



OVEL DÍAZ GARCÍA, PHD

Research Engineer

Ovel Díaz García is a research engineer at The Water Institute. He is currently working on Storm Surge and Wave Simulations for the Louisiana Coastal Master Plan 2023.

Ovel graduated of Nuclear Engineer at the Higher Institute of Technology and Applied Sciences, Havana, Cuba, and applied his programming and numerical models experience to study environmental processes since his early research carrier. He obtained a Master's in Applied Mathematics in Cienfuegos University, Cuba, and his Ph.D. on Earth Sciences from the National Autonomous University of Mexico.

During his research years in Cuba and Mexico he participated in national and international projects related mainly with numerical models. Ovel created the first three operational forecasting numerical systems of storm surge for Mexican coasts using ADCIRC, for Mexican institutions like the National Meteorological Services (SMN), the National Center for Disaster Prevention (CENAPRED) and the Center for Atmospheric Sciences (CCA).

His research includes the use of numerical models for atmospherics (WRF), hydrodynamics (MARS3D), storm surges (ADCIRC, FVCOM), waves (SWAN), and oil spills (GNOME) processes. His skills include the application of numerical models, programming in MATLAB, Python, Pascal, FORTRAN, PHP, and the use of visualization and data processing tools like ArcGIS, QGIS, MapInfo, NCL, and Ferret. He is an expert Linux and HPC user, with scripting and automation processes experience.

COMPANY ROLE

Research Engineer

PROJECT ROLE / FOCUS AREAS

Technical delivery
Numerical modeling
Storm surge
Hydrodynamics

EDUCATION

PhD Earth Sciences,
National Autonomous
University of Mexico,
2020

MS Applied
Mathematics,
University of
Cienfuegos, 2008

BS Nuclear Engineer,
Higher Institute of
Technology and
Applied Sciences,
2003

PROFESSIONAL EXPERIENCE

2021-Present: Research Engineer, The Water Institute

2020-2021: Numerical Modeling Expert, Coastal Process and Engineer
Laboratory, National Autonomous University of Mexico

2017-2020: Laboratory Professor, National Autonomous University of Mexico

2021- Present: External Advisor, Interdisciplinary Center of Marine Sciences
postgraduate program, La Paz, National Polytechnic Institute, Mexico

2019- Present: External Advisor, Marine Sciences postgraduate program, National
Autonomous University of Mexico

2020: Postdoc, Center for Atmospheric Sciences, National Autonomous University
of Mexico



2017-2020: Numerical Modeling Expert, Center for Atmospheric Sciences, National Autonomous University of Mexico

2009-2011: Master Thesis Co-Advisor, University of Cienfuegos

2003-2012: Researcher, Center for Environmental Studies of Cienfuegos

SELECTED PROJECTS

Louisiana Coastal Master Plan 2023. *Storm surge and wave simulations.* GIS data manipulation, bash and python scripting, running and post processing thousands of simulations in HPC.

SELECTED PUBLICATIONS

1. Rodríguez-Pérez, J., Córdova-López L.F., & **Díaz-García, O.** (2020). Coastal hydrodynamics during Hurricane Wilma (2005) in Artemisa, Mayabeque and Havana. *Hydraulic and Environmental Engineering* 41(2), p.3-17
2. **Díaz-García, O.**, Zavala-Hidalgo, J., Douillet, P., Contreras Ruiz-Esparza, A., Fichez, R., Grenz, C., & Denis, L. (2020). Changes in the flooding area due to storm surge under climate change in an extensive wetland area in the southern Gulf of Mexico. *Atmosphere* 33(2), p. 105-121.
3. Muñoz-Caravaca, A., Douillet, P., **Díaz-García, O.**, Renaud, F., Herrera-Marrero, R.H., & Alcántara-Carrió, J. (2012). Flushing time in the Cienfuegos Bay, Cuba. *Natural Resource Modeling* 25(3), p. 434-455.
4. Muñoz-Caravaca A., **Díaz-García O.**, Douillet P., Fichez R., Herrera-Marrero R.H., Alcántara-Carrió J., & García-Rodríguez A. (2011). The distribution of residence time in the Bay of Cienfuegos. *Oceanological Series* (9), p. 15-29
5. Muñoz-Caravaca A., García-Rodríguez, A., Douillet, P., **Díaz-García, O.**, Fichez, R., Herrera-Marrero, R.H., & Alcántara-Carrió, J. (2011). Analysis of the processes of renewal of the waters of the Bay of Cienfuegos, *CENIC Biological Sciences*, 42(3), p. 125-130
6. Muñoz-Caravaca, A., Herrera-Marrero, R.H., Fichez, R., Douillet, P., **Díaz-García, O.**, & Fernández, J.M. (2010). Influence of hydrodynamic and morphometric characteristics on the distribution of ²¹⁰Pb in the surface sediments of Cienfuegos Bay, Cuba, *Rev. Marine Research*, 31(1), 11-21
7. Muñoz-Caravaca, A., Douillet, P., **Díaz-García, O.**, Ouillon, S., & Fichez, R. (2008). Influence of tide, wind and fluvial input in the circulation of the waters in the Cienfuegos Bay, Cuba. *Marine Research*, 29(2), 101-112
8. Barros, R.C., Garcia, C.R., Dominguez, D.S., **Díaz-García, O.**, & Tame, V.M. (2004). Recent advances in spectral nodal methods for numerically solving neutron-diffusion eigenvalue problems. *Transport Theory and Statistical Physics*, 33(3 & 4)