DYLAN SCHLICHTING

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EDUCATION

Ph.D. Oceanography, Texas A&M University — Jan 2020 - Aug 2024 (Expected)
Committee: Robert Hetland (co-chair), Henry Potter (chair), Spencer Jones, Scott Socolofsky
Dissertation: Quantification of numerical mixing in simulations of submesoscale baroclinic instabilities over sloping bathymetry

B.S. Civil Engineering, University of Maine — Aug 2016 - Dec 2019
Minor: Mathematics. *Honors: cum laude*

RESEARCH INTERESTS

Spurious/numerical mixing, coastal ocean modeling, submesoscale processes and dynamics, estuarine exchange flow and mixing.

RESEARCH EXPERIENCE

Graduate Research Assistant — Jan 2020 - Present
Texas A&M University: Dept. Oceanography

- Characterized numerical mixing in a high-resolution ocean model (COAWST/ROMS) of the Texas-Louisiana (TXLA) continental shelf
- Developed idealized ROMS simulations of submesoscale baroclinic instabilities for a reentrant coastal shelf
- Contributed to the development of modern, python-based post-processing packages for C-grid ocean model output (xroms, xarray, xgcm)
- Provided shore support for two oceanographic cruises in 2021/2022 as part of the Submesoscales Under Near-Resonant Inertial Shear Experiment (SUNRISE, https://sunrise-nsf.github.io/)

Student Research Assistant — May 2017 - Dec 2019
UMaine: Dept. Civil Engineering

- Used analytical modeling to study the interaction of flow and suspended kelp farms.
- Analyzed the environmental impacts of coastal armoring structures on pocket beaches in Southern Maine using empirical orthagonal functions.
- Participated in the construction, deployment, and management of an oceanographic mooring system for the Sensing Storm Surge Citizen Science Project. (http://sensingstormsurge.acg.maine.edu/).
- Designed and co-managed laboratory experiments to study hydrodynamic and turbulent characteristics of flow through floating oyster cages.

Engineering Research Assistant — Aug 2018 - May 2019
UMaine: School of Marine Sciences

· Characterized inertial oscillations in the Gulf of Maine using observational current data.
· Gained basic experience with spectral analysis (e.g. frequency-wavenumber diagrams, power spectra, and rotary spectra).

Research Experience for Undergraduates May 2018 - Aug 2018
Texas A&M University: Dept. Oceanography

· Characterized salinity structure in Copano Bay, TX using ROMS model output.
· Analyzed time scales, total exchange flow, and salinity variance in Copano Bay to improve performance of existing numerical models.
· Cruise: R/V Pelican (3 days). Cocodrie, LA, to Flower Garden Banks National Marine Sanctuary in the northern Gulf of Mexico.

PUBLICATIONS

3. **Schlichting, D.**, Qu, L., Kobashi, D., & Hetland, R. (2023). Quantification of physical and numerical mixing in a coastal ocean model using salinity variance budgets. *Journal of Advances in Modeling Earth Systems*, 15, e2022MS003380. `https://doi.org/10.1029/2022MS003380`.

2. Qu, L., Hetland, R., & **Schlichting, D.** Mixing pathways in simple box models (2022). *Journal of Physical Oceanography*, 52(11), 2761-2772. `https://doi.org/10.1175/JPO-D-22-0074.1`.

1. Spicer, P., **Schlichting, D.**, Huguenard, K., Roche, A., & Rickard, L. (2021). Sensing Storm Surge: A framework for establishing a citizen scientist monitored water level network. *Ocean and Coastal Management*, 211, 105802. `https://doi.org/10.1016/j.ocecoaman.2021.105802`.

MANUSCRIPTS IN PREPARATION

2. **Schlichting, D.**, & Hetland, R. Numerical mixing in idealized simulations of submesoscale baroclinic instabilities over a weakly stratified shelf.

1. Wei Hsu, F., Shearman, R. Kipp , **Schlichting, D.**, Kobashi, D., & Hetland, R. S_2 Atmospheric Tide Driven Superinertial Oscillation on the Texas-Louisiana Shelf. Intent to submit to *Journal of Physical Oceanography*.

INVITED PRESENTATIONS

2. **Schlichting, D.** (2022). An introduction to numerical mixing in a coastal ocean model of the Texas-Louisiana continental shelf. SUNRISE student cruise meeting. Dec 11. Bend, OR. *Talk*.

1. **Schlichting, D.**, Qu, L., Hetland, R., & Kobashi, D. (2022). Quantification of physical and numerical mixing using tracer variance dissipation in a coastal ocean model. Pacific Northwest National Laboratory coastal modeling group. Jul 11. *Talk, virtual*.

