

# Seth Zippel (he/him), PhD

*Assistant Scientist*

Applied Ocean Physics and Engineering  
Woods Hole Oceanographic Institution  
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## EDUCATION

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2017 **PhD** *Applied Physics Lab, University of Washington, WA*  
Civil and Environmental Engineering: Hydrology and Hydrodynamics  
2014 **MS Civil and Environmental Engineering** *Applied Physics Lab, University of Washington, WA*  
2009 **BA Physics** *Whitman College, WA*

## EMPLOYMENT

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2019-present **Assistant Scientist** *Woods Hole Oceanographic Institution, MA*  
2017-2019 **Postdoctoral Scholar** *Woods Hole Oceanographic Institution, MA*  
2010-2012 **Research Assistant** *Woods Hole Oceanographic Institution, MA*  
2009-2010 **NSF Swashzone Fellow** *Woods Hole Oceanographic Institution, MA*  
2008-2009 **Lab Assistant** *Whitman College, WA*

## PUBLICATIONS

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**Zippel, S.**, Farrar, J. T., Zappa, C. J., Miller, U., St. Laurent, L., Ijichi, T., Weller, R. A., McRaven, L. T., Nylund, S., Le Bel, D. (2021). Moored Turbulence Measurements using Pulse-Coherent Doppler Sonar. *J Atmos Ocean Technol.* (Early online release)  
**Zippel, S.**, Maksym, T., Scully, M., Sutherland, P., Dumont, D., (2020) Measurements of Enhanced Near-Surface Turbulence Under Windrows. *J. Phys. Oceanogr.*, 50, 197-215.  
**Zippel, S.**, Thomson, J., Farquharson G. (2018). Turbulence from breaking surface waves at a river mouth. *J. Phys. Oceanogr.*, 48, 435-453.  
**Zippel, S.**, and Thomson, J. (2017). Surface wave breaking over sheared currents: observations from the Mouth of the Columbia River. *J. Geophys. Res. Oceans.*, 122, 3311-3328.  
Thomson, J., Schwendeman, M. S., **Zippel, S. F.**, Moghimi, S., Gemmrich, J., & Rogers, W. E. (2016). Wave breaking turbulence in the ocean surface layer. *J. Phys. Oceanogr.*, 46, 1857-1870.  
**Zippel S.**, Thomson J. (2016). Air-sea interactions in the marginal ice zone. *Elem. Sci. Anth.*, 4: 000095.  
Moghimi, S., Thomson, J., Özkan-Haller, T., Umlauf, L., & **Zippel, S.** (2016). On the modeling of wave-enhanced turbulence nearshore. *Ocean Modell.*, 103, 118-132.  
**Zippel, S.**, and J. Thomson (2015), Wave breaking and turbulence at a tidal inlet, *J. Geophys. Res. Oceans.*, 120, 1016-1031.  
Thomson, J., Horner-Devine, A. R., **Zippel, S.**, Rusch, C., & Geyer, W. (2014). Wave breaking turbulence at the offshore front of the Columbia River Plume. *Geophys. Res. Lett.*, 41, 8987-8993.

## EXTERNAL FUNDING

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2020-2023 **NSF, OCE-2023020** Air/Sea Energy Fluxes Mediated by Waves and Pressure Work  
*Role: Lead Principal Investigator, leading field work, analysis, student mentorship*  
2020-2021 **NSF, OIA-2035143** NSF Convergence Accelerator: Future of Oceans: Innovation, Exploration, and Utilization  
*Role: Co-Principal Investigator, co-lead planning, organization, and enacting of Smart Oceans 2020 workshops*

- 2021-2025 **DOE** Improving High Resolution Offshore Wind Resource Assessments and Forecasts using Observations in the MA/RI Lease Areas  
*Lead: A. Kirincich (WHOI)*  
*Role: upper ocean current measurements, wave measurements, assisting with large-barge flux tower deployments and ASIT measurements*
- 2021-2025 **NASA** Salinity and Stratification at the Sea Ice Edge (SASSIE)  
*Lead: K. Drushka (UW/APL)*  
*Role: lead collection and analysis of shipboard air-sea heat, momentum, and moisture flux measurements*

## TEACHING

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- 2016 **Teaching Assistant** Civil and Env. Engineering, *University of Washington*  
 Developed CEE572, the graduate level addition to coastal engineering CEE473. Created graduate coursework, including an introduction to the wave model SWAN.
- 2014 **Teaching Assistant** Civil and Env. Engineering, *University of Washington*  
 CEE:473 Coastal Engineering. Gave multiple in class lectures, and ran office hours.

