

# LILIAN MICHELLE ENGEL

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## EDUCATION

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<b>PhD</b>	<b>Civil and Environmental Engineering</b>	August 2023
	University of California, Berkeley	
	Dissertation: <i>Into the Plankter-Verse: Physical-Biological Interactions in Estuaries</i>	
	UC San Diego Scripps Institution of Oceanography, inter-campus exchange	
<b>MS</b>	<b>Civil and Environmental Engineering</b>	May 2019
	University of California, Berkeley	
<b>BS</b>	<b>Biosystems Engineering</b>	May 2018
<b>BS</b>	<b>Mathematics</b>	May 2018
	University of Arizona	
	Honors and Summa Cum Laude, GPA: 3.954/4.0	
	Minors in Spanish and Mechanical Engineering	
	University of Queensland, study abroad	

## RESEARCH EXPERIENCE

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<b>Postdoctoral Researcher, Pacific Northwest National Lab</b>	2023-Present
Mentor: Dr. Lysel Garavelli	

- Implemented a modeling tool to evaluate the effects of diel vertical migration on phytoplankton population dynamics in the Salish Sea Model.
- Developed a larval dispersal biophysical model using the Salish Sea Model for an invasive crab species, the European Green Crab.
- Interacted with Tribal Nations and Federal/State agencies for data organization.
- Implemented a larval dispersal biophysical model to analyze the effects of offshore wind on three commercial US fish species.
- Evaluated the spread of PCBs in the Puget Sound using the Salish Sea Model.
- Participated in two field campaigns to collect eDNA of the European Green Crab in different parts of the Salish Sea.

<b>Dissertation, UC Berkeley Civil and Environmental Engineering</b>	2023
Advisor: Dr. Mark Stacey	

- Investigated how time variable exchange between a channel and shoal in San Francisco Bay influences biomass with an interacting water columns model.
- Explored the interaction of sinking particles and estuarine exchange flow to recreate the estuarine turbidity maximum in a simplified longitudinal model.
- Developed The Peter-Parker Model: an ecophysical model which combined estuarine physics with a NPZD ecosystem model to explore how human impacts and other

- climate change scenarios affect the interaction of estuarine flow with ecosystem processes in an estuary.
- Participated/presented work in the UC Berkeley EFMH lab group, the Franks lab group at Scripps, the COMPASS-GLM team meetings, the University of Washington EFM group, and the MacCready group at UW.

#### TEACHING EXPERIENCE

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<b>Graduate Student Instructor, UC Berkeley CEE</b>	Spring 2021
Advisor: Dr. Mark Stacey	
<ul style="list-style-type: none"><li>Graduate level course titled <i>Environmental Fluid Mechanics II</i>.</li><li>Explored application of a water column model to various environmental scenarios.</li><li>Led a discussion section once every two weeks, held regular office hours, and helped prepare the coursework.</li></ul>	

#### SERVICE/AFFILIATIONS

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Washington Ocean Acidification Center Research Cruise	Summer 2023
Western Coastal Collaboratorium (WCC) Seminar Planning Committee	2022-2023
Environmental Engineering Graduate Student Admissions Committee	Spring 2022
Civil and Environmental Engineers for Anti-Racism	2020-2022
Environmental Engineering Seminar Planning Committee	Fall 2019
Environmental Engineering Advocacy Team	2018-2022

#### HONORS AND AWARDS

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<b>Student Poster Award</b>	2023
Gordon Research Conference: Coastal Ocean Dynamics	
<b>National Science Foundation Graduate Research Fellowship Program</b>	2018
Awarded 2018, on tenure 2019, 2021, and 2022.	
<b>Department Award</b>	2018
Financial assistantship for MS degree.	

