

DANIEL P. DAUHAJRE

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EDUCATION

B.S. Biomedical Engineering, University of Southern California May 2011
M.S. Atmospheric and Oceanic Sciences, University of California, Los Angeles June 2014
Ph.D. Atmospheric and Oceanic Sciences, University of California, Los Angeles January 2019
Dissertation: Submesoscale Currents on the Continental Shelf
Advisor: James C. McWilliams

PROFESSIONAL EXPERIENCE

University of California, Los Angeles

Assistant Researcher, Dept. of Atmospheric and Oceanic Sciences July 2022 - present
Postdoctoral Scholar, Dept. of Atmospheric and Oceanic Sciences April 2019 - June 2022
Staff Research Associate, Dept. of Atmospheric and Oceanic Sciences February 2019 - March 2019
Graduate Research Assistant, Dept. of Atmospheric and Oceanic Sciences August 2012 - January 2019
Teaching Assistant, Dept. of Atmospheric and Oceanic Sciences 2015-2016

Santa Monica College

Adjunct Faculty, Dept. of Earth Sciences February 2023 - present

PUBLICATIONS

In Preparation

Dauhajre, D.P., Srinivasan K., Molemaker, M.J., Gula, J., Hypolite, D., McWilliams, J.C., Barkan, R., and Young, W.R. (2023), Can Vertical Mixing Induce Frontogenesis in the Surface Boundary Layer?. In preparation for *J. Phys. Ocean.*

Hypolite, D., **Dauhajre, D.P.**, McWilliams, J.C., and Romero, L. (2023), The Regional Oceanic Modeling System with Non-Conservative broadband surface gravity Wave Effects on Currents (ROMS- NCWEC). In preparation for *Geoscientific Model Development*

Molemaker, M., Damien, P., **Dauhajre, D.P.**, and McWilliams, J.C. (2023), The Pacific echo chamber: Phase locking and patterns in the internal tide. In preparation for *Nature Geoscience*

Peer-reviewed Journal Articles

- Dauhajre, D. P.**, McWilliams, J.C., and Hypolite, D., (2023), Interactions Between Internal Tidal Bores and Submesoscale Currents on the Continental Shelf. *J. Geophys. Res. Oceans*, 128, e2022JC018747. doi.org/10.1029/2022JC018747
- Hypolite D., Romero, L., McWilliams, J.C., and **Dauhajre, D.P.** (2023), Langmuir Circulations Transfer Kinetic Energy from Submesoscales to Dissipative Scales. *J. Phys. Ocean.*, **53**. 253-268. doi.org/10.1175/JPO-D-22-0126.1
- Frieder, C., Yan, C., Chamecki, M., **Dauhajre, D.**, McWilliams, J.C., Infante, J., MchPherson, M., Kudela, R., Kessouri, F., Sutula, M., Arzeno-Soltero, I., and Davis, K. (2022), A macroalgal cultivation modeling system (MACMODS): Evaluating the role of physical-biological coupling on nutrients and farm yield. *Frontiers in Marine Science*, **9**, doi.org/10.3389/fmars.2022.752951
- Dauhajre, D. P.**, Molemaker M.J., McWilliams, J.C., and Hypolite, D., (2021), Effects of Stratification on Shoaling Internal Tidal Bores. *J. Phys. Ocean.*, **51**. 3183 - 3202. doi.org/10.1175/JPO-D-21-0107.1

5. Hypolite D., Romero, L., McWilliams, J.C., and **Dauhajre, D.P.** (2021), Surface Gravity Wave Effects on Submesoscale Currents in the Open Ocean. *J. Phys. Ocean.*, **51**. 3365 - 3383. doi.org/10.1175/JPO-D-20-0306.1
4. Sun, D., Bracco, A., Barkan, R., Berta, M., **Dauhajre, D.P.**, Molemaker, M.J., Choi, J., Liu, G., Griffa, A., and McWilliams, J.C. (2020), Diurnal Cycling of Submesoscale Dynamics: Lagrangian Implications in Drifter Observations and Model Simulations of the Northern Gulf of Mexico. *J. Phys. Ocean.*, **50**. 1605-1623. doi.org/10.1175/JPO-D-19-0241.1
3. **Dauhajre, D.P.**, McWilliams, J.C., and Renault, L. (2019), Nearshore Lagrangian Connectivity: Submesoscale Influence and Resolution Sensitivity *J. Geophys. Res. Oceans*, **124**. 5180-5204. doi.org/10.1029/2019JC014943
2. **Dauhajre, D. P.** and McWilliams, J. C. (2018), Diurnal Evolution of Submesoscale Front and Filament Circulations. *J. Phys. Ocean.*, **48**. 2343 - 2361. doi.org/10.1175/JPO-D-18-0143.1
1. **Dauhajre, D. P.**, McWilliams, J. C., and Uchiyama, Y. (2017), Submesoscale Coherent Structures on the Continental Shelf. *J. Phys. Ocean.*, **47**. 2949 - 2976. doi.org/10.1175/JPO-D-16-0270.1