ACADEMIC PRESENTATIONS / CONFERENCES

14. **Schlichting, D.**, & Hetland, R. (2023). Numerical mixing in idealized simulations of baroclinic instabilities over a shelf. Gordon Research Seminar/Conference on coastal ocean dynamics, Jun 17-23. *Poster*.

13. Texas Center for Climate Studies High Resolution Earth System Modelling Workshop (2023). College Station, TX, Jan 23-25. *Attended*.

12. **Schlichting, D.**, Qu, L., Hetland, R., & Kobashi, D. (2022). Quantification of physical and numerical mixing using tracer variance dissipation in a coastal ocean model. Gordon Research Seminar/Conference on ocean mixing, Jun 4-10. *Poster*.

11. Hetland, R., Qu, L., & **Schlichting, D.** (2022). Tracer variance mixing in simple box models. Ocean Sciences Meeting. Feb 24 - Mar 4. *Talk*.

10. **Schlichting, D.**, Qu, L., Hetland, R., & Kobashi, D. (2022). Using salinity variance budgets to quantify numerical mixing in a coastal ocean model. Ocean Sciences Meeting. Feb 24 - Mar 4. Talk.

9. **Schlichting, D.**, Hetland, R., Qu, L., & Kobashi, D. (2021). Using tracer variance budgets to quantify numerical mixing offline in a coastal ocean model. Warnemünde Turbulence Days Meeting. Dec 6-9. *Talk*.

8. Scientific Computing with Python Conference (2021). Jul 12-18. *Attended, virtual*.

7. Scientific Computing with Python Conference (2020). Jul 6-12. *Attended, virtual*.

6. **Schlichting, D.**, Lieberthal, B., & Huguenard, K. (2019). An assessment into vegetation farms as a solution to coastal erosion in southern Maine. Northeast Aquaculture Conference, Boston MA. Jan 9-11. *Poster*.

5. **Schlichting, D.** & Hetland, R. (2018). Using salinity variance and total exchange flow to analyze salinity structure in an unsteady estuary. Physics of Estuaries and Coastal Seas Conference, Galveston TX. October 14-18. Poster.

4. **Schlichting, D.** & Hetland, R. (2018). Mechanisms controlling salinity structure structure in a broad, shallow, unsteady estuary. Sustainable Ecological Aquaculture Network Undergraduate Research Symposium, Walpole ME. August 7. Poster.

3. **Schlichting, D.** & Hetland, R. (2018). Salinity structure in Copano Bay. Texas A&M University Observing the Ocean REU Student Symposium, College Station, TX. August 2. *Talk*.

2. **Schlichting, D.**, Lieberthal, B., & Huguenard, K. (2017). Vegetation farms as a solution to coastal erosion for Saco, Maine. Sustainable Ecological Aquaculture Network Undergraduate Research Symposium, Walpole ME. August 16. *Poster*.

1. Coastal and Estuarine Research Federation Conference (2017). Providence, RI, Nov 5-9. *Attended*.

SERVICE AND TEACHING

Reviewer: *Journal of Advances in Modeling Earth Systems*	Aug. 2023 - Present
Reviewer: *Journal of Geophysical Research: Oceans*	Aug. 2023 - Present
Judge: Student Research Week (multiple sessions)	Spring 2023
NSF PROGRESS Mentor - Milly Hencey	Fall 2022
Judge: Environmental Geosciences (GEOS 405, TAMU)	Spring 2022
Tutor: Computers in Civil Engineering (CIE 115, UMaine)	Spring 2019

HONORS AND AWARDS

Louis and Elizabeth Scherck Scholarship (X4)	2020-Present
NSF S-STEM Scholar (X2)	Jan 2020 - Aug 2021
Oceanography Graduate Council mini-grant recipient (X3)	2021
Frank Sleeper - Sawyer Scholarship	2017 - 2019
Best civil engineering capstone project	2019
Chi Epsilon Member: Civ. Eng. Honors Society	2019
NSF Research Experience for Undergraduates Scholar	May 2018 - Aug 2018
Alpha Tau Omega Memorial Scholarship	2018

SKILLS

- Programming: Python (advanced), LaTeX(advanced), Markdown (advanced), Matlab (intermediate), Bash (intermediate), FORTRAN (basic), C++ (basic), Linux administration (basic)
- Website design with GitHub Pages, HTML, Ruby, and CSS
- Ocean modeling: ROMS/COAWST (structured, advanced), MPAS-O (unstructured, basic), FVCOM (unstructured, basic)
- Ocean observations: Advanced knowledge of HOBO water level and conductivity sensors, basic experience with ADCPs and ADVs
- Open science: GitHub/git, Zenodo, GLOBUS
- Civil engineering: Concrete mooring design, basic experience with HEC-RAS, AutoCad, and Revit

PROFESSIONAL SOCIETIES

- American Geophysical Union
- Association for the Sciences of Limnology and Oceanography
- The Oceanography Society