

# Yanxu Chen

Woods Hole Oceanographic Institution

Department of Physical Oceanography

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## EDUCATION

- École Normale Supérieure (ENS), Université Paris Sciences et Lettres (PSL)** Paris, France  
Dec 2018-Sep 2022
- Ph.D., Laboratoire de Météorologie Dynamique (LMD)
  - Thesis title: Ocean ventilation at the mesoscale.
  - Advisor: Sabrina Speich
- McGill University** Montreal, Canada  
Sep 2016-Dec 2018
- M.Sc., Department of Atmospheric and Oceanic Sciences
  - Thesis title: Flow-dependent Ekman theory.
  - Advisors: David Straub and Louis-Philippe Nadeau
- Sun Yat-sen University (SYSU)** Guangzhou, China  
Sep 2012-Jun 2016
- B.Sc., School of Marine Sciences
  - Thesis title: Combined effects of river discharge and tidal range on estuary water levels.
  - Thesis advisors: Qingshu Yang and Huayang Cai
- Hong Kong University of Science and Technology (HKUST)** Hong Kong  
Jun-Aug 2014
- Summer Exchange

## WORK EXPERIENCE

- Woods Hole Oceanographic Institution** Woods Hole, US  
Sep 2022-Current
- Postdoc Investigator, Department of Physical Oceanography
  - Advisors: Viviane Menezes and Lisan Yu
  - **Research Project 1:** Ocean mesoscale eddy-induced air-sea heat budgets.
  - **Research Project 2:** NASA's SASSIE campaign: Chukchi-Beaufort Seas' summer meteorology.
  - **Research Project 3:** Winter air-sea interaction in the Red Sea and Persian/Arabian Gulf.
  - **Research Project 4:** Modulation of heat loss by ocean stratification in tropical cyclone cold wakes.
- University of Alberta** Edmonton, Canada  
May-Sep 2015
- Undergrad Research Intern, Department of Earth and Atmospheric Sciences
  - Advisor: Paul Myers
  - **Research Project:** Assessment of freshwater budget through major straits around the Greenland (by comparing numerical runs to investigate the stratification and freshwater transport).

## FIELDWORK

### Wind Forecast Improvement Project (WFIP-3)

Woods Hole, US  
Sep 2024-Current

- Scientific Member
- Activities: Atmospheric sounding launches to investigate the marine boundary layer stability.

### EUREC4A Campaign R/V L'Atalante

south of Barbados  
Jan-Feb 2020

- Scientific Crew Member
- Activities: Deployments of several instruments, mainly CTD casts, uCTDs, XBTs and Argo floats; Water mass (mode water) detection with the proceeding shipborne data.

## PUBLICATIONS

- 2025** **Chen, Y.**, Yu, L., and Zhang, C. "Impacts of atmospheric near-surface stability on the Arctic summer air-sea heat budget assessed with uncrewed surface vehicles." *Journal of Geophysical Research: Oceans*. <https://doi.org/10.1029/2024JC022313>
- 2024** **Chen, Y.**, and Yu, L. "Mesoscale meridional heat transport inferred from sea surface observations." *Geophysical Research Letters*. <https://doi.org/10.1029/2023GL106376>
- Chen, Y.**, and Yu, L. "Signature of mesoscale eddies on air-sea heat fluxes in the North Indian Ocean." *Journal of Geophysical Research: Oceans*. <https://doi.org/10.1029/2023JC019878>
- Carrigg, J., Yu, L., Menezes, V., and **Chen, Y.** "Autumnal equinox shift in Arctic surface energy budget: Beaufort-Chukchi Seas case study." *Journal of Geophysical Research: Oceans*. <https://doi.org/10.1029/2023JC020788>
- 2023** Yu, L., **Chen, Y.**, Gonzalez, A., Zhang, C., and Foltz, G. "Dry air outbreak and significant surface turbulent heat loss during hurricane Ian: satellite and saildrone observations." *Geophysical Research Letters*. <https://doi.org/10.1029/2023GL105583>
- 2022** **Chen, Y.**, Speich, S., and Laxenaire, R. "Formation and transport of the South Atlantic subtropical mode water in eddy-permitting observations." *Journal of Geophysical Research: Oceans*. <https://doi.org/10.1029/2021JC017767>
- 2021** **Chen, Y.**, Straub, D., and Nadeau, L-P. "Interaction of nonlinear Ekman pumping, near-inertial oscillations, and geostrophic turbulence in an idealized coupled model." *Journal of Physical Oceanography*. <https://doi.org/10.1175/JPO-D-20-0268.1>
- Stevens, B., ... **Chen, Y.**, ... et al. "EUREC4A." *Earth System Science Data*. <https://doi.org/10.5194/essd-13-4067-2021>
- Under review** **Chen, Y.**, Menezes, V., and Yu, L. "Physical phenology of air-sea heat budget for the Beaufort Sea autumn freeze-up." under review in the *Journal of Climate*.
- Chen, Y.**, and Speich, S. "Role of mesoscale eddies in global mode water distribution and ventilation." in revision for the *Geophysical Research Letters*.
- Chen, Y.**, Menezes, V., Al Senafi, F., and Churchill, J. "Air-sea heat loss in cyclonic eddies: dense water formation against the paradigm?" in preparation.
- Chen, Y.**, Barnier, S., and Yu, L. "Mixed-layer heat loss in cold wakes of rapidly intensifying tropical cyclones." in preparation.
- Laws, K., Gonzalez, A., **Chen, Y.**, Yu, L., and Neale, R. "The effect of upper ocean freshwater on the rapid intensity changes of hurricane Lee." in preparation.
- Chen, Y.**, Speich, S., and Straub, D. "Water mass subduction in an isopycnic coordinate." in preparation.
- Others** Contributor to "Polar Early Career World Summit Synthesis Report." 2025. <https://doi.org/10.5281/zenodo.16994869>