## ADVISING

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- 2021-current **Oaklin Keefe**, MIT/WHOI Joint Program Student in Physical Oceanography

## SERVICE

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- 2020 **Smart Oceans 2020 workshops**  
 Conference co-lead and organizer
- 2020 **Committee for Diversity, Equity, and Inclusion**,  
*Volunteer*, Messaging and Implementation Working Group
- 2021 **AOPE Department Standing Committee for Diversity**  
*Member*
- 2021 **Search Committee for Chief Diversity, Equity & Inclusion Officer**,  
*Non-tenured Scientific Staff Representative*
- 2021 **Cañada College STEM Center**, Job Shadowing Program  
*Hosted URM community college students for job shadowing program (Virtual)*

## PRESENTATIONS

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- Nov, 2020 **Turbulence Estimation from Moorings using Pulse-Coherent Doppler Profilers**  
 COFDL Seminar, *Woods Hole, MA (Zoom)*
- Apr, 2020 **Turbulence Estimation from Moorings using Pulse-Coherent Doppler Profilers**  
 EFM Seminar Series, *Seattle, WA (zoom)*
- Feb, 2020 **Turbulence measurements from the SPURS-2 mooring**  
 Ocean Sciences Meeting, *San Diego, CA*
- Jan, 2020 **M-O Scaling at the SPURS Moorings: A Cautionary Tale**  
 Coastal Ocean Fluid Dynamics Laboratory Seminar, *Woods Hole, MA*
- Sep, 2019 **The Effects of Ice and Currents on Wave-breaking Turbulence at the Ocean Surface**  
 UConn Marine Sciences Seminar, *Groton, CT*
- Jun, 2019 **The Circulation, Geometry, and Turbulence of Windrows: Measurements from the St. Lawrence Estuary**  
 Gordon Conference, *Manchester NH*
- Jun, 2019 **The Circulation, Geometry, and Turbulence of Windrows: Measurements from the St. Lawrence Estuary**  
 Gordon Seminar, *Manchester NH*
- Apr, 2019 **Modifications to Wave-breaking Turbulence at the Ocean Surface by Ice, Currents, and Windrows**  
 WHOI AOP&E Seminar, *Woods Hole, MA*

Dec, 2018 **Measurements of Enhanced Near-Surface Turbulence Under Windrows**  
AGU Fall Meeting, *Washington D.C.*

Oct, 2018 **The Effects of Ice and Currents on Wave-breaking Turbulence at the Ocean Surface**  
WHOI PO seminar *Woods Hole, MA*

Feb, 2018 **Wave-breaking Turbulence at a River Inlet**  
Ocean Sciences *Portland, OR*

Jan, 2018 **The Effects of Ice and Currents on Wave-breaking Turbulence at the Ocean Surface**  
UNH Oce. Eng. Seminar *Durham, NH*

Dec, 2017 **The Effects of Ice and Currents on Wave-breaking Turbulence at the Ocean Surface**  
Coastal Ocean Fluid Dynamics Laboratory Seminar *Woods Hole, MA*

May, 2017 **Wave breaking over vertically sheared currents**  
WISE Meeting *Victoria, Canada*

Apr, 2017 **Field Measurements of Waves and Currents at the Mouth of the Columbia River**  
EGU Meeting *Vienna, Austria*

Jan, 2017 **Turbulence Estimates from a Free Drifting Platform at a River Inlet**  
AMS *Seattle, WA*

Jun, 2016 **Observations of Wave Breaking Induced by Wave-Current Interactions**  
WISE Meeting *Venice, Italy*

Feb, 2016 **The Effects of Ice and Currents on Wave-driven Turbulence at the Ocean Surface**  
Ocean Sciences *New Orleans, LA*

Apr, 2015 **Winds, Waves, and Turbulence in the Marginal Ice Zone**  
Gas Transfer Workshop 7 *Seattle, WA*

Dec, 2014 **Wave Transformation and Breaking on a Sheared Current**  
AGU Fall Meeting *San Francisco, CA*

Jun 2014 **Wave Breaking and Turbulence and New River Inlet, Depths, Currents, and Winds**  
WISE Meeting *Reading, England*

Feb 2014 **Wave Breaking Due To Depth and Currents**  
Ocean Sciences *Honolulu, HI*

Dec 2012 **Wave Breaking at New River Inlet**  
AGU Fall Meeting *San Francisco, CA*

Feb 2010 **Bottom Drag Coefficients on a Tidal Flat**  
Ocean Sciences *Portland, OR*

Dec 2009 **Friction Coefficients on the Skagit Tidal Flats**  
Coastal Ocean Fluid Dynamics Laboratory Seminar *Woods Hole, MA*

## CERTIFICATIONS

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2011 **NOLS Leadership Training**  
2010 **AAUS Scientific Diver**, Dry Suit Certification, Nitrox Certification  
2011 **Woods Hole Oceanographic Institution Small Boat Certification**

## FIELD WORK

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Feb 2020 **BicWin2020** *Rimouski, Quebec*  
Feb-Mar 2018 **BicWin2018** *Rimouski, Quebec*  
Apr 2017 **Quinalt River** *Ocean Shores, WA*  
Oct 2016 **RollEx** *Duck, NC*  
Oct 2014 **Marginal Ice Zone DRI** *Beaufort Sea*  
Aug 2014 **USCGC Healy** *Beaufort Sea*  
Sept 2013 **USCGC Healy** *Beaufort Sea*  
April-Sept 2013 **RIVET 2** *Columbia River Mouth, WA/OR*  
Jun-Aug 2012 **HoleEx 2** *Duck, NC*  
Apr-Jun 2012 **RIVET 1** *New River Inlet, NC*  
Oct-Nov 2011 **Duck sensor tests** *Duck, NC*  
Jul-Sept 2011 **Rivers and Inlets Study** *Katama Bay, MA*  
May 2011 **Vorticity Experiment** *Duck, NC*

Jul-Aug 2010 **HoleEx 1** *Duck, NC*  
Jun-Sept 2009 **Skagit Tidal Flats Experiment** *La Conner, WA*