Nathan J. M. Laxague

Assistant Professor
University of New Hampshire
Department of Mechanical Engineering

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Google Scholar

Education

2012 - 2016 **Ph.D.**, *Applied Marine Physics*
Rosenstiel School of Marine and Atmospheric Science, University of Miami

Dissertation title: "Development and Application of Gravity-Capillary Wave Fourier Analysis for the Study of Air-Sea Interaction Physics".
Doctoral Advisor: Dr. Brian K. Haus

2007 - 2011 **B.S.**, *Physics*
University of Miami

Research Interests

- Air-sea interaction physics
- Marine-atmospheric boundary layer dynamics
- Geophysical turbulence
- Ocean surface waves
- Ocean surface currents
- Ocean pollutant transport

Professional Appointments

2020 – present **Assistant Professor**, University of New Hampshire
Department of Mechanical Engineering and Center for Ocean Engineering

2017 – 2020 **Postdoctoral Research Scientist**, Columbia University
Lamont-Doherty Earth Observatory, Division of Ocean and Climate Physics

2017 **Postdoctoral Scientist**, University of Miami
Rosenstiel School of Marine and Atmospheric Science, Department of Ocean Sciences

Awards and Honors

2024 - 2029 **NSF Early Career Development (CAREER) award**

2018 **Geophysical Research Letters Editor Highlights**
"Observations of Near-Surface Current Shear Help Describe Oceanic Oil and Plastic Transport"
Among the editor-selected highlights, representing approximately 4% of GRL papers published in 2017

2014-2016 **Gulf of Mexico Research Initiative (GoMRI) Scholar**
Recognition by GoMRI as a student "whose vital research contribute(s) to improv(ing) understanding about the damage, response, and recovery following the Deepwater Horizon oil spill."

Professional Societies

American Geophysical Union

American Meteorological Society

Institute of Electrical and Electronics Engineers

Oceanic Engineering Society

Published Scholarly Work

KEY FOR PUBLICATIONS SINCE UNH APPOINTMENT:

I. Advisor to student(s) who is (are) first author(s).

II. Primary author of paper based on research their student(s) performed.

III. Primary author of paper based on work independent of students.

IV. Co-author of paper based on work independent of students.

V. Contributing author on paper primarily written by co-authors.

VI. Co-author of paper who contributed equally on research their student(s) performed.

Student authors are marked in the following manner:

› **Students** for whom I am the thesis/dissertation committee chair
› Students for whom I am a thesis/dissertation committee member

Archival Journal Publications:

Since UNH appointment.

1. Ortiz-Suslow, D. G., Laxague[IV], N. J. M., Björkqvist, J.-V. I., and Curcic, M., (2025); Accounting for Waves and Current Shear in Ocean Wind Stress Parameterization. *Boundary Layer Meteorology*, Accepted for Publication DOI: TBD

2. Laxague[III], N. J. M., **Duvarcı, Z. G.**, Hogan, L., Anderson, S. P., and Zappa, C. J., (2025); The Effects of Subpixel Variability on Polarimetric Sensing of Ocean Waves. *IEEE Transactions on Geoscience and Remote Sensing*, 63, DOI: 10.1109/TGRS.2025.3538460

3. Tan, P., Savelyev, I., Laxague[V], N. J. M., Haus, B. K., Curcic, M., Matt, S. Zappa, C. J., Mehta, S., and Wray, S., (2025); Wind-wave momentum flux in steep, strongly forced, surface gravity wave conditions. *Journal of Geophysical Research: Oceans*, 130 (1), DOI: 10.1029/2024JC021616

4. Laxague[III], N. J. M., Zappa, C. J., **Soumya, S.**, and Wurl, O., (2024); The Suppression of Ocean Waves by Biogenic Slicks. *Journal of the Royal Society Interface*, 21 (220), DOI: 10.1098/rsif.2024.0385

5. Laxague[III], N. J. M., Zappa, C. J., Mahoney, A. R., Goodwin, J., Harris, C., Schaeffer, R. E., Schaeffer, Sr., R., Betcher, S. Hauser, D. D. W., Witte, C. R., Lindsay, J. L., Subramaniam, A., Turner, K. E., and Whiting, A., (2024); The radiative and geometric properties of melting first-year landfast sea ice in the Arctic. *The Cryosphere*, 18, 3297-3313, DOI: 10.5194/tc-18-3297-2024

6. Lindsay, Jessica M., Hauser, D. D. W., Mahoney, A. R., Laidre, Kristin L., Goodwin, J., Harris, C., Schaeffer, R. J., Schaeffer, R., Whiting, A. V., Boveng, Peter L., Laxague[V], N. J. M., Betcher, S., Subramaniam, A., Witte, C. R., & Zappa, C. J., (2023); Characteristics of ringed seal Pusa hispida ('natchiq') denning habitat in Kotzebue Sound, Alaska, during a year of limited sea ice and snow *Marine Ecology Progress Series*, 705: 1-20. DOI: 10.3354/meps14252

7. Hauser, D. D. W., Whiting, A. V., Mahoney, A. R., Goodwin, J., Harris, C., Schaeffer, R. J., Schaeffer, R., Laxague[V], N. J. M., Subramaniam, A., Witte, C. R., Betcher, S., Lindsay, J. M., & Zappa, C. J., (2021); Co-production of knowledge reveals loss of Indigenous hunting opportunities in the face of accelerating Arctic climate change. *Environmental Research Letters*, 16 (9): 095003. DOI: 10.1088/1748-9326/ac1a36

8. Witte, C. R., Zappa, C. J., Mahoney, A. R., Goodwin, J., Harris, C., Schaeffer, R. J., Schaeffer, R., Betcher, S., Hauser, D. D. W., Laxague[IV], N. J. M., Lindsay, J. M., Subramaniam, A., Turner, K. E.,

