

# Galen Egan

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## EDUCATION

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<b>Ph.D., Civil &amp; Environmental Engineering</b> <b>Environmental Fluid Mechanics &amp; Hydrology</b> Stanford University, Stanford, CA	June 2020
<b>M.S., Civil &amp; Environmental Engineering</b> <b>Environmental Fluid Mechanics &amp; Hydrology</b> Stanford University, Stanford, CA	June 2016
<b>B.S., Civil &amp; Environmental Engineering</b>   <i>magna cum laude</i> <b>Environmental &amp; Water Resources Engineering</b> UCLA, Los Angeles, CA	June 2015

## RESEARCH

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<b>Graduate researcher, Stanford University</b> <b>Bob &amp; Norma Street Environmental Fluid Mechanics Lab</b> Advisor: Prof. Stephen Monismith, Co-advisor: Prof. Oliver Fringer  Thesis: <i>Waves, turbulence, mud, and worms: sediment transport and boundary layer dynamics in an estuary</i> Led three field deployments in San Francisco Bay with novel instrumentation designed to investigate boundary layer turbulence and sediment transport. Additional projects include hydrodynamic modeling of stratified turbulence in a tidal river, and running laboratory experiments to quantify the mixing of brine discharge from desalination plants.	2016–present
<b>Undergraduate researcher, UCLA</b> <b>Laboratory for the Chemistry of Construction Materials</b> Advisor: Prof. Gaurav Sant  Investigated the mechanical and transport properties of low-CO <sub>2</sub> footprint concretes for civil infrastructure applications. Designed and conducted multi-year experiments studying the effects of aggregate inclusion on moisture transport and drying shrinkage in cement composites.	2013–2015

## EXPERIENCE

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<b>Visiting student, United States Geological Survey, Woods Hole, MA</b> Contact: Neil Ganju Sitting in the Coastal and Marine Geology group while finishing dissertation research.	2019–present
<b>On-call scientist, Integral Consulting Inc.</b> Supervisor: Grace Chang Provide data analysis and field work support for Integral's Marine Science & Engineering practice. Current work includes a baseline condition assessment for a potential sediment remediation site.	2019–present
<b>Engineering assistant, Jensen Design &amp; Survey Inc.</b> Supervisor: Donald Jensen Drafted plans and coordinated all contractor bidding and approval for a road rehabilitation project. Conducted flow studies for a new sewer line installation and designed ADA compliant infrastructure for housing developments.	06/2013–08/2013

## PUBLICATIONS

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- Cowherd, M., **Egan, G.**, Monismith, S., & Fringer, O. (2020 *in prep*). Wave-phase decomposed boundary layer dynamics in a shallow estuary.
- Egan, G.**, Chang, G., Revelas, G., Fringer, O., & Monismith, S. (2020 *in prep*). Cohesive sediment erosion in the field and laboratory: analysis and comparison.
- Roberts, D.C., **Egan, G.**, Forrest, A.L., Largier, J.L., Bombardelli, F.A., Laval, B.E., Monismith, S.G., Schladow, S.G. (2020 *in revision*). The setup and relaxation of spring upwelling in a deep, rotationally influenced lake.
- Egan, G.**, Manning, A., Chang, G., Fringer, O., & Monismith, S. (2020 *in revision*). Sediment-induced stratification in an estuarine bottom boundary layer.
- Egan, G.**, Chang, G., Revelas, G., Monismith, S., & Fringer, O.. (2020 *accepted*). Bottom drag varies seasonally with biological roughness. *Geophysical Research Letters*
- Egan, G.**, Cowherd, M., Fringer, O., & Monismith, S. (2019). Observations of near-bed shear stress in a shallow, wave- and current-driven flow. *Journal of Geophysical Research: Oceans* 124(8), 6323-6344.
- Monismith, S.G., Hirsh, H., Batista, N., Francis, H., **Egan, G.**, & Dunbar, R.B. (2019). Flow and drag in a seagrass bed. *Journal of Geophysical Research: Oceans* 124(3), 2153-2163.
- Hogg, C. A., **Egan, G.**, Ouellette, N. T., & Koseff, J. R. (2018). Shoaling internal waves may reduce gravity current transport. *Environmental Fluid Mechanics* 18(2), 383-394.
- Egan, G.**, Kumar, A., Neithalath, N., & Sant, G. (2017). Re-examining the influence of the inclusion characteristics on the drying shrinkage of cementitious composites. *Construction and Building Materials* 146, 713-722.