## TEACHING EXPERIENCE

<b>Mentor for the Summer Student Fellow (WHOI)</b> <ul style="list-style-type: none"><li>• SSF student: Chelone Laws from University of Wisconsin-Madison</li><li>• Study on hurricane intensification induced by ocean freshwater pools.</li></ul>	Summer 2025
<b>Mentor for the Summer Student Fellow (WHOI)</b> <ul style="list-style-type: none"><li>• SSF student: Sean Barnier from Embry-Riddle Aeronautical University</li><li>• Study on ocean's responses to tropical cyclones.</li></ul>	Summer 2024
<b>Mentor for the Summer Student Fellow (WHOI)</b> <ul style="list-style-type: none"><li>• SSF student: Joe Carrigg from Oregon State University</li><li>• Study on air-sea heat budget in the Arctic Ocean.</li></ul>	Summer 2023
<b>One lecture in the course: Submesoscale Ocean Processes (WHOI)</b> <ul style="list-style-type: none"><li>• Course instructor: Amala Mahadevan</li></ul>	Fall 2022
<b>Teaching Assistant: Introduction to Oceanic Sciences (McGill)</b> <ul style="list-style-type: none"><li>• Course instructor: Carolina Dufour</li></ul>	Winter 2018
<b>Teaching Assistant: Natural Disasters (McGill)</b> <ul style="list-style-type: none"><li>• Course instructor: John Gyakum and Souad Guernina</li></ul>	Fall 2017
<b>Teaching Assistant: Pearl River Delta Field Trip (SYSU)</b> <ul style="list-style-type: none"><li>• Field trip instructor: Yaping Lei</li></ul>	Fall 2015

## PRESENTATIONS

<ul style="list-style-type: none"><li>• <b>WHOI Physical Oceanography Buoy Lunch 2025</b></li></ul> Talk: Peer review survey	Woods Hole, US
<ul style="list-style-type: none"><li>• <b>WHOI Polar Day 2025</b></li></ul> Short talk: Physical phenology of air-sea heat budget for the Beaufort Sea autumn freeze-up	Woods Hole, US
<ul style="list-style-type: none"><li>• <b>WHOI Physical Oceanography Seminar 2025</b></li></ul> Talk: Seabird foraging along tropical cyclones: linking marine ecology and ocean dynamics	Woods Hole, US
<ul style="list-style-type: none"><li>• <b>University of Rhode Island PO Seminar 2025</b></li></ul> Talk: Eddy-induced air-sea coupling in momentum and heat budgets	Narragansett, US
<ul style="list-style-type: none"><li>• <b>WHOI Postdoc Symposium 2025</b></li></ul> Talk: Mixed-layer heat loss in cold wakes of rapidly intensifying tropical cyclones	Woods Hole, US
<ul style="list-style-type: none"><li>• <b>WHOI Physical Oceanography Seminar 2024</b></li></ul> Talk: Eddy-induced air-sea coupling in momentum and heat budgets	Woods Hole, US
<ul style="list-style-type: none"><li>• <b>Ocean Sciences Meeting 2024</b></li></ul> Poster: Physical phenology of air-sea heat budget in the Beaufort Sea autumn freeze-up	New Orleans, US
<ul style="list-style-type: none"><li>• <b>CAMAS Workshop 2024</b></li></ul> Talk: Physical phenology of air-sea heat budget in the Beaufort Sea autumn freeze-up	Santa Fe, US
<ul style="list-style-type: none"><li>• <b>Eddy Energy Annual Meeting 2023</b></li></ul> Talk: Signature of mesoscale eddies on air-sea heat fluxes: strong compensation between SSH-SST coherent and incoherent eddies	Woods Hole, US
<ul style="list-style-type: none"><li>• <b>Mesoscale and Frontal-Scale Air-Sea Interactions Workshop 2023</b></li></ul> Talk: Signature of mesoscale eddies on air-sea heat fluxes: strong compensation between SSH-SST coherent and incoherent eddies	Boulder, US

