

Xuanyu Chen

CIRES at NOAA Physical Sciences Laboratory
325 Broadway, Boulder, CO 80305
✉ xuanyu.chen@colorado.edu
ID 0000-0003-3092-5728

Education

- 2015–2020 **University of Rhode Island**, *Graduate School of Oceanography*, Narragansett, RI.
Ph.D. in Physical Oceanography
Dissertation: Impacts of Shoaling Ocean Surface Waves on Wind Stress and Storm Surge
(Advisors: Dr. Isaac Ginis and Dr. Tetsu Hara)
- 2011–2015 **Ocean University of China**, Qingdao, China.
B.S. in Marine Science

Experience

- 02/2023–
present **Research Associate**, *Cooperative Institute for Research in Environmental Sciences (CIRES)*, University of Colorado, Boulder, CO.
Use Large Eddy Simulations to understand:
- the mechanism linking local cloudiness with sea surface temperature (SST) spatial anomalies
- the role of mesoscale SST anomalies on mesoscale cloud organization
- marine fog's impact on atmospheric boundary layer structure during the Third Wind Forecast Improvement Project
- 03/2021–
01/2023 **Post-doctoral Associate**, *Cooperative Institute for Research in Environmental Sciences (CIRES)*, University of Colorado, Boulder, CO.
- Analyzed in-situ measurements and satellite products during the ATOMIC field campaign
- Designed and configured Large Eddy Simulations with the System for Atmospheric Modeling (SAM) to investigate role of mesoscale SST anomalies on shallow convection
- Facilitated cross-team science collaboration in the NOAA Physical Sciences Laboratory
- 09/2020–
02/2021 **Post-doctoral Research Fellow**, *Graduate School of Oceanography*, University of Rhode Island, Narragansett, RI.
- Implemented an ESMF-based coupling framework for ADCIRC–WAVEWATCH III system (developed by NOAA OCS and EMC) outside of NOAA high-performing computers;
- Supported research activities through adding effects of shoaling surface wave on drag coefficient into the coupled system, communicating with collaborators, and assisting a first-year graduate student to run the coupled system.
- 09/2015–
08/2020 **Graduate Research Assistant**, *Hurricane Modeling Group and Air-Sea Interaction Lab*, GSO/URI, Narragansett, RI.
- Project 1: Modeling the combined coastal and inland hazards from high-impact hypothetical hurricanes
- Project 2: Sea-state dependent drag coefficient in coastal waters and its impacts on storm surge modeling
- 09/2017–
12/2017 **Graduate Teaching Assistant**, *OCG123: Climate Change and the Oceans*, URI.
- 09/2014 **Undergraduate Intern**, *Dong-Fang Oceanographic Station*, Hainan, China.

Publications

- 2024 **Chen, X.**, J. Dias, B. Wolding, P. N. Blossey, C. DeMott, R. Pincus, and E. J. Thompson. (2024). Impacts of Weak Sea Surface Temperature Anomalies on Trade Wind Cloudiness in Large Eddy Simulations. (submitted to JAMES) [[preprint](#)]
- Hu, I., **X. Chen**, L. Bengtsson, E. J. Thompson, J. Dias, S. Tulich. (2024). Utilizing ATOMIC observations for assessing marine shallow cumuli in single column models. (submitted to JAMES)
- 2023 **Chen, X.**, J. Dias, B. Wolding, R. Pincus, C. DeMott, G. Wick, E. J. Thompson, and C. W. Fairall. (2023). Ubiquitous Sea Surface Temperature Anomalies Increase Spatial Heterogeneity of Trade Wind Cloudiness on Daily Time Scale. *J. Atmos. Sci.*, 80, 2969–2987, <https://doi.org/10.1175/JAS-D-23-0075.1>.
- 2020 **Chen, X.**, Hara, T., Ginis, I. (2020). Impact of shoaling ocean surface waves on wind stress and drag coefficient in coastal waters: 1. Uniform wind. *Journal of Geophysical Research: Oceans*, 125, e2020JC016222.
- Chen, X.**, Ginis, I., Hara, T. (2020). Impact of shoaling ocean surface waves on wind stress and drag coefficient in coastal waters: 2. Tropical cyclones. *Journal of Geophysical Research: Oceans*, 125, e2020JC016223.
- 2019 Ullman, D. S., Ginis, I., Huang, W., Nowakowski, C., **Chen, X.**, Stempel, P. (2019). Assessing the multiple impacts of extreme hurricanes in southern New England, USA. *Geosciences*, 9(6), 265.
- 2018 **Chen, X.**, Ginis, I., Hara, T. (2018). Sensitivity of Offshore Tropical Cyclone Wave Simulations to Spatial Resolution in Wave Models. *J. Mar. Sci. Eng.* 2018, 6, 116.