& Whiting, A. V., (2021); The Winter Heat Budget of Sea Ice in Kotzebue Sound: Residual Ocean Heat and the Seasonal Roles of River Outflow. *Journal of Geophysical Research: Oceans*, 126 (9): e2020JC016784. DOI: 10.1029/2020JC016784

9. Mahoney, A. R., Turner, K. E., Hauser, D. D. W., Laxague[V], N. J. M., Lindsay, J. M., Whiting, A. V., Witte, C. R., Goodwin, J., Harris, C., Schaeffer, R. J., Schaeffer, R., Betcher, S., Subramaniam, A., & Zappa, C. J., (2021); Thin ice, deep snow and surface flooding in Kotzebue Sound: landfast ice mass balance during two anomalously warm winters and implications for marine mammals and subsistence hunting. *Journal of Glaciology*, 67 (266): 1013–1027. DOI: 10.1017/jog.2021.49

Prior to UNH appointment.

7. Laxague, N. J. M. & Zappa, C. J., (2020); The impact of rain on ocean surface waves and currents. *Geophysical Research Letters*, 47 (7): e2020GL087287. DOI: 10.1029/2020GL087287

8. Laxague, N. J. M. & Zappa, C. J., (2020); Observations of mean and wave orbital flows in the ocean's upper centimetres. *Journal of Fluid Mechanics*, 887: A10. DOI: 10.1017/jfm.2019.1019

9. Zappa, C. J., Brown, S. M., Laxague, N. J. M., Dhakal, T., Harris, R. A., Farber, A. M., & Subramaniam, A., (2020); Using Ship-Deployed High-Endurance Unmanned Aerial Vehicles for the Study of Ocean Surface and Atmospheric Boundary Layer Processes. *Frontiers in Marine Science*, 6: 777. DOI: 10.3389/fmars.2019.00777

10. Lund, B., Haus, B. K., Graber, H. C., Horstmann, J., Carrasco, R., Novelli, G., Guigand, C. M., Mehta, S., Laxague, N. J. M., & Özgökmen, T. M., (2020); Marine X-band radar currents and bathymetry: An argument for a wavenumber-dependent retrieval method. *Journal of Geophysical Research: Oceans*, 125 (2): e2019JC015618. DOI: 10.1029/2019JC015618

11. Shao, M., Ortiz-Suslow, D. G., Haus, B. K., Lund, B., Williams, N. J., Özgökmen, T. M., Laxague, N. J. M., Horstmann, J., & Klymak, J. M., (2019); The Variability of Winds and Fluxes Observed Near Submesoscale Fronts. *Journal of Geophysical Research: Oceans*, 124 (11): 7756–7780. DOI: 10.1029/2019JC015236

12. Zappa, C. J., Laxague, N. J. M., Brumer, S. E., & Anderson, S. P., (2019); The Impact of Wind Gusts on the Ocean Thermal Skin Layer. *Geophysical Research Letters*, 46 (20): 11301–11309. DOI: 10.1029/2019gl083687

13. Laxague, N. J. M., Haus, B. K., Ortiz-Suslow, D. G., & Graber, H. C., (2018); Quantifying highly variable air-sea momentum flux using wavelet analysis. *Journal of Atmospheric and Oceanic Technology*, 35 (9). DOI: 10.1175/JTECH-D-18-0064.1

14. Laxague, N. J. M., Zappa, C. J., LeBel, D. A., & Banner, M. L., (2018); Spectral characteristics of gravity-capillary waves, with connections to wave growth and microbreaking. *Journal of Geophysical Research: Oceans*, 123 (7). DOI: 10.1029/2018JC013859

15. Laxague, N. J. M., Özgökmen, T. M., Haus, B. K., Novelli, G., Shcherbina, A. Y., Sutherland, P., Guigand, C. M., Lund, B., Mehta, S., Alday, M., & Molemaker, J., (2018); Observations of Near-Surface Current Shear Help Describe Oceanic Oil and Plastic Transport. *Geophysical Research Letters*, 45 (1). DOI: 10.1002/2017GL075891

16. D'Asaro, E. A., Shcherbina, A. Y., Klymak, J. M., Molemaker, J., Novelli, G., Guigand, C. M., Haza, A. C., Haus, B. K., Ryan, E. H., Jacobs, G. A., Huntley, H. S., Laxague, N. J. M., Chen, S., Judt, F., McWilliams, J. C., Barkan, R., Kirwan, A. D., Poje, A. C., & Özgökmen, T. M., (2018); Ocean convergence and the dispersion of flotsam. *Proceedings of the National Academy of Sciences*, 201718453. DOI: 10.1073/pnas.1718453115

17. Lund, B., Haus, B. K., Horstmann, J., Graber, H. C., Carrasco, R., Laxague, N. J. M., Novelli, G., Guigand, C. M., & Özgökmen, T. M., (2018); Near-surface current mapping by shipboard marine X-

band radar: A validation. *Journal of Atmospheric and Oceanic Technology*, 35 (5): 1077–1090. DOI: 10.1175/JTECH-D-17-0154.1

18. Laxague, N. J. M., Haus, B. K., Ortiz-Suslow, D. G., Smith, C. J., Novelli, G., Dai, H., Özgökmen, T. M., & Graber, H. C., (2017); Passive optical sensing of the near-surface wind-driven current profile. *Journal of Atmospheric and Oceanic Technology*, 34 (5): 1097–1111. DOI: 10.1175/JTECH-D-16-0090.1

19. Laxague, N. J. M., Curcic, M., Björkqvist, J.-V., & Haus, B. K., (2017); Gravity-capillary wave spectral modulation by gravity waves. *IEEE Transactions on Geoscience and Remote Sensing*, 55 (5). DOI: 10.1109/TGRS.2016.2645539

