David Fernando Muñoz Pauta

Assistant Professor – Department of Civil and Environmental Engineering, Virginia Tech

Google Scholar: https://scholar.google.com/citations?user=bS44baIAAAAJ&hl=en&oi=ao

Lab website: https://coral-lab-vt.github.io/

EDUCATION

August 2018 – September 2021

Ph.D. Civil, Construction and Environmental Engineering. The University of Alabama.

September 2015 – September 2017

MSc. Earth and Environment. Wageningen University & Research. The Netherlands.

October 2007 – February 2013

Bachelor's in Civil Engineering. University of Cuenca. Cuenca, Ecuador.

HONORS AND AWARDS

March 2023

2023 Faculty Mentoring Grant. Blacksburg, VA.

July 2022

2022 NHERI RAPID Facility Intensive Hands-On Training Workshop. Travel grant. Seattle WA.

April 2022

2022 Outstanding Dissertation Award. Department of Civil, Construction and Environmental Engineering, The University of Alabama. Tuscaloosa, AL. April 2022.

June 2019

National Water Center Innovators Program – Summer Institute. Consortium of Universities for the Advancement of Hydrologic Science (*CUAHSI*) and National Oceanic and Atmospheric Administration (*NOAA*). Tuscaloosa, AL.

APPOINTMENTS & WORK EXPERIENCE

August 2022 to present

Assistant Professor. Charles E. Via, Jr. Department of Civil & Environmental Engineering at Virginia Tech. Patton Hall Blacksburg, VA 24061.

September 2021 to August 2022

Postdoctoral research associate. Center for Complex Hydrosystems Research (CCHR). The University of Alabama. 248 Kirkbride Ln, Tuscaloosa, AL 35401.

October 2017 – August 2018

Research assistant. "*Cost Effective Neural Technique to Alleviate Urban Flood Risk*" - CENTAUR project. (https://www.sheffield.ac.uk/centaur). Department of Civil Engineering. Faculty of Sciences and Technology of the University of Coimbra (FCTUC) – Pólo II. Rua Luis Reis Dos Santos, 3030-790. Coimbra, Portugal.

February 2013 – May 2015

Civil engineer. KIMSA / Azuay Prefecture. Cuenca, Ecuador. Amazonas Constructors / Enterprise of Economic Development (EDEC). Cuenca, Ecuador. Civil engineer (junior). Consultancy in Environmental and Sanitary Engineering (CONSULTORACAV) / Ministry of Urban Development and Housing (MIDUVI). Ministry of Transportation and Public Works (MTOP). Cuenca, Ecuador.

SYNERGISTIC ACTIVITIES

American Society of Civil Engineers (ASCE)

Member of Compound Flooding Task Committee. Manual of Practice. April 2022.

Co-editor of Research Topic in Frontiers in Water:

Spatiotemporal Modelling and Assessment of Water-related Multi-hazards. September 2023.

Conference convener
Hybrid Modeling & Digital Twin Systems for Flood Hazard Prediction and Risk Assessment. AGU - Natural Hazards; Fall Meeting 2024. Washington DC. December 2024.

MOST RECENT PUBLICATIONS

1) Daramola, S., Muñoz, P., Irish, J., Saksena, S., Muñoz Pauta, D.F., 2025. A Cluster-based Temporal Attention Approach for Predicting Cyclone-induced Compound Flood Dynamics. https://dx.doi.org/10.2139/ssrn.5146212

2) Daramola, S., Muñoz, P., Irish, J., Saksena, S., Muñoz Pauta, D.F., 2025. Predicting the Evolution of Extreme Water Levels with Long Short-Term Memory Station-Based Approximated Models and Transfer Learning Techniques. https://doi.org/10.22541/essoar.173991354.46305207/v1

3) Muñoz, D.F., Moftakhari, H., Moradkhani, H., 2024. Quantifying cascading uncertainty in compound flood modeling with linked process-based and machine learning models. Hydrology and Earth System Sciences 28, 2531–2553. https://doi.org/10.5194/hess-28-2531-2024

4) Hamidi, E., Peter, B.G., Muñoz, D.F., Moftakhari, H., Moradkhani, H., 2023. Fast Flood Extent Monitoring With SAR Change Detection Using Google Earth Engine. IEEE Transactions on Geoscience and Remote Sensing 61, 1–19. https://doi.org/10.1109/TGRS.2023.3240097

5) Abbaszadeh, P., Muñoz, D.F., Moftakhari, H., Jafarzadegan, K., Moradkhani, H., 2022. Perspective on uncertainty quantification and reduction in compound flood modeling and forecasting. iScience 25, 105201. https://doi.org/10.1016/j.isci.2022.105201

6) Muñoz, D.F., Abbaszadeh, P., Moftakhari, H., Moradkhani, H., 2022a. Accounting for uncertainties in compound flood hazard assessment: The value of data assimilation. Coastal Engineering 171, 104057. https://doi.org/10.1016/j.coastaleng.2021.104057

7) Muñoz, D.F., Moftakhari, H., Kumar, M., Moradkhani, H., 2022b. Compound Effects of Flood Drivers, Sea Level Rise, and Dredging Protocols on Vessel Navigability and Wetland Inundation Dynamics. Frontiers in Marine Science 9. https://doi.org/10.3389/fmars.2022.906376

8) Muñoz, D.F., Muñoz, P., Moftakhari, H., Moradkhani, H., 2021a. From local to regional compound flood mapping with deep learning and data fusion techniques. Science of The Total Environment 782, 146927. https://doi.org/10.1016/j.scitotenv.2021.146927

9) Muñoz, D.F., Yin, D., Bakhtyar, R., Moftakhari, H., Xue, Z., Mandli, K., Ferreira, C., 2021b. Inter-Model Comparison of Delft3D-FM and 2D HEC-RAS for Total Water Level Prediction in Coastal to Inland Transition Zones. JAWRA Journal of the American Water Resources Association n/a. https://doi.org/10.1111/1752-1688.12952

10) Muñoz, D.F., Moftakhari, H., Moradkhani, H., 2020. Compound Effects of Flood Drivers and Wetland Elevation Correction on Coastal Flood Hazard Assessment. Water Resources Research 56, e2020WR027544. https://doi.org/10.1029/2020WR027544

AFFILIATIONS AND MEMBERSHIPS

American Water Resources Association (AWRA)
American Geophysical Union (AGU)
European Geosciences Union (EGU)