

## Research interests

- Coastal hydrodynamics: wave-current interaction and wave transformation
- Transport and mixing processes: plumes, ocean outfalls, sediment transport and pollutant dispersion
- Wave climate: analysis of metocean data, extreme wave conditions and wave spectra

## Education

- Expected 2027 **Ph.D. in Water Resources and Environmental Engineering**, *Federal University of Paraná (UFPR)*, Brazil.  
Supervisor: Prof. Dr.-Ing. Tobias Bleninger
- 2023 **M.Sc. in Water Resources and Environmental Engineering**, *Federal University of Paraná (UFPR)*, Brazil.  
Dissertation: "Influence of waves on the transport and fate of sediments from a submarine sewage outfall in shallow coastal waters"  
Supervisor: Prof. Dr.-Ing. Tobias Bleninger
- 2020 **B.Sc. in Civil Engineering**, *Universidad del Norte*, Colombia.

## Professional experience

- 2021–2022 **Course instructor**, *Universidad del Magdalena*, Colombia.  
Course: "Computational Modeling in Coastal Engineering"
- 2020–2021 **Design engineer**, *ATE Hydrosystems*, Colombia.
- 2020 **Consulting engineer**, *Universidad del Norte*, Colombia.  
Project: "Technical/scientific studies and baseline designs for the feasibility of navigability of the Magdalena River"

## Publications

- [1] Y. Berrio, G. Rivillas-Ospina, G. Ruiz-Martínez, A. Arango-Manrique, Constanza Ricaurte, E. Mendoza, R. Silva, **D. Casas**, M. Bolívar, and K. Díaz. "Energy conversion and beach protection: Numerical assessment of a dual-purpose WEC farm". In: *Renewable Energy* (2023), p. 119555. ISSN: 0960-1481. DOI: 10.1016/j.renene.2023.119555.

- [2] Diego Andrés Casas Toro. "Influence of waves on the transport and fate of sediments from a submarine sewage outfall in shallow coastal waters". M.Sc. dissertation. Curitiba, Brazil: Federal University of Paraná, 2023. URL: <https://hdl.handle.net/1884/82595>.
- [3] German Rivillas-Ospina, **Diego Casas**, Mauro Antonio Maza-Chamorro, Marianella Bolívar, Gabriel Ruiz, Roberto Guerrero, José M. Horrillo-Caraballo, Milton Guerrero, Karina Díaz, Roberto del Rio, and Erick Campos. "APPMAR 1.0: A Python application for downloading and analyzing of WAVEWATCH III® wave and wind data". In: *Computers & Geosciences* 162 (May 2022), p. 105098. ISSN: 00983004. DOI: 10.1016/j.cageo.2022.105098.
- [4] German Rivillas-Ospina, Mauro Antonio Maza-Chamorro, Sebastián Restrepo, Debora Lithgow, Rodolfo Silva, Augusto Sisa, Andrés Vargas, Juan Pablo Sarmiento, Juan Caes, Marianella Bolivar, Roberto Del Rio, Erick Campo, **Diego Casas**, and Dennis Rudas. "Alternatives for Recovering the Ecosystem Services and Resilience of the Salamanca Island Natural Park, Colombia". In: *Water* 12 (5 May 2020), p. 1513. ISSN: 2073-4441. DOI: 10.3390/w12051513.

## Presentations

- 2023 "Modeling the transport of outfall sediments under wave action". Webinar of the IAHR Brazil Young Professionals Network. [youtu.be/3K7UAPZUYTc](https://youtu.be/3K7UAPZUYTc).
- 2023 "Coupled wave-current modeling of outfall sediment dynamics in shallow coastal waters". 4th International Symposium on Outfall Systems. Buenos Aires, Argentina. [isos2023.com.ar/presentaciones](https://isos2023.com.ar/presentaciones)
- 2022 "Modelagem do transporte de sedimentos oriundos de emissários submarinos sob efeito de ondas". V Simpósio PPGERHA. Federal University of Paraná, Curitiba, Brazil.

## Honors and awards

- 2013–2017 Orgullo Caribe Scholarship (Universidad del Norte)

## Professional memberships

- Since 2023 International Association for Hydro-Environment Engineering and Research (IAHR): IAHR/IWA Joint Committee on Marine Outfall Systems; IAHR Brazil Young Professional Network.
- Since 2023 International Water Association (IWA): IAHR/IWA Joint Specialist Group on Marine Outfall Systems.

## Relevant skills and experience

- Hydrodynamic and wave modeling: Delft3D FLOW/WAVE
- Proficient in programming for numerical modeling and data analysis: Fortran, C/C++, Go, Python, Julia, R and MATLAB
- Proficient in geographic information systems (GIS) and geoprocessing, including satellite imagery: QGIS and GDAL
- Shell scripting, server administration and cloud computing: Linux and Windows
- Development of APPMAR: a program for analysis of wave and wind climate ([github.com/cemanetwork/appmar](https://github.com/cemanetwork/appmar))
- Development of GMDApp: an application for ground motion time series selection ([github.com/gaaraujo/GMDApp](https://github.com/gaaraujo/GMDApp))

## Languages

Spanish	Native
English	Fluent (CEFR level C1)
Portuguese	Fluent