Presentations

- Oral
- Chen, X., Dias, J., Wolding, B.O., Pincus, R., DeMott, C., Wick, G., Thompson, E.J., Fairall, C., and Blossey P. (2024). Mesoscale Sea Surface Temperature Warm Anomalies Excite Trade Cumulus Generation in North Atlantic Trades: *Satellite Observations & Large Eddy Simulations*. *MMM seminar at NSF NCAR, Boulder, CO, Apr 25. (Recorded)*
 - Chen, X., Dias, J., Pincus, R., DeMott, C., Wolding, B.O., Wick, G., Thompson, E.J., and Fairall, C. (2023). Trade Cumulus Cloudiness Modulated by Weak Sea Surface Temperature Anomalies during Atlantic Tradewind Ocean-Atmosphere Mesoscale Interaction Campaign. *103rd Amer. Meteor. Soc. Annually Meeting, Denver, CO, 8-12 January. (Recorded)*
 - Chen, X., Dias, J., Pincus, R., DeMott, C., Wolding, B.O. (2023). Understanding the Impact of SST Spatial Anomalies on Shallow Mesoscale Cloud Organization with Large Eddy Simulations. *103rd Amer. Meteor. Soc. Annually Meeting, Denver, CO, 8-12 January. (Recorded)*
 - Chen, X., Dias, J., Pincus, R., DeMott, C., Wolding, B.O., Wick, G., Thompson, E.J., and Fairall, C. (2022). Impacts of Mesoscale Sea Surface Temperature Gradients on Trade Cumulus Cloudiness during ATOMIC. *NOAA Physical Sciences Lab ATOMIC science day (virtual), May 2.*
 - Chen, X., Dias, J., Pincus, R., DeMott, C., Wolding, B.O., Wick, G., Thompson, E.J., and Fairall, C. (2022). Spatial Variability of Sea Surface Temperature and Mesoscale Cloud Patterns in the Trades. *EUREC4A-ATOMIC Celebrosium (virtual), Feb 14-18.*

- Chen, X., Ginis, I., Hara, T. Moghimi, S., Abdolali, A., Van der Westhuysen., A. (2021). Implementation of a Flexible ADCIRC-WAVEWATCH III Coupling System. *DHS Coastal Resilience Center 6th Annual Meeting. Virtual, Apr 21. (Recorded)*
- Chen, X., Ginis, I., Hara, T. (2021). Impacts of Shoaling Ocean Surface Waves on Wind Stress and Drag Coefficient. *DHS Coastal Resilience Center 6th Annual Meeting. Virtual, Apr 21. (Recorded)*
- Chen, X., I. Ginis, T. Hara. (2018). Sea-state dependent drag coefficient in shallow water under tropical cyclones. *21st Amer. Meteor. Soc. Conf. on Air-Sea Interaction, Oklahoma City, OK, 11-15 June. (Recorded)*
- Poster ○ Chen, X., J. Dias, R. Pincus, C. DeMott, B.Wolding, G. Wick, E.Thompson, and C.Fairall. (2022). Understanding the Role of Sea Surface Temperature Warm Anomalies in Mesoscale Organization of Shallow Cumulus in the Northwestern Atlantic Trade Wind Boundary Layer, Abstract [AIP06-4488] presented at Virtual Ocean Sciences Meeting 2022, Feb 28 – Mar 4.
- Chen, X., Ginis, I., Hara, T. (2020). Numerical Study of Wind Stress in Coastal Water Under a Tropical Cyclone, Abstract [AI24B-2331] presented at Ocean Sciences Meeting 2020, San Diego, CA, 16-21 Dec.
- Hara, T., Chen, X., Ginis, I. (2020). Impact of Shoaling Wind Waves on Drag Coefficient in Finite Depth, Abstract [AI44A-2413] presented at Ocean Sciences Meeting 2020, San Diego, CA, 16-21 Dec.

Technical Skills

Numerical Modelling **Ocean Surface Waves, Storm Surge, Cloud-resolving Large Eddy Simulations.**

- WAVEWATCH III and SWAN
- ADCIRC (The ADvanced CIRCulation Model)
- SAM (System for Atmospheric Modeling)

Programming MATLAB, FORTRAN, Python

Scripting Linux Shell

Software GitHub, LaTeX

Grants

2024-2025 CIRES Innovative Research Program (Role: PI; Amount awarded: \$26,011)

Awards

- 2019 William E. Simmons Memorial Scholarship Award in Oceanography for research expected to be of real economic value, *GSO/URI*
- 2018 3rd Place Student Oral Presentation, 21st Conference on Air-Sea Interaction, Oklahoma, *American Meteorological Society*
- 2018 Marine Science Award, Thomas and Kathy J. McNiff Graduate Student Endowment, *GSO/URI*
- 2016, 2017 GSO Alumni Awards, *GSO/URI*
- 2012–2014 Scholarship for Academic Excellence, Ocean University of China
- 2013 Outstanding Volunteer Teacher, Shi-Lao-Ren Primary School, Qingdao, China

Service

- 2024–2025 **CIRES Innovative Research Proposal Reviewers Committee**, University of Colorado Boulder.
- 2020–present **Journal Reviewer**.
including Journal of Geophysical Research: Oceans, Journal of Advances in Modeling Earth Systems, & Ocean Modelling, among others
- 10/2022– **Postdoc Peer Mentoring Program**, University of Colorado Boulder.
01/2023 Serving as a peer-mentor to a 1st year CU postdoc.
- 2017–2018 **Student Coordinator for Physical Oceanography Seminar Series**, GSO/URI.
- Summer 2017 **Research Mentor to a SURFO undergraduate student**, GSO/URI.
- 03/2017 **Webinar talk “Storm Surge 101” to high school students**, MaTTS project, GSO/URI.
- 10/2012– **Volunteer Teacher to 4th graders**, Shi-Lao-Ren Primary School, Qingdao, China.
05/2013