

Juan L. Garzon

jgarzon3@gmu.edu

<http://mason.gmu.edu/~jgarzon3/>

+1 5713636019

US address: 3890 Lyndhurst Dr, Apt 201 Fairfax, VA (USA)

Spain address: 35 Cerrillo St. Vilches, Jaen (Spain)

EDUCATION

Ph.D. in Civil Engineering-Water Resources

Fairfax, VA

George Mason University

05/2018

GPA: 4.00 (1-4 scale)

Dissertation Thesis: Field and numerical investigations of coastal hazards and nature based defenses from hurricane storm surge and waves in the Chesapeake Bay.

M.Sc. Coastal and Ports Engineering

Santander, Spain

University of Cantabria

06/2013

GPA: 8.27 (1-10 scale)

Master Thesis: Remote sandbar mapping at a multibarred beach in Sisal, Yucatan.

Bachelor of Civil Engineering

Granada, Spain

University of Granada

09/2010

GPA: 6.50 (1-10 scale)

PROFESSIONAL/RESEARCH EXPERIENCE

Graduate Research Assistant

Fairfax, VA

Flood Hazards Research Lab at George Mason University (FHRL)

2014-2018

- Mentoring students ranging from high school to doctoral students, improving my leadership and team work skills.
- Collaborating with different agencies (TNC, NOAA and US Geological Survey), as well as some prestigious national and international institutions such as Stanford, Deltares and Hydraulic Institute of Cantabria.
- Collecting field observations, analyzing time series and simulating coastal hazards.

NOAA Intern

College Park, MD

National Center for Environmental Prediction (NCEP)

2015

- Creating a water level forecast system in the Chesapeake Bay.
- Training in forecast activities.
- Being exposed to a unique educational and professional environment.

Graduate Research Assistant

Yucatan, Mexico

Engineering and Coastal Processes Laboratory (LIPC)

2012-2013

- Developing and validating a camera system to monitor sediment transport at a beach in Mexico.
- Quantifying sediment transport processes in sandy beach environments.
- Learning new technologies and improving my data analysis, oral and writing skills.

TEACHING EXPERIENCE

Flood Hazards Research Lab

Mentorship

2016-2018

- Instructing two undergraduate students on the coastal engineering field.
- Supervising technical papers, posters and oral presentations.
- Teaching MATLAB scripting and specific engineering software.

Mentee honors

- ASCE Marr Technical Paper 2017
- ASCE Hardy Cross Oratory Competition 2017
- 2017 OSCAR Student Excellence Award
- Research Celebration Outstanding Research Award 2017
- Selected to present at the 2017 NASEC conference
- ASCE Hardy Cross Oratory Competition 2018
- 2018 OSCAR Student Excellence Award
- Research Celebration Outstanding Research Award 2018

MENTORSHIP PROGRAM Thomas Jefferson High School for Science and Technology

Mentorship

2016-2017

- Supervising two high school students on their research activities.
- Explaining hydrodynamics and coastal engineering principles.
- Teaching MATLAB scripting and specific engineering software.

Mentee achievements

- Acquiring research experience.
- Developing the pioneer real-time flood forecast system at the FHRL.
- Submitting and publicizing of a peer reviewed article.

RESEARCH GRANTS

- NSF Extreme Science and Engineering Discovery Environment (2017). Project title: "Numerical simulation of coastal flood hazards: natural and nature-based features and coastal resilience". PI: Celso Ferreira.
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The Extreme Science and Engineering Discovery Environment (XSEDE) allocation provides access to computing, visualization, and/or storage resources as well as extended support services at XSEDE service provider (SP) sites. In general, XSEDE follows the guidelines described in the current NSF Grant Proposal Guide. XSEDE allocations are decided on a competitive process.

PUBLICATIONS

- Glass, E., **Garzon, J. L.**^{*}, Lawler, S., Paquier, E. and Ferreira, C. M. (2017) "Potential of marshes to attenuate storm surge water level in the Chesapeake Bay.", *Limnol. Oceanogr.* doi: 10.1002/lno.10682
***corresponding author**
- **Garzon, J. L.**, Ferreira, C. M. and R. Padilla-Hernandez (2017) "Evaluation of weather forecast systems for storm surge modeling in the Chesapeake Bay.", *Ocean dynamics.*
<https://doi.org/10.1007/s10236-017-1120-x>.

