

# **CURRICULUM VITAE**

#### PERSONAL DATA

Name: Nicolás Diego Badano

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### **EDUCATION**

- Doctor of Engineering, Faculty of Engineering, University of Buenos Aires (UBA), Argentina, 2021.
- Civil Engineer, specialized in Hydraulics (a six-year program; equivalent to a MSc. degree), Faculty of Engineering, University of Buenos Aires (UBA), Argentina, 2010.

## LANGUAGE KNOWLEDGE

- Spanish: native language.
- English: full professional proficiency. Cambridge Academy of English (CAE) Advance Certificate, Cambridge, England (2000).

## EXPERTISE

- Numerical modelling of water-related problems, including river/estuarine/coastal flows, Computational Fluid Dynamics, water quality and hydrology.
- Development of computational codes and processing algorithms.

# **ACADEMIC ACTIVITIES**

- Research Associate at the National Institute for Water of Argentina. 2018 2023.
- Assistant Professor (part-time), Faculty of Engineering, University of Buenos Aires.
  2015 2023.
- Researcher at the Mathematical Modeling Laboratory, Faculty of Engineering, University of Buenos Aires. 2007 - 2023.



#### MEMBER OF PROFESSIONAL ASSOCIATIONS

- Professional Association of Civil Engineering (CPIC), License No. 17.579, Argentina.
- International Association for Hydro-Environment Engineering and Research (IAHR).
- Asociación Argentina de Mecánica Computacional (AMCA).

## AWARDS

• "RIBAGUA 2016" to the best technical paper published in RIBAGUA (Revista Iberoamericana del Agua).

# REFERENCE ENGINEERING PROJECTS

Computational Fluid Dynamics

- CFD modeling of the Ugarteche pumping station. For the Buenos Aires City Government, Argentina, 2025.
- CFD modeling of the emergency closure of a gate on the Valle Grande Dam. For NihroNihuil S.A., Argentina, 2025.
- CFD modeling of a flow regulation valve. For Tassaroli S.A., Argentina, 2024.
- CFD modeling of flow at the Nieuwpoort storm surge barrier site. For Flanders Hydraulics Research, Belgium, 2023.
- Simulation of Phase distribution in a manifold for the PTG2 plant. For Consultores de Tecnología e Ingeniería Solari y Asociados and Pampa Energía, 2023.
- Hydrodynamic modeling of the wave deflector barrier for the Gobernador Cepernic dam. For Stantec and Represas Patagónicas UTE, Argentina, 2023.
- CFD modeling of the Maasdelta tunnel installation. Para BAAK Consortium, Nederlands, 2023.
- Detailed CFD modeling of the Stepped Spillway of the Néstor Kirchner Dam. For Stantec and Represas Patagónicas UTE, Argentina, 2022.
- CFD modeling of the Maraetai Dam Spillway. For Damwatch Ltd., New Zealand, 2022.
- CFD modeling of the Waimea Dam Spillway. For Damwatch Ltd., New Zealand, 2021.
- Preliminar CFD modeling of the Stepped Spillway of the Condor Cliff Dam. For Stantec and Represas Patagónicas UTE, Argentina, 2020.
- Implementation of a three-dimensional simulation model of a Wave Energy Converter. For International Marine & Dredging Consultants (IMDC), 2020.



- CFD modeling of the Bottom Discharger of the Barrancosa Dam. For Stantec and Represas Patagónicas UTE, Argentina, 2020.
- Three-dimensional simulation of flow through the fish passage of the Sint-Baafs-Vijve weir. For International Marine & Dredging Consultants (IMDC) and the Department of Mobility and Public Works, Flemish Government, 2020.
- CFD modeling of fish passage in Denderleeuw. For International Marine & Dredging Consultants (IMDC) and the Department of Mobility and Public Works, Flemish Government, 2019.
- Three-dimensional simulation of flow through the valves of the new Aalst Lock in Belgium. For International Marine & Dredging Consultants (IMDC) and the Department of Mobility and Public Works, Flemish Government, 2017.
- Verification of hydraulic design of the settling chamber in the pumping station for General Belgrano's purification plant. Metropolitan Region of Buenos Aires. For AySA (water supply company), Argentina, 2016.
- Verification of hydraulic design of settling chamber in pumping station for the treatment plant of Bernal. Metropolitan Region of Buenos Aires. For Panedile (construction company) and AySA (water supply company), Argentina, 2015.
- CFD modeling of the trifurcation for the Misicuni Project. For MWH Global, Bolivia, 2013.
- Verification of present Gatun spillway and design of new Gatun spillway. For MWH Global and ACP (Panama Canal Authority), Panama, 2011-2012.
- Hydraulic design of Guaigüi spillway. For the National Institute of Water Resources (INRH), Dominican Republic, 2011.
- Design optimization of hydraulic system for the Third Set of Locks of Panama Canal. For MWH Global and ACP (Panama Canal Authority) through GUPC (Group United for the Canal), Panama, 2009-2011.