20. Novelli, G., Guigand, C. M., Cousin, C., Ryan, E. H., Laxague, N. J. M., Dai, H., Haus, B. K., & Özgökmen, T. M., (2017); A biodegradable surface drifter for ocean sampling on a massive scale. *Journal of Atmospheric and Oceanic Technology*, 34 (11): 2509–2532. DOI: 10.1175/JTECH-D-17-0055.1

21. Ortiz-Suslow, D. G., Haus, B. K., Mehta, S., & Laxague, N. J. M., (2016); Sea Spray Generation in Very High Winds. *Journal of the Atmospheric Sciences*, 73 (10): 3975–3995. DOI: 10.1175/JAS-D-15-0249.1

22. Soloviev, A. V., Haus, B. K., McGauley, M. G., Dean, C. W., Ortiz-Suslow, D. G., Laxague, N. J. M., & Özgökmen, T. M., (2016); Surface dynamics of crude and weathered oil in the presence of dispersants: Laboratory experiment and numerical simulation. *Journal of Geophysical Research: Oceans*, 121 (5): 3502–3516. DOI: 10.1002/2015JC011533

23. Mariano, A. J., Ryan, E. H., Huntley, H. S., Laurindo, L. C., Coelho, E. F., Griffa, A., Özgökmen, T. M., Berta, M., Bogucki, D. J., Chen, S. S., Curcic, M., Drouin, K. L., Gough, M. K., Haus, B. K., Haza, A. C., Hogan, P. J., Iskandarani, M., Jacobs, G. A., Kirwan, A. D., Laxague, N. J. M., Lipphardt, B. L., Magaldi, M. G., Novelli, G., Reniers, A. J. H. M., Restrepo, J. M., Smith, C. J., Valle-Levinson, A., & Wei, M., (2016); Statistical properties of the surface velocity field in the northern Gulf of Mexico sampled by GLAD drifters. *Journal of Geophysical Research: Oceans*, 121 (7): 5193–5216. DOI: 10.1002/2015JC011569

24. Huguenard, K. D., Bogucki, D. J., Ortiz-Suslow, D. G., Laxague, N. J. M., MacMahan, J. H., Özgökmen, T. M., Haus, B. K., Reniers, A. J. H. M., Hargrove, J., Soloviev, A. V., & Graber, H. C., (2016); On the nature of the frontal zone of the Choctawhatchee Bay plume in the Gulf of Mexico. *Journal of Geophysical Research*, 121 (2). DOI: 10.1002/2015JC010988

25. Laxague, N. J. M., Haus, B. K., Bogucki, D. J., & Özgökmen, T. M., (2015); Spectral characterization of fine-scale wind waves using shipboard optical polarimetry. *Journal of Geophysical Research*, 120 (4). DOI: 10.1002/2014JC010403

26. Bogucki, D. J., Huguenard, K. D., Haus, B. K., Özgökmen, T. M., Reniers, A. J. H. M., & Laxague, N. J. M., (2015); Scaling laws for the upper ocean temperature dissipation rate. *Geophysical Research Letters*, 42 (3). DOI: 10.1002/2014GL062235

27. Ortiz-Suslow, D. G., Haus, B. K., Williams, N. J., Laxague, N. J. M., Reniers, A. J. H. M., & Graber, H. C., (2015); The spatial-temporal variability of air-sea momentum fluxes observed at a tidal inlet. *Journal of Geophysical Research*, 120 (2): 660–676. DOI: 10.1002/2014JC010412

28. Coelho, E. F., Hogan, P. J., Jacobs, G. A., Thoppil, P. G., Huntley, H. S., Haus, B. K., Lipphardt, B. L., Kirwan, A. D., Ryan, E. H., Olascoaga, M. J., Beron-Vera, F. J., Poje, A. C., Griffa, A., Özgökmen, T. M., Mariano, A. J., Novelli, G., Haza, A. C., Bogucki, D. J., Chen, S. S., Curcic, M., Iskandarani, M., Judt, F., Laxague, N. J. M., Reniers, A. J. H. M., Valle-Levinson, A., & Wei, M., (2015); Ocean current estimation using a Multi-Model Ensemble Kalman Filter during the Grand Lagrangian Deployment experiment (GLAD). *Ocean Modelling*, 87: 86–106. DOI: 10.1016/j.ocemod.2014.11.001

29. Jacobs, G. A., Bartels, B. P., Bogucki, D. J., Beron-Vera, F. J., Chen, S. S., Coelho, E. F., Curcic, M., Griffa, A., Gough, M. K., Haus, B. K., Haza, A. C., Helber, R. W., Hogan, P. J., Huntley, H. S., Iskandarani, M., Judt, F., Kirwan, A. D., Laxague, N. J. M., Valle-Levinson, A., Lipphardt, B. L., Mariano, A. J., Ngodock, H. E., Novelli, G., Olascoaga, M. J., Özgökmen, T. M., Poje, A. C., Reniers, A. J.

H. M., Rowley, C. D., Ryan, E. H., Smith, S. R., Spence, P. L., Thoppil, P. G., & Wei, M., (2014); Data assimilation considerations for improved ocean predictability during the Gulf of Mexico Grand Lagrangian Deployment (GLAD). *Ocean Modelling*, 83: 98–117. DOI: 10.1016/j.ocemod.2014.09.003

30. Johnson, N. F., Carran, S., Botner, J., Fontaine, K., Laxague, N. J. M., Nuetzel, P., Turnley, J., & Tivnan, B., (2011); Pattern in escalations in insurgent and terrorist activity. *Science*, 333 (6038). DOI: 10.1126/science.1205068

Archival Journal Publications Under Review:

1. Collins, C. O., Amador, A, Behrens, J, Benetazzo, A., Bergamasco, F., Blenkinsopp, C., Bonneton, P., Breivik, Ø., Christensen, K. H., Colosi, L., Ewans, K., Gemmrich, J., Grigorieva, V., Gulev, S., Hauser, D., Hole, L. R., Hope, G., Houghton, I., Hsu, J.-Y., Laxague[IV], N. J. M., ..., & Zhang, D. (2024). Measuring Ocean Waves. *Progress in Oceanography* DOI: TBD

Conference Papers and Technical Reports:

Since UNH appointment.