<ul style="list-style-type: none"> <li>• <b>Imaginary Futures Workshop (Arts and Sciences) 2022</b> Creation: Sound waves in water</li> </ul>	Paris, France
<ul style="list-style-type: none"> <li>• <b>Laws of Nature Conference (Philosophy) 2022</b> Short talk: The role of ocean in the warming climate</li> </ul>	Munich, Germany
<ul style="list-style-type: none"> <li>• <b>FDSE Summer School 2022</b> Poster: Water mass subduction in the isopycnic coordinate</li> </ul>	Paris, France
<ul style="list-style-type: none"> <li>• <b>EUREC4A-OA Workshop 2022</b> Talk: Water mass subduction in the isopycnic coordinate</li> </ul>	Paris, France
<ul style="list-style-type: none"> <li>• <b>BGC-Argo Science Webinar (SOCCOM) 2022</b> Talk: Global mode water detection and its representation in heat transport</li> </ul>	Virtually
<ul style="list-style-type: none"> <li>• <b>Ocean Sciences Meeting 2022</b> Talk: Global mode water detection and its representation in heat transport</li> </ul>	Virtually
<ul style="list-style-type: none"> <li>• <b>TRIATLAS General Assembly 2021</b> Poster: Formation and transport of the South Atlantic subtropical mode water in eddy-permitting observations</li> </ul>	Virtually
<ul style="list-style-type: none"> <li>• <b>LMD Webinar 2021: Mesoscale dynamics and air-sea interactions</b> Talk: The South Atlantic subtropical mode water in eddy-permitting observations</li> </ul>	Virtually
<ul style="list-style-type: none"> <li>• <b>AGU Fall Meeting 2020</b> Talk: Effect of mesoscale eddies on mode water formation, transport and heat uptake in the world ocean</li> </ul>	Virtually
<ul style="list-style-type: none"> <li>• <b>EGU General Assembly 2020</b> Talk: Effect of mesoscale eddies on subtropical mode water formation and ocean heat storage</li> </ul>	Virtually
<ul style="list-style-type: none"> <li>• <b>EUREC4A Planning Workshop 2019</b> Talk: The effect of mesoscale eddies on air-sea interactions</li> </ul>	Paris, France
<ul style="list-style-type: none"> <li>• <b>EGU General Assembly 2019</b> Talk: Flow-dependent Ekman theory and its application to shallow water models</li> </ul>	Vienna, Austria
<ul style="list-style-type: none"> <li>• <b>McGill AOS Student Seminar 2018</b> Talk: Flow-dependent Ekman theory</li> </ul>	Montreal, Canada
<ul style="list-style-type: none"> <li>• <b>Ocean Mixing Gordon Research Conference 2018</b> Poster: Flow-dependent Ekman theory</li> </ul>	Andover, US
<ul style="list-style-type: none"> <li>• <b>Seminar at École Normale Supérieure 2018</b> Talk: Flow-dependent Ekman theory</li> </ul>	Paris, France
<ul style="list-style-type: none"> <li>• <b>Ocean Sciences Meeting 2018</b> Poster: A shallow water model forced by flow-dependent Ekman pumping</li> </ul>	Portland, US
<ul style="list-style-type: none"> <li>• <b>Ocean Mesoscale Eddy Interaction with the Atmosphere Workshop 2018</b> Poster: The application of flow-dependent Ekman transport to a two-layer shallow water model</li> </ul>	Portland, US
<ul style="list-style-type: none"> <li>• <b>McGill AOS Student Seminar 2017</b> Talk: Wind-driven Ekman transport of curvilinear flows</li> </ul>	Montreal, Canada
<ul style="list-style-type: none"> <li>• <b>51st CMOS Congress 2017</b> Poster: Frequency analysis of wind forcing over ocean gyres</li> </ul>	Toronto, Canada
<ul style="list-style-type: none"> <li>• <b>University of Alberta Summer Poster Symposium 2015</b> Poster: Comparison of different ANHA simulations and analysis of time series for straits near Greenland</li> </ul>	Edmonton, Canada

