

# JORGE E. SAN JUAN

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**RESEARCH INTERESTS** — Turbulence · Sediment Transport · Mixing & Transport · Environmental Hydrodynamics · Near-shore Marine Environments · Coastal Eco-Morphodynamics

## EDUCATION

**University of Illinois Urbana-Champaign** Urbana, IL  
Ven Te Chow Hydrosystems Laboratory  
Ecohydraulics and Ecomorphodynamics Laboratory

Ph.D. Environmental Engineering in Civil Engineering 2016-2021  
Thesis: *The Role of Aquatic Vegetation on Oscillatory Flows and Sediment Transport*.  
Committee: Julia Mullarney, Marcelo García, Gary Parker, Leonardo Chamorro  
Rafael Tinoco (Advisor)

M.Sc. Environmental Engineering in Civil Engineering 2015-2016  
Thesis: *Radial and Tangential Velocity Profiles in an Annular Flume with Granular Bed*.  
Advisor: Marcelo García

**Universidad de Cartagena** Cartagena, Colombia  
B.Sc. Civil Engineering 2007-2012

## ACADEMIC APPOINTMENTS

**University of Minnesota Twin Cities** Minneapolis, MN  
Postdoctoral Associate 2021-Present  
St Anthony Falls Laboratory  
Department of Civil, Environmental, and GeoEngineering  
Research Topic: *Impact of ionic-strength in the formation, erodibility, and transport of cohesive sediment aggregates*.  
Supervisor: Judy Yang

## PUBLICATIONS

Jin, C., Coco, G., Tinoco, R.O., Ranjan, P., **San Juan, J.E.**, Dutta, S., Friedrich, H. & Gong, Z. (2021). Large Eddy Simulation of three-dimensional flow structures over wave-generated ripples. *Earth Surface Processes and Landforms*, 46:1536–1548.

Tinoco, R. O., **San Juan, J. E.**, & Mullarney, J. C. (2020). Simplification bias: lessons from laboratory and field experiments on flow through aquatic vegetation. *Earth Surface Processes and Landforms*, 45(1), 121-143.

**San Juan, J. E.**, Carrillo, G. V., & Tinoco, R. O. (2019). Experimental observations of 3D flow alterations by vegetation under oscillatory flows. *Environmental Fluid Mechanics*, 19(6), 1497-1525.

*SUBMITTED*

**San Juan, J. E.** & Tinoco, R. O. (Submitted) Turbulent Kinetic Energy Predictor for Oscillatory Flows Through Submerged Aquatic Vegetation. Submitted to *Journal of Geophysical Research: Earth Surface*.

*IN PREP.*

**San Juan, J. E.**, Mullarney, J. C. & Tinoco, R. O. (In Prep.) Suspended Sediment Concentration in Vegetated Oscillatory Flows. In preparation for submission to *Water Resources Research*.

Jin, C., Coco, G., Tinoco, R.O., Ranjan, P., Gong, Z., Dutta, S., **San Juan, J.E.**, & Friedrich, H. (In Prep.) High-resolution Large Eddy Simulations of Vortex Dynamics Over Ripple Defects. In preparation for submission to *Earth Surface Processes and Landforms*.

