophysical Research Letters*.

**2019** (2 peer-reviewed papers)

10. Sparks, N., Hon, K., Chan, P., **Wang, S.**, Chan, J., Lee, T., and Toumi, R. (2019). Aircraft Observations of Tropical Cyclone Boundary Layer Turbulence over the South China Sea [link]. *Journal of the Atmospheric Science*.
9. **Wang, S.** and Toumi, R. (2019) Impact of dry midlevel air on the tropical cyclone outer circulation [link]. *Journal of the Atmospheric Science*.

**2018** (3 peer-reviewed papers)

8. **Wang, S.** and Toumi, R. (2018). A historical analysis of the mature stage of tropical cyclones [link]. *International Journal of Climatology*.
7. **Wang, S.** and Toumi, R. (2018). Reduced sensitivity of tropical cyclone intensity and size to sea surface temperature in a radiative-convective equilibrium environment [link]. *Advances in Atmospheric Science*.
6. Bruneau, N., Toumi, R. and **Wang, S.** (2018) Impact of wave white-capping on landfalling tropical cyclones [link]. *Scientific Reports*.

**Before 2017** (5 peer-reviewed papers)

5. **Wang, S.** and Toumi, R. (2016). On the relationship between hurricane cost and the integrated wind profile [link]. *Environmental Research Letters*.
4. **Wang, S.**, Toumi, R., Czaja, A. and Van Kan, A. (2015). An analytic model of tropical cyclone wind profiles [link]. *Quarterly Journal of the Royal Meteorological Society*.
3. Li, P., Fu, G., Lu, C., Fu, D., and **Wang, S.** (2012) The formation mechanism of a spring sea fog event over the yellow sea associated with a low-level jet [link]. *Weather and Forecasting*.
2. **Wang, S.**, Fu, G., and Pang, H. (2017). Structure analyses of the explosive extratropical cyclone: A case study over the Northwestern Pacific in March 2007 [link]. *Oceanic and Coastal Sea Research*.
1. Fu, D., **Wang, S.**, Chen, D., Pang, H. and Li, P. (2012). Comparison study between observation and simulation for sea fog over the Yellow Sea in May 2009 [link]. *Oceanic and Coastal Sea Research*.

INVITED AND  
CONFERENCE  
PRESENTATIONS

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Chinese Academy of Meteorological Sciences, Beijing: “Future typhoon risk in East Asia”. **Invited seminar**, Mar. 2024.

University of Delaware, DE: “Gray swan hurricanes in western Europe: past and future”. **Invited seminar**, Mar. 2024.

Bryant University, RI: “Climate change and tropical cyclone frequency”. **Invited seminar**, Feb. 2024.

Southern University of Science and Technology, Shenzhen: “Future typhoon risk in East Asia”. **Invited talk**, Jan. 2024.

AGU, CA: “Anthropogenic forcing changes coastal tropical cyclone activities”. **Oral presentation**, Dec. 2023.

Environmental Modeling Center (NOAA/EMC), MD: “Coastal tropical cyclone changes in the past and future”. **Invited Seminar**, July. 2023.

University at Albany, NY: “Anthropogenic forcing changes coastal tropical cyclone frequency”. **Oral presentation**, June. 2023.

The 35th Conference on Hurricanes and Tropical Meteorology (AMS), New Orleans, USA: “Recent migration of tropical cyclones toward coasts”. **Oral presentation**, May. 2022.

City University of Hong Kong, HK: “Too close to comfort”. **Invited talk**, June. 2021.

Met Office, UK: “Landward migration of tropical cyclone activities”. **Invited talk**, Mar. 2021.

Princeton University, GFDL/NOAA, USA: “Tropical cyclone activities in coastal regions”. **Invited talk**, Jan. 2021.

University College London, UK: “Estimating the destructive potential of tropical cyclones”. **Invited talk**, Mar. 2019.

The 34th Conference on Hurricanes and Tropical Meteorology (AMS), virtual, USA: “Midlevel dry air and tropical cyclone structure change”. **Oral presentation**, Apr. 2020.

The 13th Conference on Mesoscale Convective Systems and High-Impact Weather in East Asia (ICMCS), Naha, Japan: “Impact of dry midlevel air on the tropical cyclone outer circulation”. **Oral presentation**, Mar. 2019.

The 33rd Conference on Hurricanes and Tropical Meteorology (AMS), Florida, USA: “A historical analysis of the mature stage of tropical cyclones”. **Oral presentation**, Apr. 2018.

The 33rd Conference on Hurricanes and Tropical Meteorology (AMS), Florida, USA: “Reduced sensitivity of tropical cyclone intensity and size to sea surface temperature in a radiative-convective equilibrium environment”. **Poster presentation**, Apr. 2018.

The 32nd Conference on Hurricanes and Tropical Meteorology (AMS), San Juan, Puerto Rico: “Hurricane cost is largely controlled by the vertical wind shear”. **Oral presentation**, Apr. 2016.

The Climate Science for Service Partnership (CSSP) China-UK Workshop, Nanjing, China: “Tropical cyclone damage and potential environmental factors”. **Oral presentation**, Nov. 2015.

National Basic Research Program Annual Meeting, Guangzhou, China: “Factors on tropical cyclone destructive potential”. **Oral presentation**, Nov. 2015.

European Geosciences Union Annual meeting, Vienna, Austria: “Factors that influence the size of tropical cyclones”. **Oral presentation**, Apr. 2015.

Korea-China Joint Workshop on Marine Environment Forecasting System for the Yellow Sea and East China Sea, Seoul, South Korea: “Explosive Extra-tropical Cyclogenesis over the Yellow Sea”. **Oral presentation**, Apr. 2012.

PROFESSIONAL  
SERVICE

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Membership

American Meteorological Society, American Geophysical Union, Royal Meteorological Society

Peer Review

**National Science Foundation**

**The Fifth National Climate Assessment**

**Journals** *Nature Climate Change, Nature Communications, Journal of Climate, Monthly Weather Review, Environmental Research Letters, Climate Dynamics, Geophysical Research Letters, Journal of Geophysical Research, Journal of Hydrometeorology, International Journal of Climatology, Natural Hazards* (among others)

MEDIA COVERAGE **The Associated Press** (2023) What makes Idalia so potent? [link]  
**The Atlantic** (2023) This hurricane season is unprecedented [link]  
**The Associated Press** (2021) Tropical cyclones are nearing land more, except in Atlantic [link]  
**U.S. News** (2021) Tropical cyclones are nearing land more [link]  
**Science Daily** (2021) Hurricanes and typhoons moving 30km closer to coasts every decade [link]  
**Carbon Brief** (2021) Recent increase in major Atlantic hurricanes after 1960-1980s lull [link]  
**The Independent** (2020) How is the ‘strongest storm of 2020’ linked to the climate crisis? [link]  
**Carbon Brief** (2020) Global warming has ‘changed’ spread of tropical cyclones around the world [link]  
**Carbon Brief** (2020) Major tropical cyclones have become ‘15% more likely’ over past 40 years [link]  
**Carbon Brief** (2018) Global warming is causing tropical storms to slow down and last longer [link]  
**BBC** (2017) Furacões estão mais frequentes e destruidores este ano? [link]

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