Non-peer Reviewed White Papers

Dauhajre, D.P., Bell, T., and Siegel, D. (2023), Considerations for Regional Simulations of Seaweed Carbon Dioxide Removal. doi.org/10.31223/X52Q1N

Krause, S.J., **Dauhajre, D.P.**, Bell, T., Miller, R., Valentine, D., and Siegel, D. (2023), Comparing Kelp Conveyance Strategies for Marine Carbon Dioxide Removal with Farmed Macroalgae. doi.org/10.31223/X5M66B

Theses

Dauhajre, D. P. (2019), Submesoscale Currents on the Continental Shelf. Ph.D. Dissertation. University of California, Los Angeles ([Link](#))

RESEARCH SUPPORT

External Awarded (\$480,667 cumulative)

Belford, S. (U. Tenn. Southern), Beck, E (U. Oregon), Hypolite, D. (UCLA), **Dauhajre, D.P.**

Support to develop collaborative proposal between MSI and R1 institutions

NSF Diverse Ocean Science Community through Collaboration \$8,000 (total)

2023

Dauhajre, D.P. (PI), Hypolite, D. (UCLA, co-PI), and J.C. McWilliams (UCLA, co-PI), "Submesoscale and Surface Gravity Wave Interactions on the Continental Shelf",

NSF Physical Oceanography, Award #2124174, \$472,667 (total)

January 2022 - December 2024

Fellowships

Santa Barbara Coastal LTER Graduate Student Fellowship

Summer Quarters 2014 - 2017

TEACHING EXPERIENCE

Adjunct Professor, SMC GEOL 31: Introduction to Physical Oceanography

February 2023-present

Guest Lecturer, UCLA AOS 130: California's Ocean

2017-present

Guest Lecturer, UCLA AOS 103: Introduction to Physical Oceanography

2015,2017

Guest Lecturer, UCLA AOS: Python Seminar

2016

Teaching Assistant, UCLA AOS 103: Introduction to Physical Oceanography

2015-2016

RESEARCH MENTORSHIP

Garret Staller (undergraduate student), Marine Operations, UCLA

January 2023 - present

Co-advised with Andrew Stewart (UCLA) and Jeroen Molemaker (UCLA)

Minna Ho (undergraduate student), Senior Research Project, UCLA

2016

Co-advised with James McWilliams (UCLA)

AWARDS

Jacob A. Bjerknes Memorial Award , UCLA AOS: “for innovative discoveries of submesoscale currents on continental shelves and superior communication of results”	November 2018
Best Student Talk (voted by attendees), Eastern Pacific Ocean Conference	September 2018
Brian Bosart Award , UCLA AOS: “for service to students and the department”	November 2016

RESEARCH PRESENTATIONS AND POSTERS

Presentations

Ocean Sciences Meeting	<i>forthcoming</i> February 2024
Towards a regional, coupled modeling system to robustly quantify the viability and environmental impacts of seaweed mCDR	
UCLA Atmospheric and Oceanic Sciences 271 Seminar	November 2023
Can Vertical Mixing Sharpen Oceanic Submesoscale Fronts?	
Graduate School of Oceanography, University of Rhode Island	May 2023
Computational Perspectives on Coastal Ocean Fronts, Filaments, and Vortices	
University of Southern California, Nuzdhin Lab Seminar	April 2023
Simulating seaweed in realistic marine environments: approaches, challenges, and applications	
Eastern Pacific Ocean Conference	September 2022
Interactions Between Internal Tidal Bores and Submesoscale Currents on the Continental Shelf	
CalGFD Meeting	August 2022
Interactions Between Internal Tidal Bores and Submesoscale Currents on the Continental Shelf	
Ocean Sciences Meeting (virtual)	February 2022
Effects of Stratification and Submesoscale Currents on Internal Tidal Bores	
CalGFD Meeting (virtual)	September 2021
Effects of Stratification on Shoaling Internal Tidal Bores	
CalGFD Meeting (virtual)	August 2020
Structural diversity of shallow-water internal tidal bores due to stratification	
Ocean Sciences Meeting	February 2020
Submesoscale Influence on Nearshore Lagrangian Transport: How important is resolution for simulated coastal connectivity?	
Eastern Pacific Ocean Conference	September 2019
Submesoscale Influence on Nearshore Lagrangian Transport: How important is resolution for simulated coastal connectivity?	
Eastern Pacific Ocean Conference	September 2018
Submesoscale Currents in the Coastal Ocean (<i>*voted best student talk</i>)	
UCLA Marine Center	2018
Submesoscale Currents in the Coastal Ocean	
UCLA Atmospheric and Oceanic Sciences 270 Seminar	May 2018
Submesoscale Currents in the Coastal Ocean	
Santa Barbara Coastal LTER All Scientist Meeting	November 2014
Shelf Transport Mechanisms: Classification of Shelf Currents	
Santa Barbara Coastal LTER All Scientist Meeting	November 2013
Characterization of inner-shelf flow patterns	