- **Garzon, J. L.**, Ferreira, C. M., Maza, M. and Lara, J.L. (2017) “A step forward in the implementation of natural solutions for coastal protection in the Chesapeake Bay.”, *8th SCACR International Short Conference on APPLIED COASTAL RESEARCH*
- Borga, M., Tanyu, B. F., Ferreira, C. M., **Garzon, J. L.**, and Onufrychuk, M. (2017) “A geospatial framework to estimate depth of scour under buildings due to storm surge in coastal areas.”, *Nat Hazards*. <https://doi.org/10.1007/s11069-017-2817-3>
- **Garzon, J. L.** and Ferreira, C. M. (2016) "Storm surge modeling in large estuaries: sensitivity analyses to parameters and physical processes in the Chesapeake Bay.", *J. Mar. Sci. Eng.*. doi:10.3390/jmse4030045
- **Garzon, J. L.**, Ferreira, C. M., Dalrymple, R. A. and Guikema, S.D. (2016) "Efficient integration of a storm surge model into a multidisciplinary agent based model framework.", *Journal of Coastal Research*, 1082-1086, <http://www.jstor.org/stable/43752430>.
- **Garzon, J. L.**, Ferreira, C. M., Maza M., Lara J.L. and Losada I. (2018) “Wave attenuation by Spartina saltmarshes in the Chesapeake Bay under storm surge conditions.” *Journal of Geophysical Research. Ocean* (Under review)
- **Garzon, J. L.**, Miesse, T. and Ferreira, C. M. (2018) “Field-based numerical model investigation of wave propagation across marshes in the Chesapeake Bay under storm surge conditions.” *Coastal Engineering* (Under review)
- Bigalbal A., Rezaie A., **Garzon J.L.**, and Ferreira C. (2018) “Potential Impacts of Sea Level Rise and Marsh Migration on Storm Surge Hydrodynamics and Waves on Coastal Protected Areas in the Chesapeake Bay.” *Journal of Marine Science and Engineering* (Under review)

SCIENTIFIC PRESENTATIONS

- **Garzon, J. L.**, Ferreira, C. M. (2017) "A step forward in the implementation of natural solutions for coastal protection in the Chesapeake Bay.", *1st International Workshop on Waves, Storm Surge and Coastal Hazards*, Liverpool, UK.
- **Garzon, J. L.**, Ferreira, C. M., Maza M. and Lara J.L. (2017) "A step forward in the implementation of natural solutions for coastal protection in the Chesapeake Bay.”, *8th SCACR International Short Conference on APPLIED COASTAL RESEARCH*, Santander, Spain.
- **Garzon, J. L.** and Ferreira, C. (2015) "Integrating physically-based numerical modeling of hurricane storm surge to an agent based framework for coastal resilience and planning.", *World Environmental & Water Resources Congress 2015*, American Society of Civil Engineering (ASCE), Austin, USA.
- **Garzon, J. L.**; Lawler, S.; Haddad, J.; Deb, M.; and Ferreira, C. (2015) "Integrating Rivers Discharge into Coastal Flooding Modeling Along the Baltimore Harbor.", *American Water Resources Association (AWRA) National Capital Region Symposium 2015*, Washington, DC.
- **Garzon, J. L.**; and Ferreira, C. (2015). "Integrating physically-based numerical modeling of hurricane storm surge to an agent based framework for coastal resilience and planning.", *Young Coastal Scientists and Engineers Conference 2015 (YCSEC)*, Newark, Delaware.

HONORS AND AWARDS

- Distinguished Academic Achievement Graduate
- NSF Project: Hazards SEES Type 2, Modeling to Promote Regional Resilience to Repeated Heat Waves and Hurricanes. Award #1331399.
- Certificate of Appreciation from the MENTORSHIP PROGRAM Thomas Jefferson High School for Science and Technology
- Exchange Student Program of the Institute of Engineering of Autonomous University of Mexico.

PROFESSIONAL TRAININGS AND WORKSHOPS

- Autonomous Systems Boot Camp 2016, University of Delaware 2016
- Wave Watch III Summer School, National Center for Environmental Prediction 2016
- International Summer School on Estuarine and Nearshore, University of Granada 2016
- 2015 ADCIRC User's Group Meeting and ADCIRC Boot Camp, NCEP 2015
- Numerical wind wave modeling by SWAN model, UNAM 2012

RELEVANT SKILLS

- Proficient in ADCIRC, SWAN, SMS, X-Beach, HEC-RAS, Autocad 2D, ArcGIS, MATLAB, FORTRAN and High Performance Computer environments.
- Familiarity with different types of equipment used in coastal environment to monitor hydrodynamic processes (ADCPs, low and high frequency sensors) along with Trimble DGPS.
- Certain experience using Unmanned Aerial Vehicles (UAV).
- Excellent programming and scripting skills, along with an outstanding knowledge of coastal numerical models, allowing me to actively collaborate to develop the educational flood forecast systems powered by ADCIRC and X-Beach (<https://masonfloodhazardsresearchlab.github.io/>).
- Office package (Word, Excel, Power Point, etc.).

EXTRA-CURRICULAR ACTIVITIES

- ECUSA-DC board of Directors. ECUSA (Españoles Científicos en USA) is a not profit organization which aims to promote the role of science, technology and their professionals in our society. 2015-2018