1. Nuijens, L., Wenegrat, J., Dekker, P. L., Pasquero, C., L.W. O'Neill, Ardhuin, F., Ayet, A., Bechtold, P., Bruch, W., Laurindo, L., Chen, X., Desbiolles, F., Foster, R., Frenger, I., George, G., Giesen, R., Hayden, E., Hell, M. C., Iyer, S., Kousal, J., Laxague[IV], N. J. M., ..., & Zippel, S. (2024). The air-sea interaction (ASI) submesoscale: Physics and impact. *Workshop Report: "Atmosphere-ocean coupling at (sub)mesoscales", Lorentz Center, Leiden, NL (2023)* DOI: 10.5065/78ac-qd31

Prior to UNH appointment.

1. Laxague, N. J. M., Ortiz-Suslow, D. G., Haus, B. K., Williams, N. J., & Graber, H. C., (2016); Water surface slope spectra in nearshore and river mouth environments. *IOP Conference Series: Earth and Environmental Science*, 35 (1): 012013. DOI: 10.1088/1755-1315/35/1/012013

2. Ortiz-Suslow, D. G., Haus, B. K., Mehta, S., & Laxague, N. J. M., (2016); A laboratory study of spray generation in high winds. *IOP Conference Series: Earth and Environmental Science*, 35 (1): 012008. DOI: 10.1088/1755-1315/35/1/012008

Conference Abstracts and Posters (first author indicates speaker):

Since UNH appointment. **Student authors** are in bold italics.

1. Laxague[III], N. J. M., Zappa, C. J., **Soumya, S.**, and Wurl, O., (2024); The Suppression of Ocean Waves by Biogenic Slicks. *The 13th Workshop on Currents, Waves, and Turbulence Measurement (IEEE OES)*

2. Laxague[III], N. J. M., Zappa, C. J., **Soumya, S.**, and Wurl, O., (2024); The Suppression of Ocean Waves by Biogenic Slicks. *Ocean Sciences Meeting*

3. **Soumya, S.**, Laxague[I,VI], N. J. M., Savelyev, I., Buckley, M., Tenhaus, J., Matt, S., Liu, J., Haus, B. K., and Zappa, C. J., (2024), Quantification of turbulence at a wavy air-water interface via thermal marking velocimetry *Ocean Sciences Meeting*

4. **Duvarcı, Z. G.**, Kilmer, O., and Laxague[I,VI], N. J. M., (2024), Application of an Airborne System for Observing Ocean Surface Waves over a Wide Range of Scales *Ocean Sciences Meeting*

5. Zappa, C. J., Laxague[IV], N. J. M., Liu, J., Hogan, L., Savelyev, I., Buckley, M., Tenhaus, J., and Haus, B. K., (2024), Non-Intrusive Sensing of the Ocean Tangential Viscous Stress at the Air-Sea Interface *Ocean Sciences Meeting*

6. Savelyev, I., Matt, S., Wang, S., Zappa, C. J., Hogan, L., Liu, J., Laxague[V], N. J. M., **Soumya, S.**, Buckley, M., Tenhaus, J., Haus, B., Tan, P., Curcic, M., Mehta, S., Wray, S., Sheng, Q., Wang, X., and Chinmay, A., (2024), An overview of a joint experiment on air-sea fluxes and the resulting subsurface turbulence at the SUSTAIN wind-wave tunnel *Ocean Sciences Meeting*

