

Daniel Gonzalez Duque

Ph.D. in Environmental Engineering

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<https://dgd042.github.io/>

Summary

My research is centered on investigating the movement of water through Earth's systems and its impact on transport and biogeochemical reactions of chemical constituents that influence ecosystems and communities. To achieve this, I utilize numerical models, data consolidation and analysis, and statistical methods within high-performance computing environments to assess hydrologic ecosystems. My key research interests encompass surface water-groundwater interactions, groundwater hydrology, physical hydrology, geophysics, geostatistics, climatology, and meteorology.

Education

Vanderbilt University

Ph.D., Environmental Engineering

Nashville, TN, USA

January 1, 2019 - May 10, 2024

Dissertation: From Mountains to Bedforms: Multiscale Groundwater Dynamics and its Influence on Solute and Energy Fate and Transport

Advisor: Dr. Jesus Gomez-Velez

Achievements: 4.0/4.0 GPA; AGU Horton Research Grant, Carl E. Adams Graduate Award, and three Graduate Travel Awards

Universidad Nacional de Colombia

M.Sc., Water Resources

Medellin, Colombia

January 26, 2015 - April, 30 2019

Thesis: Quantification of the Temporal Dynamics of Surface Atmospheric Pressure and Precipitation in Different Biomes and Hydro-climatic Conditions [Translated from Spanish]

Advisor: Dr. German Poveda Jaramillo

Achievements: 4.7/5.0 GPA; Faculty Scholarship

Universidad EIA

Bachelor of Science, Environmental Engineering

Envigado, Colombia

January 18, 2010 - December 12, 2014

Thesis: Quantifying Climate Change Exposure of Strategic Ecosystems in the Tropical Andes [Translated from Spanish]

Advisor: Dr. Daniel Ruiz-Carrascal

Achievements: 4.24/5.0 GPA; Undergraduate honorary mention thesis; Environmental engineering scholarship

Professional & Research Experience

School of Earth Sciences, The Ohio State University

Research Scientists

Columbus, OH, USA

July 28, 2025 – Present

- Co-development of a novel workflow for assessing risk to subsurface infrastructure in coastal communities in the Boston Area due to sea level rise
 - Development of a groundwater model prototype for the cities of Quincy and Salem, MA, to explore the effects of sea level rise on subsurface infrastructure
 - Lead virtual sessions with interested parties in the Greater Boston Area that focus on the co-development of tools for characterizing the impacts of sea level rise in underground infrastructure
- Assessing the impacts of saltwater intrusion processes in urban infrastructure due to sea-level rise induced by climate change
 - Developing multiple groundwater flow and transport models for assessing the uncertainty of the model approach in saltwater intrusion processes

- Development of analytical groundwater transport models for understanding exchange processes of nutrients and radiogenic tracers in submarine groundwater discharge systems
- Exploration and development of novel research proposals

School of Earth Sciences, The Ohio State University

Post Doctoral Scholar, PI Dr. Audrey Sawyer

Columbus, OH, USA

May 20, 2024 – July 28, 2025

- Assessing the impacts of saltwater intrusion processes in urban infrastructure due to sea-level rise induced by climate change
 - Developing coastal groundwater numerical and analytical models
 - Assessing the uncertainty of the model approach in saltwater intrusion processes
- Co-development of a noble workflow for assessing risk to subsurface infrastructure in coastal communities in the Boston Area due to sea level rise.
 - Participating in the development of the NSF CHIRRP proposal.
 - Generating the infrastructure damage risk and cost datasets that will be used in the co-development phase of the project.

Vanderbilt Department of Civil & Environmental Engineering

Graduate Research Assistant, Advisor Dr. Jesus Gomez-Velez

Nashville, TN, USA

January 1, 2019 – May 10, 2024

- Understanding the Critical Zone and the tight coupling of water, energy, and solutes in mountainous terrains
 - Exploring the nested nature of hydrologic systems in mountainous terrains through developing groundwater flow and transport models and geophysical forward and inverse modeling
 - Participating in fieldwork performing Magnetotelluric surveys at Rincon, NM. These measurements are used for deep groundwater exploration
- Developing a framework to upscale biogeochemical processes in hyporheic exchange
 - Assessing the effect of meander geometry and regional groundwater fluxes in the hydrodynamics of sinuosity-driven hyporheic exchange and its impact on biogeochemical processes
 - Leveraging the use of the High-Resolution National Hydrography Dataset (NHDPlus High Res) and statistical methods to extract meandering features across the conterminous US
 - Developing a Python-based surrogate model-building framework that uses active learning statistical methods to provide surrogate models able to predict the sinuosity-hyporheic exchange characteristics

