MINGMING SHAO

Email: mshao@earth.miami.edu \diamond umshao@gmail.com

EDUCATION

Rosenstiel School, University of Miami, Miami, USA Ph.D. , Applied Marine Physics (Advisor: Prof. Brian Haus) Thesis: Air-sea Interaction and Submesoscale Processes near Fronts	Jan 2015 — Aug 2020
Zhejiang University, Hangzhou, China M.S., Coastal Engineering Thesis: Impacts of Reclamation on Tidal Dynamics in Hangzhou Bay	Sep 2013 — Jun 2015
Xiamen University, Xiamen, China B.S. , Physical Oceanography & Economics (minor)	Sep 2009 — Jun 2013

PROFESSIONAL EXPERIENCE

NOAA/AOML and CIMAS, Miami, FL, USA Postdoc Associate	Aug 2023 — date
Woods Hole Oceanographic Institution, Woods Hole, MA, USA Postdoc Associate	Aug 2022 — Jul 2023
The Hong Kong University of Science and Technology, HK & GZ, China Postdoc Associate & Research Associate	Dec 2020 — Jul 2022
Rosenstiel School, University of Miami, FL, USA Research Assistant & Teaching Assistant	Jan 2015 — Aug 2020

RESEARCH INTERESTS

- \cdot (Sub)Mesoscale air-sea coupling; Air-sea fluxes measurements
- · Upper ocean dynamics (submesoscale processes, internal waves, budget analysis, etc)
- · Tank experiments of wave-turbulence interactions
- · Atmosphere-wave-ocean coupled model; HAFS coupled model
- \cdot Machine learning; Retrieval of air-sea variables from microwave radiometer

PUBLICATIONS

- 1. Mingming Shao^{*}, Brian K.Haus, Jody M.Klymak, Björn Lund, Jochen Horstmann, Tamay M. Özgökmen. High-frequency internal waves catalyzed by submesoscale fronts. *JGR-Oceans*, revised
- Mingming Shao^{*}, Lichuan Wu. Atmospheric Fronts Shaping the (Sub)Mesoscale SST-Wind Coupling Over the Southern Ocean: Observational Case. https://doi.org/10.1029/2023JD039386, JGR-Atmospheres
- Mingming Shao^{*}, D.G.Ortiz-Suslow, Brian K.Haus, Björn Lund, N. Williams, Tamay M. Özgökmen, N.J.M.laxague, Jochen Horstmann, Jody M.Klymak. The Variability of winds and fluxes observed near submesoscale fronts. *JGR-Oceans*, https://doi.org/10.1029/2019JC015236
- 4. Lichuan Wu, **Mingming Shao**, Eric Shalée. Impact of air-wave-sea coupling on the simulation of offshore wind and wave energy potentials. *Atmosphere*, https://doi.org/10.3390/atmos11040327

- 5. Darek Bogucki, Brian Haus, Mohammed Barzegar, **Mingming Shao**, Julian Domaradzki. On the nature of the turbulent energy dissipation beneath non-breaking waves. *Geophysical Research Letters*, https://doi.org/10.1029/2020GL090138
- Shelby Metoyer, Mohammed, Darek Bogucki, B.K.Haus, Mingming Shao. Small-scale surface velocity in grid generated turbulence. *Journal of Atmospheric and Oceanic Technology*, https://doi.org/10.1175/JTECH-D-19-0183.1
- 7. Mohammed, Darek Bogucki, B.K.Haus, **Mingming Shao**. The response of the surface boundary layer to a weak forcing. https://doi.org/10.3390/jmse9020217, *Journal of Marine Science and Engineering*
- 8. Mohammed, Darek Bogucki, B.K.Haus, Tamay M. Özgökmen, **Mingming Shao**. Turbulence and surface heat flux changes across a submesoscale front in Gulf of Mexico. *Journal of Marine Science and Engineering*, https://doi.org/10.3390/jmse9040402
- 9. Mingming Shao, Li Li, Zhiguo He. Land reclamation in Hangzhou Bay and its impact on tidal dynamics over recent 10 years. *Bulletin of Science and Technology*, 2017, (In Chinese with English Abstract)

PUBLICATIONS: BOOK CHAPTER & DATASET

- Li Li, Taoyan Ye, Xiaohua Wang, Zhiguo He, Mingming Shao. Changes in the Hydrodynamics of Hangzhou Bay Due to Land Reclamation in the Past 60 Years. Paperback ISBN: 9780128119778. doi: https://doi.org/10.1016/B978-0-12-811977-8.00005-4
- 2. Mingming Shao, B.K.Haus, Darek Bogucki, Mohammed. Temporal and spatial scaling of dissipation under non-breaking surface waves. doi: https://doi.org/10.17604/t66y-bz87

MANUSCRIPTS IN PREPARATION

- 1. Mingming Shao^{*}, Hyun-Sook Kim, Rick Lumpkin. Ocean surface wave-current interaction signatures from drifter measurements. (in preparation)
- 2. Mingming Shao^{*}, Hyun-Sook Kim. The heat budget analysis using 3-way coupling for Hurricane Laura. (in preparation)
- 3. Mingming Shao^{*} et al. Submesoscale processes observed in changing wind conditions. Part I: cross-front wind. (submitted)
- 4. Mingming Shao^{*} et al. Atmospheric surface layer turbulence across oceanic submesoscale fronts. (submitted)