7. Liu, J., Zappa, C. J., Laxague[IV], N. J. M., and Cifuentes-Lorenzen, A., (2024), Remotely Retrieved Near-Surface Current and its Relationship to Air-Sea Momentum Flux *Ocean Sciences Meeting*
8. Laxague[III], N. J. M., Zappa, C. J., **Soumya, S.**, and Wurl, O., (2023); The Suppression of Ocean Waves by Biogenic Slicks. *Atmosphere-ocean coupling at (sub)mesoscales Workshop, Leiden, NL*
9. Laxague[III], N. J. M., Zappa, C. J., **Soumya, S.**, and Wurl, O., (2023); The Scale-Dependent Response of Short Ocean Waves to Biogenic Surface Active Substances *Waves In Sea Environment (WISE) meeting, Princeton, NJ*
10. Laxague[III], N. J. M., Zappa, C. J., **Soumya, S.**, and Wurl, O., (2023); The Scale-Dependent Response of Short Ocean Waves to Biogenic Surface Active Substances *Waves In Sea Environment (WISE) meeting, Princeton, NJ*
11. **Soumya, S.**, Laxague[I,VI], N. J. M., Zappa, C. J., and Wurl, O., (2023); The Scale-Dependent Response of Short Ocean Waves to Biogenic Surface Active Substances *23rd Conference on Air-Sea Interaction*
12. Clayson, C., Laxague[IV], N. J. M., Booth, J. F., Kang, D., O'Neill, L., Roberts, M. J., Small, R. J., Samelson, R., and Thompson, E., (2023); Advances and Opportunities for Predicting and Understanding Gulf Stream Impacts on Weather and Climate: 2022 CLIVAR Workshop Report *23rd Conference on Air-Sea Interaction*
13. Laxague[III], N. J. M., and Zappa, C. J., (2022); Observations of mean and wave orbital flows in the upper centimeters of the ocean surface layer *The 8th Symposium on Gas Transfer at Water Surfaces, Plymouth, UK (virtual participation)*
14. Laxague[III], N. J. M., and Zappa, C. J., (2022); The impact of rain on ocean surface waves and currents *The 8th Symposium on Gas Transfer at Water Surfaces, Plymouth, UK (virtual participation)*
15. Laxague[III], N. J. M., Zappa, C. J., Mahoney, A. R., Goodwin, J., Harris, C., Schaeffer, R. E., Schaeffer, Sr., R., Betcher, S. Hauser, D. D. W., Witte, C. R., Lindsay, J. L., Subramaniam, A., Turner, K. E., and Whiting, A., (2022); UAV-Based Radiometric Observations of First-Year Sea Ice Undergoing Spring Melt *Ocean Sciences Meeting (online)*
16. Laxague[III], N. J. M., Ortiz-Suslow, D. G., Björkqvist, J.-V., Curcic, M., Haus, B., and Wang, Q., (2021); The Relative Wind Velocity at the Air–Sea Interface in the Presence of Surface Gravity Waves *22nd Conference on Air-Sea Interaction (online)*
17. Laxague[III], N. J. M., and Zappa, C. J., (2021); Observations of mean and wave orbital flows in the upper centimeters of the ocean surface layer *22nd Conference on Air-Sea Interaction (online)*
18. Laxague[III], N. J. M., and Zappa, C. J., (2021); The impact of rain on ocean surface waves and currents *22nd Conference on Air-Sea Interaction (online)*
19. Zappa, C. J., Laxague[III], N. J. M., Brumer, S., and Anderson, S. P., (2021); The Impact of Wind Gusts on the Ocean Thermal Skin Layer *22nd Conference on Air-Sea Interaction (online)*
20. Zappa, C. J., Brown, S., Laxague[III], N. J. M., Dhakal, T., Harris, R., Witte, C., Subramaniam, A., and Farber, A., (2021); Using Ship-Deployed High-Endurance Uncrewed Aerial Vehicles for the Study of Ocean Surface and Atmospheric Boundary Layer Processes *22nd Conference on Air-Sea Interaction (online)*
21. Laxague[III], N. J. M., Zappa, C. J., Mahoney, A. R., Goodwin, J., Harris, C., Schaeffer, R. E., Schaeffer, Sr., R., Betcher, S. Hauser, D. D. W., Witte, C. R., Lindsay, J. L., Subramaniam, A., Turner, K. E., and Whiting, A., (2020); Evolution of sea ice radiometric properties during melt and breakup *American Geophysical Union Fall Meeting (online)*

Prior to UNH appointment.

22. Laxague, N. J. M., and Zappa, C. J., (2020); Observations of mean and wave orbital flows in the upper centimeters of the ocean surface layer *Ocean Sciences Meeting*

23. Brown, S., Zappa, C. J., Laxague, N. J. M., Mahoney, A. R., Goodwin, J., Harris, C., Schaeffer, R. E., Schaeffer, Sr., R., Betcher, S. Hauser, D. D. W., Witte, C. R., Lindsay, J. L., Subramaniam, A., Turner, K. E., and Whiting, A., (2020); Changes in ocean-atmosphere heat and momentum fluxes during sea ice melt and breakup *Ocean Sciences Meeting*

24. Laxague, N. J. M., Zappa, C. J., LeBel, D. A., & Banner, M. L., (2018); Spectral characteristics of gravity-capillary waves, with connections to wave growth and microbreaking. *21st Conference on Air-Sea Interaction*

25. Laxague, N. J. M., Haus, B. K., Ortiz-Suslow, D. G., and Graber, H. C., (2018); Unpacking Observed Air-Sea Momentum Flux in Frequency and Time. *Ocean Sciences Meeting*

26. Haus, B. K., Laxague, N. J. M., and the CARTHE Experiment Team, (2018); Observations of the vertical profile of currents in the upper meter of the ocean. *Ocean Sciences Meeting*

27. Laxague, N. J. M., Haus, B. K., Curcic, M., and Björkqvist, J.-V., (2018); Laboratory Observations of Short Wave Hydrodynamic Modulation by Gravity Waves. *20th Conference on Air-Sea Interaction*

28. Laxague, N. J. M., Ortiz-Suslow, D. G., Haus, B. K., Williams, N. J., Smith, C. J., Romeiser, R., and Graber, H. C., (2016); Sea surface wave spectral properties in coastal waters. *Ocean Sciences Meeting*

29. Laxague, N. J. M., (2016); Laboratory Measurements of Near-Surface Wind-Wave-Current Interaction. *Gulf of Mexico Oil Spill and Ecosystem Science Conference*

30. Laxague, N. J. M., (2016); Laboratory Measurements of Near-Surface Wind-Wave-Current Interaction. *Gulf of Mexico Oil Spill and Ecosystem Science Conference*

31. Laxague, N. J. M., (2015); Wavenumber Dependence of Surface Roughness Over A Variety of Wind Conditions. *Gulf of Mexico Oil Spill and Ecosystem Science Conference*

32. Laxague, N. J. M., Ortiz-Suslow, D. G., Haus, B. K., Williams, N. J., & Graber, H. C., (2015); Water surface slope spectra in nearshore and river mouth environments. *7th Symposium on Gas Transfer at Water Surfaces*,

33. Laxague, N. J. M., Ortiz-Suslow, D. G., Huguenard, K., Williams, N. J., Bogucki, D., and Haus, B. K., (2015); Coastal Dynamics Observed from a Mobile Air-Sea Interaction Platform *The 11th Workshop on Currents, Waves, and Turbulence Measurement (IEEE OES)*

34. Laxague, N. J. M., Ortiz-Suslow, D. G., Haus, B. K., Williams, N. J., & Graber, H. C., (2015); Wavenumber Dependence of Surface Roughness Over A Variety of Wind Conditions. *19th Conference on Air-Sea Interaction*,

35. Laxague, N. J. M., Haus, B. K., Bogucki, D. J., & Özgökmen, T. M., (2014); Spectral characterization of fine-scale wind waves using shipboard optical polarimetry. *Ocean Sciences Meeting*,

36. Laxague, N. J. M., (2014); Polarimetric Sea-Surface Measurements Made During The GLAD Experiment. *Gulf of Mexico Oil Spill and Ecosystem Science Conference*

37. Laxague, N. J. M., (2013); Polarimetric Remote Sensing of Wind-Induced Surface Roughness. *Gulf of Mexico Oil Spill and Ecosystem Science Conference*

Invited Lectures:

Since UNH appointment.