Universidad EIA

EnergEIA Researcher

Envigado, Colombia

October 1, 2017 – December 31, 2018

- Assessed the solar radiation potential of Colombia
 - Supervised the undergraduate thesis "Evaluation of methodologies for interpolating solar radiation in Colombia" [translated from Spanish] developed by Diana Patricia Zuluaga Pulgarin. The student graduated with an Environmental Engineering degree and is currently pursuing a Master of Science in Water Resources at the Universidad Nacional de Colombia
 - Consolidated and analyzed climatic information from satellite and re-analysis products and meteorological stations across Colombia
- Contributed to the research project "Reconstruction of late Pleistocene to Holocene glacial flows on the north-western flank of the Ruiz-Tolima volcanic massif, Colombia," funded by the EIA University
 - Developed a framework to reconstruct the zero-degree isotherm in the Ruiz-Tolima volcanic massif and in La Sierra Nevada del Cocuy

GOTTA INGENIERIA S.A.S.

Project Consulting

Medellin, Colombia

October 1, 2016 – June 30, 2017

- Developed hydrologic models to assess the water availability in prospective mining exploration areas
- Consolidated and analyzed hydrologic and climatic information from Reanalysis products, meteorological stations, and stream gauges across Colombia

Universidad EIA

Project Professional

Envigado, Colombia

April 28, 2015 – September 20, 2016

- Contributed to the research project "Hydroclimatic characterization of the Claro River watershed, Los Nevados

Natural Park,” funded by the Universidad EIA and ISAGEN

- Developed a framework to reconstruct a 10-year surface temperature series for geothermal energy generation projects
- Consolidated and analyzed climatic information from Reanalysis products and meteorological stations across Colombia

Universidad EIA

Research Assistant

Envigado, Colombia

August 1, 2014 – November 30, 2014

- Contributed to the research project “Impacts of climate change on biodiversity in the Tropical Andes: climate-related vulnerability and risk assessments and improved decision making processes for conservation and land use planning in two Andean biodiversity hotspots,” funded by the MacArthur Foundation
- Participated in fieldwork experiments for setting up and gathering information from HOBO Data Loggers that gather temperature, pressure, and relative humidity.
- Analyzed the fourth IPCC climate change temperature and precipitation datasets to assess the change in temperature along the Tropical Andes, from Chile to Colombia
- Consolidated and analyzed climatic information from climate change models, Reanalysis products, HOBO Data Loggers, and meteorological stations across Colombia

ISAGEN S.A. E.S.P.

Internship

Medellin, Colombia

January 1, 2014 – July 31, 2014

- Assessed the impact of macro-climatic events on the hydroelectric sector
- Consolidated and analyzed hydrologic and climatic data coming from various sources

Universidad EIA

Undergraduate Research Assistant

Envigado, Colombia

July 26, 2013 – December 10, 2015

- Participated in fieldwork campaigns that aimed to extract stream flow measurements in the Claro River, located in the Ruiz-Tolima volcanic massif region
- Interpreted hydrologic and climatic data from Data Loggers and meteorological stations located in the Ruiz-Tolima volcanic complex

Grants and Fellowships

2024. Senior Personnel. Coauthored Proposal with PIs Sawyer, A., Whittle, A. “Planning Proposal: Integrating Subsurface Hazards Due to Sea Level Rise in the Design of Adaptation Pathways for Coastal Communities”. CHIRRP. National Science Foundation (NSF).

2024. Travel Grant from the 6th CARGESE school: FLOW and Transport In porous and fractured MEdia (FLOW-TIME). \$3,400. “Sinuosity-driven Hyporheic Exchange: Hydrodynamics and Biogeochemical Potential”

2023. Department Travel Grant from Vanderbilt University. \$1,000. “Exploring Brackish Water Resources in New Mexico”

2023. Department Travel Grant from Vanderbilt University. \$500. “Using Magnetotelluric Surveys to Explore the Nested Nature of Groundwater Flow in Mountainous Terrains”

2022. Horton Research Grant from the American Geophysical Union (AGU). \$10,000. “Can We Image the Nested Structure of Groundwater Flow in Mountainous Terrains?”