## CONFERENCES

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- Egan, G.**, Cowherd, M., Spada, F., Scheu, K., Manning, A., Jones, C., Chang, G., Fringer, O., & Monismith, S. "Cohesive sediment erosion in a shallow, wave- and current-driven flow." (poster) 2020 Ocean Sciences Meeting, San Diego, CA
- Cowherd, M., **Egan, G.**, Monismith, S., & Fringer, O. "Wave phase-decomposed near-bed currents and turbulence on the shoals of South San Francisco Bay." (poster) 2020 Ocean Sciences Meeting, San Diego, CA
- Chang, G., **Egan, G.**, Spada, F., Jones, C., Manning, A., Monismith, S., & Fringer, O. "Variability of particle characteristics in a wave- and current-driven estuarine environment." (poster) 2020 Ocean Sciences Meeting, San Diego, CA
- Egan, G.**, Cowherd, M., Spada, F., Scheu, K., Manning, A., Jones, C., Monismith, S., Chang, G., Fringer, O. "More than mud: bottom boundary layer observations in an estuary." (poster) Gordon Research Conference: Coastal Ocean Dynamics, June 2019, Manchester, NH.
- Egan, G.**, Cowherd, M., Spada, F., Scheu, K., Manning, A., Jones, C., Monismith, S., Chang, G., & Fringer, O. "In situ observations of near-bed turbulence and cohesive sediment transport." (presentation) AGU Fall Meeting 2018, Washington, D.C.
- Chang, G., Spada, F., Scheu, K., Jones, C., **Egan, G.**, Cowherd, M., Monismith, S., Fringer, O., & Manning, A. "Optics and acoustics for near-bed particle characterization and quantification of turbulence." (poster) Ocean Optics XXIV, October 2018, Dubrovnik, Croatia.
- Egan, G.**, Monismith, S.G., & Hench, J.L. "1D water column modeling of stratification and turbulence in a tidal river." (poster) 2018 Ocean Sciences Meeting, February 2018, Portland, OR

## INVITED TALKS

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“The bottom boundary layer in San Francisco Bay: waves, turbulence, mud, and worms.” Coastal Ocean Fluid Dynamics Laboratory Talk, September 2019, Woods Hole, MA

“What we learned from three muddy field deployments in San Francisco Bay.” Integral Consulting Marine Science and Engineering Webinar, May 2019, Santa Cruz, CA

“Cohesive sediment and the friction velocity.” Stanford Environmental Fluid Mechanics Laboratory Seminar, April 2019, Stanford, CA

“Stratification and turbulence in a tidal river: observations and 1D modeling.” Stanford Environmental Fluid Mechanics Laboratory Seminar, September 2017, Stanford, CA

## TEACHING

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**CEE 262B: Transport and Mixing in Surface Water Flows, Stanford University** Winter 2017, 2018

Teaching assistant: prepared and taught lessons for weekly supplementary class session, held office hours, and graded assignments.

**OSPGEN 53: Corals of Palau, Stanford/Bing Overseas Program** Summer 2017

Teaching assistant: Prior to the course, coordinated shipping and programming all of scientific instruments used for three week summer course in Palau. During the course, helped mentor student research projects, coordinated field excursions, and directed student life abroad.

**CEE 101B: Mechanics of Fluids, Stanford University** Fall 2016

Teaching assistant: held weekly office hours and review sessions, set up and assisted with the laboratory portion of the course.

**CEE 201S: Computations in CEE, Stanford University** Summer 2016

Teaching assistant: held weekly office hours, graded assignments, and led supplemental discussion section for a MATLAB-based programming class. Taught to a wide audience, from high school seniors to Stanford Continuing Studies students.

## AWARDS & CERTIFICATIONS

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Centennial TA Award Recipient 2018

Outstanding Student Presentation Award, AGU Fall Meeting 2018

Charles H. Leavell Graduate Student Fellow 2017–2018

John K. Vennard Fellow 2016

California EIT #157339 2016

## SERVICE & OUTREACH

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**Stanford CEE Graduate Life Committee** Environmental Engineering Representative 2017–2019

Planned and led quarterly town hall meetings to gain insight into problems experienced by graduate students in CEE, including issues related to diversity and inclusion, advisor relationships, and admissions procedures.

**Stanford EnvEng Student Committee** Representative 2017–2019

Organized activities and mentorship programs for students in the EnvEng sub-department.

**National Ocean Sciences Bowl** Volunteer - Stanford, CA 2017

Assisted with judging and logistics for Ocean Sciences quiz bowl for local high school students.

## MENTORING

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**Undergraduate research mentor**

2018–present

Mentoring an undergraduate (now MS) researcher. Trained in field work and data analysis, and held weekly meetings for honors thesis project. For reference, contact Marianne Cowherd at [mcowherd@stanford.edu](mailto:mcowherd@stanford.edu)

**Undergraduate research mentor**

2018–2019

Assisted an undergraduate researcher with her honors thesis, which won the Firestone Medal for Excellence in Undergraduate Research. For reference, contact Sienna White at [siennarwhite@gmail.com](mailto:siennarwhite@gmail.com)