1. Laxague, N. J. M., "Rapid Characterization of Air-Sea Fluxes and Marine-Atmospheric Boundary Layer Structure", APL seminar series, Applied Physics Laboratory, University of Washington, (2024)
2. Laxague, N. J. M., "The Scale-Dependent Response of Short Ocean Waves to Biogenic Surface Active Substances", Oceanography seminar series, Department of Oceanography, Texas A & M University, (2023)

Prior to UNH appointment.

2. Laxague, N. J. M., "The Role of Gravity-Capillary Waves in Air-Sea Momentum Flux", Physical Oceanography seminar series, Graduate School of Oceanography, University of Rhode Island, (2018)

Proposal Activity:

Funded Proposals (Total $4.7M, NJML Total $1.3M)

1. **Current**
   Project Title: CAREER: Investigating the impacts of sea breeze and steep surface gravity waves on nearshore air-sea fluxes
   Source of Support: National Science Foundation: Physical Oceanography, **#23-40712**
   Total Award Amount: $738,012 ($738,012)
   Total Award Period: 9/1/2024 - 8/31/2029
   Location of Project: University of New Hampshire
   Person Months Per Year: 1
   Investigators: PI: N. J. M. Laxague (sole)

2. **Current**
   Project Title: Multiscale Modeling and Direct Statistical Simulation of Marine Atmospheric Boundary Layer Turbulence for Offshore Wind Energy
   Source of Support: Department of Energy EPSCoR, DE-SC0024572
   Total Award Amount: $2,500,000 ($337,878)
   Total Award Period: 8/1/2023 - 7/31/2025
   Location of Project: University of New Hampshire
   Person Months Per Year: 1
   Investigators: PI: G. Chini; co-PIs: N. J. M. Laxague, C. M. White, and M. W. Wosnik (UNH); B. Fox-Kemper & J. Brad Marston (Brown) and J. S. Oishi (Bates)

3. **Current**
   Project Title: Collaborative Research: Investigating the Relationship Between Ocean Surface Gravity-Capillary Waves, Surface-Layer Hydrodynamics, and Air-Sea Momentum Flux
   Source of Support: National Science Foundation: Physical Oceanography, **#20-49578**
   Total Award Amount: $217,438 ($52,708)
   Total Award Period: 3/1/2021 - 2/28/2023
   Location of Project: University of New Hampshire
   Person Months Per Year: 1
   Investigators: UNH PI: N. J. M. Laxague; co-PI: C. J. Zappa (Columbia)

4. **Closed**
   Project Title: A Multi-Spectral Thermal Infrared Imaging System for Air-Sea Interaction Research
   Source of Support: National Science Foundation: Ocean Technology and Interdisciplinary Coordination, **#20-23678**
   Total Award Amount: $939,645 ($41,807)
   Total Award Period: 9/1/2020 - 8/31/2022
   Location of Project: University of New Hampshire
   Person Months Per Year: 0.5
   Investigators: UNH PI: N. J. M. Laxague (subaward from 2020 on); co-PI: C. J. Zappa (Columbia)

5. **Closed**
   Project Title: Ocean Gravity-Capillary Waves: Dependence on Sea-Surface Processes and Microlayer Properties
   Source of Support: National Science Foundation: Physical Oceanography, **#19-23935**
   Total Award Amount: $345,758 ($104,128)
   Total Award Period: 9/1/2019 - 8/31/2022
   Location of Project: University of New Hampshire
   Person Months Per Year: 1
   Investigators: UNH PI: N. J. M. Laxague (subaward from 2020 on); co-PI: C. J. Zappa (Columbia)

Internal (UNH) Proposals Funded

1. Proposal Title: Procurement of a Near-Infrared Scanning Lidar for Laboratory and Field Water Wave Measurements
   Source of Support: SMSOE Research Equipment Grant
   Total Award Amount: $9,937.02
   Award Year: 2024
2. Proposal Title: Boat Wake Characterization Via Dock-Based Wave Gauge Array
   Source of Support: SMSOE Peer Mentoring Program
   Total Award Amount: $14,342.13
   Award Year: 2023
3. Proposal Title: A Short Training Course for Using Remotely-Operated Aircraft
   Source of Support: CEPS Faculty Development Grant Program
   Total Award Amount: $3,400
   Award Year: 2022

Pending Proposals ($\approx$1.0M)

1. Project Title: Multiscale Modeling and Direct Statistical Simulation of Marine Atmospheric Boundary Layer Turbulence for Offshore Wind Energy (**Renewal Application**)
   Source of Support: Department of Energy EPSCoR
   Target Submission Date: 1/29/2025
   Total Proposal Amount: $4,925,000 ($706,000)
   Total Award Period: 8/1/2025 - 7/31/2027
   Location of Project: University of New Hampshire
   Person Months Per Year: 1
   Investigators: PI: G. Chini; co-PIs: N. J. M. Laxague, C. M. White, J. S. Oishi, and M. W. Wosnik (UNH); B. Fox-Kemper, J. Brad Marston, and K. Breuer (Brown)
2. Project Title: Exploring the Impacts of Wave-Current Interaction on Air-Sea Momentum Flux
   Source of Support: National Science Foundation: Physical Oceanography
   Target Submission Date: 2/15/2025
   Total Proposal Amount: $975,000 ($315,000)
   Total Award Period: 8/1/2025 - 7/31/2028
   Location of Project: University of New Hampshire
   Person Months Per Year: 1
   Investigators: PI: D. G. Ortiz-Suslow (Naval Postgraduate School); co-PIs: N. J. M. Laxague; M. Curcic (UMiami)

Proposals In Preparation (N/A)

None currently in preparation.