2021. Department Travel Grant from Vanderbilt University. \$500. “Exploring the hydrodynamics and biogeochemical potential of sinuosity-driven hyporheic zones”

Publications

Peer-Reviewed Publications

Gonzalez-Duque, D., and Gomez-Velez, J. D. (2025). WigglyRivers: A tool to characterize the multiscale nature of meandering channels. *Environmental Modelling & Software*, 106423. doi: 10.1016/j.envsoft.2025.106423.

Gonzalez-Duque, D., Gomez-Velez J. D., Person, M A., Kelley, S., Key, K., and Lucero, D. 2024. Groundwater Circulation within the Mountain Block: Combining Flow and Transport Models with Magnetotelluric Observations to Untangle Its Nested Nature. *Water Resources Research*. doi: 10.1029/2023WR035906.

Gonzalez-Duque, D., Gomez-Velez J. D., Zarnetske, J. P., Chen, X., and Scheibe, T. 2024. Sinuosity-driven Hyporheic Exchange: Hydrodynamics and Biogeochemical Potential. *Water Resources Research*. doi: 10.1029/2023WR036023.

Person, M., Stone, W. D., Horne, M., Witcher, J., Kelley, S., Gomez-Velez, J., and **Gonzalez-Duque, D.** (2023). Analysis of Convective Temperature Overturns near the East Rincon Hills Fault Zone using Semi-Analytical Models. *Geothermal Rising*, 47, 3093–3117.

Ruiz-Carrascal, D., **González-Duque, D.**, and Restrepo-Correa I. 2022. Two-Tiered Reconstruction of Late Pleistocene to Holocene Changes in the Freezing Level Height in the Largest Glacierized Areas of the Colombian Andes. *Journal of Mountain Science*. doi: 10.1007/s11629-021-6783-6.

Manuscript Submitted

Gonzalez-Duque, D., Sawyer, A. H., Whittle A. J., Martello, M. V., Cervenec, J., Knott, J., Boutt, D. F., and Hereid, K. 2025. Integrating Groundwater in Coastal Risk Assessment Due to Rising Sea Levels. Submitted to: Commentary paper at *Water Resources Research*.

Manuscript In Preparation

Gonzalez-Duque, D., Sawyer, A. H., Langevin, C. D., Adams, K. H., Reager, J. T., Hamlington, B. D., Buzzanga, B. A. 2025. Assessing Model-Based Uncertainty on Saltwater Intrusion Modeling Approaches. To be submitted to: *Water Resources Research*.

Pepin, J.D., **Gonzalez-Duque, D.**, Sazeed, N., Kelley, S., Witcher, J., Peacock, J.R., Gomez-Velez, J. D., Key, K. and Person, M. A. 2025. Using Magnetotelluric Surveys and Hydrologic Modeling to Assess Brackish Water Resources in New Mexico, USA. To be submitted to: *Hydrogeology Journal*.

Book Chapters

Ruiz-Carrascal, D., Armenta-Porras, G. E., **Gonzalez-Duque, D.**, Ruiz-Murcia, J. F., Angarita, H., Rogeliz, C., et al. 2019. Escenarios de cambio climático y variabilidad climática en la macrocuenca Magdalena-Cauca para el horizonte prospectivo 2015-2040. In *Análisis de vulnerabilidad y riesgo al cambio climático de las planicies inundables de la macrocuenca Magdalena-Cauca: Resumen para tomadores de decisiones* (pp. 41–49). Bogotá, Colombia: IDEAM and The Nature Conservancy.

Software Contributions

Gonzalez-Duque, D., Gomez-Velez, J. D., Person, M., Kelley, S., Key, K., and Lucero, D. 2023. Scripts for: Groundwater Circulation within the Mountain Block: Combining Flow and Transport Models with Magnetotelluric Observations to Untangle Its Nested Nature [Software]. FigShare. <https://doi.org/10.6084/m9.figshare.23796711>

Gonzalez-Duque, D., Gomez-Velez, J. D., Zarnetske, J. P., Chen, X., and Scheibe, T. D. 2024. Scripts for: “Sinuosity-driven Hyporheic Exchange: Hydrodynamics and Biogeochemical Potential” [Software]. FigShare. <https://doi.org/10.6084/m9.figshare.23881518>

Presentations

Contribute Talks at International Scientific Conferences.....

