

Nicole Blin

Santiago, Chile | (413) 2750682 | nblin@umass.edu or ndblin@gmail.com

EDUCATION

Pontificia Universidad Católica de Chile | Chile

Ph.D. in Civil Engineering 2023

M.S. in Civil Engineering 2018

B.S. Civil Engineering 2016

Major: Hydraulic Engineering | Minor: Hydrogeology

RESEARCH EXPERIENCE

Pontificia Universidad Católica de Chile, Undergraduate Research | Chile 2015

- Investigation of hydraulic property parameters in stratified soils using HYPROP and HYDRUS 2D.
- Field campaign to collect temperature–depth profiles from boreholes in the Atacama Desert, as part of a project led by researchers from Université du Québec à Montréal and St. Francis Xavier University, Canada.

Pontificia Universidad Católica de Chile, M.S. Thesis | Chile 2016 – 2018

- Development of conceptual model of an undeveloped basin in the Andean Altiplano (northern Chile, Atacama Desert).
- Construction of a numerical groundwater flow model using ModelMuse.
- Statistical downscaling of climatic forcing using multiple CMIP5 models to drive the groundwater flow model under different future scenarios.

Pontificia Universidad Católica de Chile, Ph.D. Thesis | Chile 2018 – 2022

- Impacts of climate change on groundwater in an Andean basin under different future scenarios from CMIP5.
- Calibration of groundwater flow models using remote -derived evapotranspiration in the basin using the Earth Engine Evapotranspiration Flux (EEFlux) tool.
- Statistical downscaling of climatic forcing using multiple CMIP6 models to drive the groundwater flow model under different future scenarios to assess climate change impacts on

University at Buffalo, Researcher | Ph.D. Thesis Internship | Buffalo, New York June – August 2021

- Statistical downscaling of climate models of CMIP6 to assess potential impacts of climate change over the Western New York aquifer.

RESEARCH INTERESTS

- Groundwater modeling
- Climate change
- Hydrological modeling
- Recharge processes
- Groundwater-dependent systems
- Hydroclimate dynamics
- Remote sensing of the environment
- Evapotranspiration
- Groundwater and surface water interactions
- Groundwater dynamics in salars
- Groundwater in Arid regions
- Extreme events
- Artificial Intelligence

PUBLICATIONS

1. **Blin, N.**, Chadwick, C., Suárez, F. [*in preparation*]. Groundwater Response to Climate Change and The Toe of Anthropogenic Signals in Aquifer Levels: Can Groundwater Support Wetlands' Resilience to Climate Change in Natural-State Basins?
2. **Blin, N.**, Soonthornrangsang, J., M., Lowry, C., Gironás, J., Chadwick, C., Suárez, F. [*under review*]. Assessing Impacts of Climate Change on Water Resources and their Interaction within the Great Lakes Region-The Potential Buffering Capacity of Groundwater on Surface Water Processes.
3. **Blin, N.** & Suárez, F. (2023). Evaluating the contribution of satellite-derived evapotranspiration in the calibration of numerical groundwater models in remote zones using the EEFlux tool. *Science of The Total Environment*, 858, 159764. <https://doi.org/10.1016/j.scitotenv.2022.159764>
4. **Blin, N.**, Hausner, M., Leray, S., Lowry, C., & Suárez, F. (2022). Potential impacts of climate change on an aquifer in the arid Altiplano, northern Chile: The case of the protected wetlands of the Salar del Huasco basin. *Journal of Hydrology: Regional Studies*, 39, 100996. <https://doi.org/10.1016/j.ejrh.2022.100996>
5. Samuel, A., **Blin, N.**, Muñoz, J. F., & Suárez, F. (2019). An unsaturated/saturated coupled hydrogeological model for the Llamara salt flat, Chile, to investigate *Prosopis tamarugo* survival. *Geosciences*, 10(1), 1. <https://doi.org/10.3390/geosciences10010001>
6. Pickler, C., Gurza Fausto, E., Beltrami, H., Mareschal, J. C., Suárez, F., Chacon-Oecklers, A., **Blin N.**, Cortés M.T., Montenegro A., Harris R., Tassara, A. (2018). Recent climate variations in Chile: constraints from borehole temperature profiles. *Climate of the Past*, 14(4), 559-575. <https://doi.org/10.5194/cp-14-559-2018>