Pre-Proposals Invited

1. Project Title: Investigating the Impact of Transient Forcing and Wave Group Intermittency on Air-Sea Momentum Flux
   Source of Support: Office of Naval Research: Littoral Geosciences and Optics (YIP)
   Total Award Period: 10/1/2023 - 9/30/2026
   Location of Project: University of New Hampshire
   Person Months Per Year: 1
   Investigators: PI: N. J. M. Laxague (sole)
2. Project Title: Multiscale Modeling and Direct Statistical Simulation of Marine Atmospheric Boundary Layer Turbulence for Offshore Wind Energy

Source of Support: Department of Energy EPSCoR
Total Award Period: 8/1/2023 - 7/31/2025
Location of Project: University of New Hampshire
Person Months Per Year: 1
Investigators: PI: G. Chini; co-PIs: N. J. M. Laxague, C. M. White, and M. W. Wosnik (UNH); B. Fox-Kemper & J. Brad Marston (Brown) and J. S. Oishi (Bates)

Proposals Declined

Agency Full Proposals—6 grants, total funding requested: $4,668,664 (excluding $13.4M Mid-Scale RI)

1. Project Title: Collaborative Research: Resolving transient wind and waves in air-sea flux formulations for weather prediction models
   Source of Support: National Science Foundation: Physical Oceanography
   Total Award Amount: $1,042,155 ($590,622)
   Total Award Period: 9/1/2024 - 8/31/2027
   Location of Project: University of New Hampshire
   Person Months Per Year: 1
   Investigators: UNH PI: N. J. M. Laxague; co-PI: M. Curcic (Miami)
2. Project Title: Digital Twinning of Floating Marine Energy Systems: Mitigating the Influence of Operational Uncertainties
   Source of Support: Department of Energy (through AMEC)
   Total Award Amount: $242,948 ($100,000)
   Total Award Period: 8/1/2024 - 7/31/2027
   Location of Project: University of New Hampshire
   Person Months Per Year: 0.4
   Investigators: PI: Y. Azam; co-PIs: N. J. M. Laxague, M. W. Wosnik, and E. Bell
3. Project Title: Investigating the Impact of Transient Forcing and Wave Group Intermittency on Air-Sea Momentum Flux
   Source of Support: Office of Naval Research: Littoral Geosciences and Optics (YIP)
   Total Award Amount: $649,079 ($649,079)
   Total Award Period: 10/1/2023 - 9/30/2026
   Location of Project: University of New Hampshire
   Person Months Per Year: 1
   Investigators: PI: N. J. M. Laxague (sole)
4. Project Title: Collaborative Research: Investigating the Modulation of Wind Stress by Surface Waves and Currents
   Source of Support: National Science Foundation: Physical Oceanography
   Total Award Amount: $794,088 ($650,088)
   Total Award Period: 9/1/2023 - 8/31/2026
   Location of Project: University of New Hampshire
   Person Months Per Year: 1
   Investigators: PI: N. J. M. Laxague (overall lead); co-PIs: B. Lund and H. C. Graber (Miami)
5. Project Title: CAREER: Quantifying the impact of surface current gradients and short wave dynamics on air-sea fluxes
   Source of Support: National Science Foundation: Physical Oceanography
   Total Award Amount: $766,468 ($766,468)
   Total Award Period: 9/1/2023 - 8/31/2028
   Location of Project: University of New Hampshire
   Person Months Per Year: 1
   Investigators: PI: N. J. M. Laxague (sole)

6. Project Title: Collaborative Research: Investigating the Impact of Surface Gravity Waves on the Coupling of Wind and Short Waves
   Source of Support: National Science Foundation: Physical Oceanography
   Total Award Amount: $1,173,926 ($396,438)
   Total Award Period: 9/1/2021 - 8/31/2024
   Location of Project: University of New Hampshire
   Person Months Per Year: 1
   Investigators: PI: N. J. M. Laxague (overall lead); co-PIs: B. K. Haus and M. Curcic (Miami), C. J. Zappa (Columbia)

7. Project Title: Development of a Large Scale, Large Reynolds Number, Turbulent Boundary Layer Wind Tunnel
   Source of Support: National Science Foundation (Mid-Scale RI - Track 1)
   Total Award Amount: $13,357,005 ($44,914)
   Total Award Period: 10/1/2021 - 9/30/2026
   Location of Project: University of New Hampshire
   Person Months Per Year: 1/1/0/0/0
   Investigators: PI: C. M. White; co-PIs: J. C. Klewicki, N. J. M. Laxague, T. L. Mandel, and M. W. Wosnik

Agency Pre-Proposals Not Invited

1. Project Title: Autonomous Characterization of Atmospheric Turbulence and Aerodynamic Wakes Via Sensor-Based Waypoint Control
   Source of Support: Office of Naval Research: Aerodynamics (DEPSCoR Collaboration)
   Total Award Period: 10/1/2023 - 9/30/2026
   Location of Project: University of New Hampshire
   Person Months Per Year: 1
   Investigators: PI: N. J. M. Laxague; co-PI: M. Thein

2. Project Title: Bottom roughness from observed topographic wavenumber spectra on a rocky shore, and its effects on gravity and infragravity wave transformation, current drag, and air-sea momentum fluxes
   Source of Support: Office of Naval Research: Littoral Geosciences and Optics (MURI)
   Total Award Period: 9/1/2020 - 8/30/2025
   Location of Project: University of New Hampshire
   Person Months Per Year: 1
   Investigators: PI: T. C. Lippmann; co-PIs: T L. Mandel, N. J. M. Laxague, D. Foster, C. M. White, M. Palace, A. Lyons, S. Dijkstra (UNH); A. Trembanis (Delaware), K. Bryan (Waikato, New Zealand), G. Coco (Auckland, New Zealand)