Posters

Gordon Research Conference: Coastal Ocean Dynamics	June 2023
Interactions Between Internal Tidal Bores and Submesoscale Currents on the Continental Shelf	
Santa Barbara Coastal LTER All Scientist Meeting	November 2016
Submesoscale Variability on the Continental Shelf	

Santa Barbara Coastal LTER All Scientist Meeting
Phenomenology of inner-shelf submesoscale fronts and filaments

November 2015

PROFESSIONAL WORKSHOPS

NSF Diverse Ocean Science Community through Collaboration (DOCC)
California State University, Monterey Bay May-August 2022
Austral Summer Institute XVII, Marine Ecosystem Modeling - Approaches and Challenges
University of Concepción, Chile January 15-19, 2018

SCIENCE COMMUNICATION AND OUTREACH

Speaking engagements

Explore Your Ocean (panel member), Exploring Your Universe (UCLA) November 2022
Perspectives on Oceanography **Spanish-speaking audience, high-school level*
Abraham Lincoln School (La Romana, Dominican Republic) October 2021
Fundación MIR (La Romana, Dominican Republic) October 2021
Comunidad Educativa Lux Mundi (Santo Domingo, Dominican Republic) May 2015, 2019
Climate 101, Surfrider Foundation, Los Angeles October 2018
Atmosphere, Oceans, Climate, and You
Citizens of the World Charter School, 3rd grade assembly (Los Angeles) October 2017
The Current California Drought and Climate Change: Are they related?
Exploring Your Universe (UCLA) November 2014
The Poetry of Nature, UCLA Center for the Art of Performance October 2013
California's Water Cycle, Orange County Children's Water Festival March 2012-2016

Other

Science Project Judge: FIRST LEGO League (Dominican Republic) April 2015, 2019
Booth Presenter: Studio City Green Living Fair (Los Angeles) March 2017

COMMUNITY LEADERSHIP

Committee Chair: Climate Change Committee, Surfrider Foundation, Los Angeles Chapter 2018-2021
President: XEP Graduate Student Group, UCLA AOS 2014-2016
Educational Outreach Coordinator: XEP Graduate Student Group, UCLA AOS 2013-2017
Co-founder: 314 Action UCLA Student Group 2017
Graduate Student Representative: UCLA Math and Physical Sciences Council 2015-2017
Graduate Student Representative: UCLA Sustainability Committee 2014-2015

PROFESSIONAL SERVICE

Reviewer for:

National Science Foundation (Physical Oceanography)
Journal of Physical Oceanography
Journal of Geophysical Research: Oceans
Geophysical Research Letters
Journal of Atmospheric and Oceanic Technology

Session Co-Chair, Eastern Pacific Ocean Conference September 2022
Mesoscale and submesoscale fluxes and dynamics in the Eastern Pacific

SKILLS

Developer: UCLA Regional Oceanic Modeling System (ROMS; [Code Repository](#))

Lead developer of online coupling of macroalgal growth model to circulation and ecosystem models

Co-developer (with D. Hypolite) of updated surface wave-current interaction module

Expert: Python, Fortran, NetCDF, Linux, Unix, LaTeX

Proficient: MATLAB

Captain: UCLA Zodiac Research Vessel

Led undergraduate student field trips in Santa Monica Bay

Led trips for graduate student eDNA data collection in Santa Monica Bay

Languages: Native English and Spanish speaker

CODE SAMPLES

Python Transient Turbulent Thermal Wind Models ([Dauhajre and McWilliams 2018](#))

https://github.com/ddauhajre/T3W_ND_MODEL

https://github.com/ddauhajre/T3W_DIM_MODEL

Python Lagrangian Particle Tracking Model for ROMS ([Dauhajre et al. 2019](#))

https://github.com/ddauhajre/PY_PART_ROMS

Last updated: November 23, 2023