CONFERENCE PRESENTATIONS

1. **Blin, N.**, Soonthornrangsang, J., M., Lowry, C., Gironás, J., Chadwick, C., Suárez, F. Assessing potential impacts of climate change on the Western New York aquifer under two CMIP6 scenarios. AGU Fall Meeting 2021. New Orleans, LA. 13-17 December 2021. Oral Presentation.
2. **Blin, N.** & Suárez, F. Improving calibration of numerical groundwater models in arid zones using Earth Engine Evapotranspiration Flux and PEST. AGU Fall Meeting 2021. New Orleans, LA. 13-17 December 2021. Poster Presentation.
3. **Blin, N.**, Hausner, M., Lowry, C., Leray, S., Suárez, F. Impacts of climate change on the Huasco salt flat (North of Chile)- Insights from a hydrological and hydrogeological perspective. EGU 2019 General Assembly. Vienna, Austria. April 7-12, 2019. Oral Presentation.
4. **Blin, N.**, Hausner, M.B., Suárez, F. Evaluating groundwater recharge variations under climate change in an endorheic basin of the Andean plateau. AGU 2017 Fall Meeting. New Orleans, Louisiana, USA. December 11-15, 2017. Poster Presentation.
5. **Blin, N.**, Sandoval, V.P., Suárez, F., Victorero, F., Bonilla, C., Gironás, J., Vera, S., Bustamante, W., Rojas, V., Pastén, P. (2015). The effect of layered substrates on green roof hydraulic performance. 10th Conference on sustainable development of energy, water and environment systems. Dubrovnik, Croatia. September 27-October 3, 2015. Poster Presentation.

TEACHING EXPERIENCE

Pontificia Universidad Católica de Chile | Chile

Teaching Assistant

Course: Groundwater Pollution

2017, 2018, 2020,
2021

Course: Groundwater 2017 – 2021
Course: Groundwater (instruction in English for Pontificia Universidad Católica de Chile and University at Buffalo students) 2018
Course: Hydraulic Engineering 2019

PROFESSIONAL EXPERIENCE

Academic:

Pontificia Universidad Católica de Chile | Chile

Instructor | *Course: Groundwater* 2019

- In charge of designing and teaching experimental classes in the geoscience's laboratory.
- Designing and grading weekly tests.

Pontificia Universidad Católica de Chile | Chile

Project Engineer | *CORFO project* 2022

Project name: "Plataforma inteligente para la vigilancia de disponibilidad de agua y presencia de contaminantes emergentes y tradicionales en fuentes de agua subterránea para potabilización y riego". Corporación de Fomento en la Producción (CORFO), Chile.

- Apply machine learning algorithms to forecast water quality in surface waters and groundwater in Southern Chile.

University of Massachusetts Amherst | Amherst, MA, USA

Postdoctoral Research Associate | *Geosciences Department* July 2023 – present

- Groundwater modeler

Consulting:

DICTUC | Chile

Project Engineer 2017 – 2018

Project name: "Efecto de la explotación de pozos en cuenca de Coposa sobre cuencas vecinas". DICTUC S.A. and the National Department of State Borders and Boundaries (DIFROL) of the Ministry of Foreign Affairs of Chile.

- Hydrogeological modeling of transboundary aquifer; sensitivity analysis of boundary conditions of existing models.

DICTUC | Chile

Project Engineer 2019

Project name: "Migración de modelos hidrogeológicos desarrollados en Visual-Modflow y Groundwater Vistas hacia su estado nativo de código MODFLOW". Water Division (DGA) of the Ministry of Public Works of Chile.

- Migration of groundwater models developed in *VisualModflow* or *Groundwater Vistas* into native MODFLOW code.

SKILLS & INTERESTS

Software and programming skills:

- Programming: Python (Advanced), MATLAB (Advanced).
- Hydrological modeling: WEAP (Basic), SWMM (Advanced).

- Hydrogeological modeling: GroundWater Vistas (Advanced), VisualModflow (Advanced), ModelMuse (Advanced), FloPy (Advanced), GSFLOW (Intermediate), HYDRUS-1D (Intermediate), SWAT (Intermediate).
- Spatial Analysis: QGIS (Intermediate), ArcGIS (Advanced).
- Calibration: PEST (Intermediate).

Languages: Spanish (fluent native speaker); English (fluent, advanced oral and writing skills); French (intermediate oral and writing skills).

Interests: Science fiction novels, mindfulness meditation, gym, pilates, AI.

REFERENCES

Francisco Suárez | Ph.D. advisor

Associate Professor and Associate Dean for Undergraduate Studies

Department of Hydraulic and Environmental Engineering

Pontificia Universidad Católica de Chile, Chile

fsuarez@ing.puc.cl

Christopher Lowry

Associate Professor

Department of Geology

University at Buffalo, USA

cslowry@buffalo.edu

Sarah Leray

Associate Professor

Department of Hydraulic and Environmental Engineering

Pontificia Universidad Católica de Chile, Chile

sleray@ing.puc.cl