Teaching and Advising Activities

Lecture Format Courses Taught:

Semester	Course No.	Course Title	Credit Hours	Enrollment
F20	OE 400	Ocean Engineering Seminar (co-taught)	1	20
F20	ME 795/895	Experimental Fluid Dynamics (co-taught)	3	18
S21	ME 603	Heat Transfer	3	101
F21	OE 995	Dynamics of Air-Sea Interaction	3	7
S22	ME 603	Heat Transfer	3	107
F22	OE 754/854	Ocean Waves & Tides	4	27
S23	ME 603	Heat Transfer	3	85
S23	ME 795/895	Experimental Fluid Dynamics	3	11
F23	OE 754/854	Ocean Waves & Tides	4	25
F23	OE 995	Dynamics of Air-Sea Interaction	3	6
S24	ME 603	Heat Transfer	3	80
F24	OE 754/854	Ocean Waves & Tides	4	23

Senior Projects Advised:

Academic Year	Course No.	Project Title	# Students
F21/S22	ME 755	Pontoon Boat Helipad (co-advised)	5
F22/S23	ME 755	Acorn Collection Device	4
F23/S24	TECH 797	Air-Sea Flux Buoy	2

Graduate Student Advising:

Doctoral Students - 2 Current:

1. Shantanu Soumya, B.S. Siddaganga Institute of Technology; M.S. Georgia Institute of Technology. Thesis project: Characterization of surface wave modulation of turbulence through thermal marking velocimetry. Expected May 2026.
2. Zeynep Göksu Duvarcı, B.S. Boğazıçı University. Thesis project: Quantifying the role of steep surface gravity waves in modulating air-sea fluxes in nearshore regions. Expected May 2027.

Masters Students - 1 Current:

1. Jane Schwadron, B.S. University of New Hampshire. Thesis project: Real-time air-sea momentum and heat flux observations in tandem with MABL profiling. Expected May 2025.

Undergraduate Student Advising:

Academic Advising: At any given time, I serve as the academic advisor for approximately 25-30 BSME students and 5 BSOE students. At the end of each semester (November & April), I meet with each student to advise them on their course selections and to provide academic/career advice as appropriate.

Research Advising of Undergraduates Employed in My Laboratory:

1. Ethan Hickey, 2024. Project: Characterization of MABL dynamics via an instrumented UAV.
2. Adam Zolotovsky, 2024. Project: Characterization of MABL dynamics via an instrumented UAV.
3. Elani Daigle, 2023-2024. Project: Development of a buoy for real-time wave and air-sea flux sensing.
4. Olivia Kilmer, 2022-2023. Project: Development and testing of an airborne wave and current sensing system.

Student Thesis Committee Service:

Doctor of Philosophy:

1. Savannah DeVoe, Ph.D. Ocean Engineering, 2024, Advisor: D. L. Foster
2. Abdulaziz Alsamil, Ph.D. Integrated and Applied Mathematics, 2024, Advisor: J. McHugh
3. Adhithiya Sivakumar, Ph.D. Mechanical Engineering, 2025 (expected), Advisor: G. P. Chini
4. Zeeshan Saeed, Ph.D. Mechanical Engineering, 2025 (expected), Advisor: T. L. Mandel
5. Peisen Tan, Ph.D. Ocean Sciences, 2024, Advisor: B. K. Haus [U. Miami]
6. Christopher Bouillon, Ph.D. Physical Oceanography, 2026 (expected), Advisor: C. Chavanne [U. Québec à Rimouski]

Master of Science:

1. Patrick Close, M.S. Mechanical Engineering, 2024, Advisor: M. Thein
2. Vivek Bheeroo, M.S. Ocean Engineering, 2023, Advisor: T. L. Mandel

Service Activities

Department Service:

1. Faculty Search Committee, Department of Mechanical Engineering (2024)
2. ME External Advisory Board Meeting, Yearly Participant
3. CEPS Admitted Students Visit Day (ME or OE), Yearly Participant

University/College Service:

1. CEPS Rules Committee (2024-present)
2. Faculty Search Committee, Center for Ocean Engineering (2023)
3. OE External Advisory Board Meeting, Yearly Participant

Community Service Since UNH Appointment:

1. Tours of Chase Ocean Engineering Laboratory (several annually)
2. Faculty mentor, First LEGO League team (2024)
3. Participant/Floor Exhibitor, Ocean Discovery Day (2023, 2024)
4. Competition Judge, New Hampshire VEX IQ Robotics Competition (2022)

Professional Service Since UNH Appointment:

1. Technical Program Committee, 13th IEEE OES Current, Waves and Turbulence Measurement and Applications (CWTMA) Workshop (2024)
2. Proposal Review Panelist - National Science Foundation (2024)
3. Session Co-Chair, Ocean Sciences Meeting (2024)
4. Workshop Co-Chair, *Whither The Gulf Stream* CLIVAR Workshop, (2022)
5. Proposal Review Panelist – National Science Foundation (2022)
6. Session Primary Chair, Ocean Sciences Meeting (2020)
7. Session Co-Chair, Ocean Sciences Meeting (2018)

8. Session Co-Chair, Ocean Sciences Meeting (2016)
9. Ad-hoc Referee, National Science Foundation
10. Journal Referee
    - *Journal of Geophysical Research: Oceans*
    - *Journal of Fluid Mechanics*
    - *Journal of Physical Oceanography*
    - *Flow*
    - *IEEE Transactions on Geoscience and Remote Sensing*
    - *Atmospheric Measurement Technology*
    - *Dynamics of Atmospheres and Oceans*
    - *Ocean Science Discussions*
    - *Continental Shelf Research*
    - *Marine Pollution Bulletin*
    - *Elementa*