## INVITED TALKS, POSTERS, AND ABSTRACTS

- San Juan, J.E.**, & Tinoco, R.O. "A New Predictor of Turbulence Metrics for Wave-Dominated Flows through Submerged Aquatic Vegetation". Virtual Poster presentation at the *AGU Fall Meeting*. EP052-0011, Online Everywhere 1-17 Dec 2020.
- San Juan, J.E.**, & Tinoco, R.O. "Experimental study of the temporal and spatial distribution of turbulence within vegetation under oscillatory flows". Oral presentation at the *AGU Fall Meeting*. EP41A-07B, Washington, DC 10-14 Dec 2018.
- Jin, C., Coco, G., **San Juan, J.E.**, Tinoco, R.O., & Goldstein, E.B. "Laboratory Experiments on Flow Structure over Transient Ripples Geometry." Poster presentation at the *AGU Fall Meeting* EP23C-2314, Washington, DC 10-14 Dec 2018.
- San Juan, J.E.** "Ecohydraulics: Interdisciplinarity and Engineering" Invited Speaker at the *4th Annual Illinois Water Day*. Urbana, IL, 2018
- Tinoco, R.O., **San Juan, J.E.**, Prada, A., Spadaro, J., & Oeij, J. "The Effect of Stem- and Canopy-Scale Turbulence on Sediment Dynamics within Submerged Vegetation." Poster presentation at the *AGU Fall Meeting* EP43B-1889, New Orleans, LA 10-14 Dec 2017.
- San Juan, J.E.** & Tinoco, R.O. "Vegetation Generated Turbulence and 3D Coherent Structures on Oscillatory Flow through Aquatic Vegetation." Rivers, Poster presentation at the *RCEM 10th Symposium*. F7348, Trento-Padua, IT 15-22 Sep 2017.
- San Juan, J.E.**, Veliz, G., & Tinoco, R.O. "Effects of Vegetation Morphology on Mean Velocity and Turbulence Intensity under Oscillatory Flows and Their Implications for Sediment Transport in Benthic Zone." Poster presentation at the *AGU Fall Meeting*, Abstract EP53D-1005, San Francisco, CA 12-16 Dec 2016.
- San Juan, J.E.**, & Tinoco, R.O. "Effects of Vegetation Morphology on Mean Velocity and Turbulence Intensity under Oscillatory Flows." ePoster presentation at *We Go CEE Research Symposium*, Fall 2016.

## FELLOWSHIP, HONORS AND AWARDS

Early Career Spotlight - AGU EPSP September (nominated award)	2020
Chester P. Siess Award, University of Illinois Urbana-Champaign	2017
High Honors, Universidad de Cartagena	2011

## TEACHING, MENTORING, AND LEADERSHIP

### **Leadership**

Geo-Hydro Discussion Group, University of Illinois Urbana-Champaign	
Student led initiative. Inter-departmental seminar between Geoscience Departments and Water Resources Engineering Program. (Convener)	2018-2019
Eng. Open House at Hydrosystems Lab., University of Illinois Urbana-Champaign (Convener, Chair)	2015-2019
IAHR Student Chapter University of Illinois Urbana-Champaign (President, Newsletter, Social chair)	2016-2019
IAHR Young Professional Network Research Workshop, Student Chapters: University of Illinois Urbana-Champaign and University of Iowa (Convener)	2016-2017
Colombian Student Association at UIUC (President, Treasurer)	2017-2018
IWRA Illinois Water Day 2016, University of Illinois Urbana-Champaign (Committee member)	2016

### **Teaching**

CEE 350: Water Resources Engineering, Civil and Environmental Engineering Department University of Illinois Urbana-Champaign (Teaching assistant, Invited lecturer, Curriculum co-developer)	Fall 2019, 2020
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CEE 432: Stream Ecology, Civil and Environmental Engineering Department  
University of Illinois Urbana-Champaign  
(Invited lecturer)

Fall 2017

**SERVICE, OUTREACH AND PUBLIC ENGAGEMENT**

Panelist. *AGU Earth and Planetary Surface Processes*. AGU EPSP Connects event (April) 2021  
"Building a supportive research community."  
Ecohydraulic Exhibition. *DREAAM Program*. Rantoul, IL 2018-2019  
Logo Design, *GeoScience Summer Camp for Girls*. School of Earth, Society and Environment. 2019  
University of Illinois Urbana-Champaign  
Logo Design, *Ven Te Chow Hydrosystems Laboratory*. Civil and Environmental Eng. Dept. 2019  
University of Illinois Urbana-Champaign  
Water Resources Exhibition. Shake and Quakes Program. Urbana, IL 2017-2019