## GRANTS, FELLOWSHIPS AND AWARDS

- 2025 **Grant:** Massachusetts' FY26 Creative Experiences \$5k (Mass Cultural Council)  
**Travel Award:** Polar Early Career World Summit (PECWS)
- 2024 **Travel Award:** Consortium for the Advancement of Marine Arctic Science (CAMAS) Workshop
- 2023 **Travel Award:** Mesoscale and Frontal-Scale Air-Sea Interactions Workshop
- 2019 **Research Grant:** PhD study in École Normale Supérieure from the CHANEL company
- 2018 **Travel Award:** Graduate Research Enhancement and Travel Award (McGill)
- 2017 **Research Grant:** Stephen and Anastasia Mysak Graduate Fellowship (McGill)  
**Research Grant:** Graduate Excellence Fellowship (McGill)  
**Travel Award:** Graduate Research Enhancement and Travel Award (McGill)  
**Travel Award:** World Climate Research Programme (WCRP)
- 2016 **Research Grant:** Stephen and Anastasia Mysak Graduate Fellowship (McGill)  
**Research Grant:** Graduate Excellence Fellowship (McGill)  
**Research Grant:** Mitacs Globalink Graduate Fellowship (Mitacs)  
**Study Award:** Outstanding Graduate of Sun Yat-sen University (Rank #1 in GPA)
- 2015 **Study Award:** Sun Yat-sen University Scholarship for Outstanding Students  
**Study Award:** Research Scholarship from China Scholarship Council  
**Study Award:** Second Prize of the National Ocean Knowledge Competition
- 2014 **Study Award:** Sun Yat-sen University Scholarship for Outstanding Students  
**Study Award:** Baogang Scholarship for Excellent Students (top 3 students in SYSU)  
**Research Grant:** Province-based Research Training Program (SYSU)  
**Research Grant:** National Entrepreneurship Training Program (SYSU)
- 2013 **Study Award:** Sun Yat-sen University Scholarship for Outstanding Students  
**Study Award:** National Scholarship at Sun Yat-sen University (Rank #1 in GPA)

## SERVICES AND OUTREACH

- Peer Reviews**
- Geophysical Research Letters (American Geophysical Union)
  - Journal of Geophysical Research: Oceans (American Geophysical Union)
  - Journal of Physical Oceanography (American Meteorological Society)
  - Journal of Climate (American Meteorological Society)
  - Journal of Atmospheric and Oceanic Technology (American Meteorological Society)
  - Frontiers in Marine Science (Frontiers Media)
  - Journal of Operational Oceanography (Taylor & Francis Group)
- Conference Convening**
- Arctic-Antarctic Connections: Physics, Conservation, and Society (Polar Early Career World Summit 2025)
  - Upcoming Session: Mesoscale Air-Sea Interaction (AGU 2025)
- Outreach**
- **Education Program:** Woods Hole Science Stroll 2025
  - **Education Program:** Exhibitor at Falmouth Schools preK-12 STEAM Fair 2025
  - **Education Program:** Representative at WHOI-MBL-NOAA Girls Empowerment and Leadership (GELI) Summit 2025
  - **Cultural Program:** Exhibitor at Falmouth Annual Multicultural Fair 2025
  - **Visual Arts Program:** Artist for Falmouth Art Center Fundraiser Program 2024
  - **Music Program:** Musician for WHOI Tunes at Noon 2024
- Management**
- Organizer for postdoc lunch with WHOI PO scientists and staff 2025
  - Coordinator for WHOI PO seminars 2025
  - Leader for a global survey on peer review and publishing in Earth sciences 2025

## MISCELLANEOUS

Other languages: mother tongue in Chinese Mandarin and B2 level of French.