# Fluvial/estuarine/coastal flows

- Hydraulic and environmental study for the feasibility of dredging in critical passages of the Alto Paraguay River. For Lhg Mining, Brazil, 2025.
- Hydrodynamic, sedimentologic and water quality modelling for Canal del Dique. For Jaime Lande & Asociados and Ecosistemas del Dique, Colombia, 2023.



- Hydraulic analysis for the implementation of a coastal wetland in the ecological reserve of Buenos Aires. For the Environmental Secretary of the Buenos Aires City Government, Argentina, 2022.
- Study of the hydraulic impact of the Grande Creek dam, Ushuaia. For Funes & Ceriale, Argentina, 2022.
- Hydraulic studies for designing and operating fluvial ports in the Departments of Nariño y Cauca, Colombia. For the Techniplan-Demison-Orengo Consortium, Colombia, 2022.
- Hydraulic studies for the implementation of artificial beaches in the coast of Buenos Aires City. For the Buenos Aires City Government and the Danish Embassy in Argentina, Argentina, 2022.
- Study of the morphologic evolution of the Ybycui Island on the Yacyretá Reservoir. For the Yacyretá Binational Agency (EBY), Paraguay, 2021-2022.
- Sedimentation along the Paraná and Plata River waterways. For the Consortium of Chambers (CPPC BCR CAPYM CAA UIA), Argentina, 2019-2020.
- Development of a master plan for the protection of Santa Lucia City against flooding. For the National Direction of Pre-Investment, Argentina, 2020.
- Hydrological and flood modeling of the Lujan River basin. For the Buenos Aires Province Direction of Public Works, Argentina, 2019.
- Study of a breakwater for the Apostadero de Aves site in Comodoro Rivadavia. For Gea Urbanizaciones, Argentina, 2018.
- Hydraulic study of the Itatí-Itacorá hydroelectric project. For Comisión Mixta Argentino Paraguaya del Río Paraná, Argentina 2017-2018.
- Development of the Emergency Action Plan for the Yacyretá dam (Paraná River 62 hm3 reservoir). For the Yacyretá Binational Agency (EBY), Argentina/Paraguay, 2014-2018.
- Study of the erosion of the Guáscaras Island. For Yacylec S.A., Argentina, 2013.
- Impact of turbidity plumes due to dredging in the Access Channel to Montevideo harbor. For the National Harbors Administration, Uruguay, 2007.

# Water quality

• Nutrient flow modeling for the systematization studies of the Canal del Dique, Colombia. For Sacyr, Colombia, 2024.



- Water quality in the coastal area of the City of Buenos Aires. For the Government of the Autonomous City of Buenos Aires. 2023.
- Assessment of the impact of the Vega Creek pollution plume. For the Buenos Aires City Government, Argentina, 2018-2019.
- Diagnosis and evaluation of remediation strategies for water quality of the Matanza-Riachuelo Basin (2000 km2). For the Matanza-Riachuelo Basin Authority, Argentina, 2007-2013 and 2017-2019.
- Impact assessment of a coastal discharge at Cabo Vírgenes. For Ecotecnica America Latina and Sipetrol, Argentina, 2014.
- Assessment of the impact of the coastal discharges of the city of Asunción on the Paraguay River. For ESSAP (Water supply company), Paraguay, 2010-2011.
- Assessment of the impact of the coastal discharges of the city of Buenos Aires on the Plata River. For the Matanza-Riachuelo Basin Authority, Argentina, 2007-2009.

## Hydrology and groundwater

- Design of the relief duct for the upper basins of the Maldonado and Cildañez streams. For the Buenos Aires Government, 2023/2024.
- Verification of the executive project for the El Gato rainwater system of El Gato stream, city of La Plata, Argentina. For Consejo Federal de Inversiones. 2023.
- Strategic Environmental Analysis for the development of livestock projects on the Boquerón Department. For Bearing Agro, Paraguay, 2021.
- Development of an adaptation plan against floodings and draughts for the Provinces of Chaco and Formosa. For the Ministry of Public Works, Argentina, 2020-2021.
- Development of a master plan for the protection of Paso De Los Libres City against flooding. For the National Direction of Pre-Investment, Argentina, 2019.
- Masterplan for the stormwater system of the city of Baradero. For the Provincial Hydraulic Direction, Province of Buenos Aires, Argentina, 2018.
- Flood assessment in the south suburban region of Buenos Aires (24,000 ha). For Water Resources Secretary, National Government, Argentina, 2014.
- Masterplan for flood control in the Salado Basin (170,000 km2). For the Provincial Hydraulic Direction, Province of Buenos Aires, Argentina, 2006-2007.



# MAIN RESEARCH PROJECTS

- Assessment of scale effects on hydraulic structure using CFD techniques. 2010-2021.
- Assessing the tidal potential energy in Patagonian estuaries through numerical modeling. 2018-2021.
- Flood modeling of large urban regions. 2018-2019.
- Study of the advance of the Paraná River Delta Front. 2009-2012.
- Integrated modeling of large flatland basins. 2006-2018.

# **PUBLICATIONS**

- 9 papers on international peer-reviewed journals.
- 20+ communications to international conferences.
- 20+ communications to national conferences.
- 2 textbook chapters.