CONFERENCE PRESENTATIONS

GRC Ocean Mixing Conference	South Hadley, Feb 2024
\cdot $Poster:$ High-frequency internal waves catalyzed by	submesoscale fronts
Ocean Science Meeting	New Orleans, Feb 2024
\cdot $Poster:$ Submesoscale processes observed in changin	g atmospheric conditions
Submesoscale Air-sea Coupling Workshop	Leiden, Sep 2023
\cdot $Poster:$ Atmospheric Fronts Shaping the (Sub)Mesos	cale SST-Wind Coupling Over the Southern Ocean $% \mathcal{O}(\mathcal{O})$
Frontal and Mesoscale Air-sea Interaction We	Boulder, Mar 2023
\cdot Poster: Atmospheric Processes shaping the frontal-s over the Southern Ocean: observation case	cale time-mean surface wind convergence patterns
Ocean Science Meeting	Online, Feb 2022

$\cdot~$ Talk: Saildrone observed air-sea fluxes variation at submesoscale and its	s impacts on mixed layer
Department Seminar	Uppsala University, Sep 2021
\cdot Invited talk: Atmospheric boundary layer response to SST gradients: the	e $in \ situ$ observational evidence
Ocean Science Meeting	San Diego, Feb 2020
\cdot $Poster:$ Observations of high-frequency internal waves near submesoscal	le fronts.
AGU Fall Meeting	San Francisco, Dec 2019
$\cdot \ Poster:$ Atmospheric surface layer turbulence response to submesoscale	fronts
Gulf of Mexico Oil Spill and Ecosystem Meeting	New Orleans, Feb 2019
\cdot $Poster:$ Observed high-frequency internal waves accompanied by unstable	ble submesoscale front.
CARTHE Meeting	Miami, Nov 2018
$\cdot~$ Talk: Observed high-frequency internal wave accompanied by unstable s	submesoscale front.
The 3rd Workshop on Ocean Surface Waves and Wave-Couple	Process Hangzhou, Oct 2018
\cdot Talk: Wave-coherent momentum fluxes observed on a moving vessel	
CARTHE Meeting	Miami, May 2018
$\cdot~$ Talk: Radar observations of symmetric instability near the submesoscale	e fronts in the Gulf of Mexico.
Ocean Science Meeting	Portland, Jan 2018
\cdot $Poster:$ The variability of winds and fluxes observed near submesoscale	fronts.
CARTHE Meeting	Miami, May 2017
\cdot Talk: The variability of fluxes observed near submesoscale fronts.	
Gulf of Mexico Oil Spill and Ecosystem Meeting	New Orleans, Feb 2017
$\cdot~$ Talk: The variability of winds and fluxes observed near submesoscale free	onts.
Ocean Science Meeting	New Orleans, Feb 2016
\cdot Poster: Multi-sensor Observation of Grid Turbulence.	

AWARD

- $\cdot\,$ Travel grant received to attend the workshop on "Atmosphere-ocean coupling at (sub)mesoscales", Leiden, the Netherlands, Sep 2023.
- Travel grant received as an early career scientist to attend the US CLIVAR Mesoscale and Frontal-Scale Air-Sea Interactions Workshop, Boulder, CO, USA, Mar 2023.

RESEARCH CRUISE EXPERIENCE

- Research cruise experience in Gulf of Mexico during Submesoscale Processes and Lagrangian Analysis on the Shelf (SPLASH) (8 days, April 2017)
- Research cruise experience in Gulf of Mexico during Lagrangian Submesoscale Experiment (LASER) (28 days, Jan-Feb 2016)
- $\cdot\,$ Research cruise experience in East China Sea (30 days, October 2014)

PROFESSIONAL AFFILIATIONS & ACTIVITIES

American Geophysical Union (AGU)

Reviewer for Geophysical Research Letters, JGR-Oceans, Monthly Weather Review, Atmosphere, AOML internal manuscript

TEACHING ASSISTANT EXPERIENCE

Environmental Statistics, Spring 2017, 2018, RSMAS

SUMMER SCHOOL & WORKSHOP

Fluid Dynamics of Sustainability & Environment Summer School Cambridge, Sep 2018

 $\cdot~$ – University of Cambridge

The 1st Workshop on Data Science in Oceanography & OOI data Seattle, August 2018

 $\cdot~$ – Invited participant at University of Washington

The 1st Workshop on Upper Ocean Turbulence

Poland, August 2016

 $\cdot~$ – Gdańsk University of Technology

SKILLS

Scientific Tools	WRF, GOTM, FVCOM, Delft3d, MOM6, HYCOM, WWIII, Sklearn, etc
Experiment Tools	PIV, Hot-film, Snoics, ADCPs, CTD, VMP, MVP, IR-Camera, etc
Languages	English, Mandarin Chinese (native)