#### SKILLS

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**Programming:** Python, MATLAB, C, Julia, Java

**Applications:** Solidworks, Excel/VBA, FVCOM

**Other:** Passed FE Exam, Intermediate Spanish, Beginner French

#### CONFERENCE PRESENTATIONS

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<b>Coastal &amp; Estuarine Research Federation 2025 Conference</b> (Richmond, VI)	2025
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*Impact of Zooplankton's Diel Vertical Migration on the Biogeochemical Cycle of a Deep Urban Estuary*  
**Gordon Research Conference: Coastal Ocean Dynamics** (New Lon, NH - poster) 2025  
*Using real-world data to inform larval dispersal modeling for invasive species management*

**American Geophysical Union Fall Meeting** (Washington, D.C. - talk) 2024  
*Modeling larval dispersal and its implications for marine ecosystem management*

**American Fisheries Society Meeting** (Honolulu, HI – talk) 2024  
*Influence of offshore wind on larval dispersal of US commercial species*

**Ocean Sciences Meeting** (New Orleans, LA - talk) 2024  
1. *Coastal ecosystem vulnerability to an invasive species – the European Green Crab*  
2. *The Peter-Parker Model vs The Sandman: How does the interaction of particle sinking and estuarine flow lead to Estuarine Turbidity Maxima (ETM)?*

**Coastal & Estuarine Research Federation 2023 Conference** (Virtual - talk) 2023  
*The Peter-Parker Model: Breaking Apart Physical and Biological Contributions which Lead to Estuarine Phytoplankton Blooms*

**Gordon Research Conference: Coastal Ocean Dynamics** (Smithfield, RI - poster) 2023  
*The Peter-Parker Model: Breaking Apart Physical and Biological Contributions which Lead to Estuarine Phytoplankton Blooms*

**American Geophysical Union Fall Meeting** (Chicago, IL - talk) 2022  
*How Does Intermittency in Channel-Shoal Exchange Influence Biomass in an Estuarine Ecosystem?*

**Ocean Sciences Meeting** (Virtual - talk) 2022  
*The Peter-Parker Model: Particle sinking and estuarine flow dynamics lead to estuarine phytoplankton blooms.*

#### **INVITED SPEAKER/LECTURER**

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**Salish Sea Roundtable** (Virtual) 2025  
*Larval Connectivity of the European Green Crab*

**WDFW EGC Managers Symposium** (Virtual) 2025  
*Larval Dispersal Modeling of the European Green Crab Update*

**UW Tacoma Environmental Modeling Class Guest Lecture** (Tacoma, WA) 2024  
*Environmental Modeling for European Green Crab Management*

**European Green Crab Larval Identification Workshop** (Padilla Bay, WA) 2024  
*European Green Crab Larval Dispersal Modeling*

**Gordon Research Seminar: Coastal Ocean Dynamics** (Smithfield, RI) 2023

*The Peter-Parker Model: Breaking Apart Physical and Biological Contributions which Lead to Estuarine Phytoplankton Blooms*

**Western Coastal Collaboratorium** (University of Washington Seattle, WA) 2023  
*The Peter-Parker Model: Breaking Apart Physical and Biological Contributions which Lead to Estuarine Phytoplankton Blooms*

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**IN PREPARATION PUBLICATION LIST**

Engel, L., Keller, A., Grason, E., Therriault, T., Makhlof, B., Premathilake, L., Khangaonkar, T., Garavelli, L. (In preparation). Using real-world data to inform larval dispersal modeling for invasive species management.

Garavelli, L., Engel, L., Hemery, L., Monim, Mahmud, Day, E., Codiga, Dan, Georgas, N. (In review). Navigating larval dynamics amid offshore wind development.

Engel, L. & Stacey, M. (In preparation). Relative Contributions of River Flow and Terrestrial Nutrient Sourcing on Phytoplankton Concentration in an Estuary.

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**PUBLICATION LIST**

Engel, L., Premathilake, L., Barrier, N., Khangaonkar, T., Garavelli, L. (2025) Larval connectivity for European green crab management in the Salish Sea and surrounding waters. Mar Ecol Prog Ser 754:77-92. <https://doi.org/10.3354/meps14778>

Engel, L., Lucas, L. & Stacey, M. The Role of Spring-Neap Phasing of Intermittent Lateral Exchange in the Ecosystem of a Channel-Shoal Estuary. Estuaries and Coasts 48, 22 (2025). <https://doi.org/10.1007/s12237-024-01434-8>

Engel, L. & Stacey, M. Timescales of Ecological Processes, Settling, and Estuarine Transport to Create Estuarine Turbidity Maxima: An Application of the Peter–Parker Model. Water 2024, 16, 2084. <https://doi.org/10.3390/w16152084>

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**JOURNAL REVIEW**

Reviewed manuscripts for *Estuaries and Coasts*, *PLOS ONE*.