Gonzalez-Duque, D., Gomez-Velez, J. D., Chen, X., and Scheibe, T. D. 2022. A continent laced with meandering waterways: Using machine learning to characterize meanders and their implications for river corridor connectivity. Presented at the Fall Meeting 2022, Chicago, USA: AGU. Retrieved from <https://agu.confex.com/agu/fm22/meetingapp.cgi/Paper/1169215>

Gonzalez-Duque, D. and Gomez-Velez J.D. 2021. Exploring the Hydrodynamics and Biogeochemical Potential of Sinuosity-Driven Hyporheic Zones. H31D-02. AGU, New Orleans, LA. <https://agu.confex.com/agu/fm21/meetingapp.cgi/Paper/948504>.

Gonzalez-Duque, D., Gomez-Velez J., Person M., Kelley S., Lucero D., and Luong L. 2021. What can Electromagnetic Methods Tell us About the Nested Nature of Groundwater Flow in Mountainous Watersheds? GSA Connects. Portland, Oregon doi:10.1130/abs/2021AM-371085

Gonzalez-Duque, D., Gomez-Velez, J., Mahadevan, S., Xingyuan C., Scheibe, T.D. 2019. A Coherent Framework to Upscale Hydrologic Exchange Processes Along River Corridors: A Proof-of-concept for Sinuosity-Driven Hyporheic Exchange, H23D-07, AGU Fall Meeting, San Francisco (USA), December 09-12, 2019. <https://agu.confex.com/agu/fm19/meetingapp.cgi/Paper/605871>

Posters and Other Talks.....

Gonzalez-Duque, D., Sawyer A. H., Adams, K. H., Reager, J. T., Hamlington, B., Buzzanga, B. A., David, C. H. 2024. Assessing Model-Based Uncertainty on Saltwater Intrusion Modeling Approaches H41M-0706. AGU Fall Meeting 2024, Washington D.C., USA. <https://agu.confex.com/agu/agu24/meetingapp.cgi/Paper/1741683>

Hrusikesha, P., Adams, K. H., Reager, J. T., Hamlington, B., Buzzanga, B. A., David, C. H., Sawyer A. H., **Gonzalez-Duque, D.** 2024. Quantifying the Uncertainty in Saltwater Intrusion Estimates Under Future Climate Change Scenarios H54C-03. AGU Fall Meeting 2024, Washington D.C., USA. <https://agu.confex.com/agu/agu24/meetingapp.cgi/Paper/1643618>

Gonzalez-Duque, D., Gomez-Velez J. D., Zarnetske, J. P., Chen, X., and Scheibe, T. 2024. Sinuosity-driven Hyporheic Exchange: Hydrodynamics and Biogeochemical Potential. 6th CARGESE school: FLOW and Transport In porous and fractured MEDIA (FLOWTIME), Cargese, France.

Gonzalez-Duque, D., Gomez-Velez, J. D., Person, M. A., Kelley, S., and Lucero, D. 2023. Exploring Brackish Water Resources in the Tularosa Basin, New Mexico. Presented at the AGU Fall Meeting 2023, San Francisco, USA: AGU. Retrieved from <https://agu.confex.com/agu/fm23/meetingapp.cgi/Paper/1408105>

Gonzalez-Duque, D., Gomez-Velez, J. D., Person, M. A., Kelley, S., and Lucero, D. 2023. Using Magnetotelluric Surveys to Explore the Nested Nature of Groundwater Flow in Mountainous Terrains. Presented at the Gordon Research Conference, Andover, New Hampshire, USA.

Person, M.A., Stone W.D., Gomez-Velez J.D., Kelley S., Witcher J.C., and **Gonzalez-Duque, D.**. 2021. Understanding Temperature Overturns near the East Rincon Hills Fault Zone, New Mexico Using Hydrothermal Modeling and Magnetotelluric Data. S25C-0253. AGU, New Orleans, LA. <https://agu.confex.com/agu/fm21/meetingapp.cgi/Person/39370>. Accessed 12 Apr 2022.

Gonzalez-Duque, D., Gomez-Velez, J. D., Person, M. A., Kelly, S., and Lucero, D. D. 2020. Can We Detect Regional to Local Groundwater Flow Systems Using Electromagnetic Methods? H112-0028. AGU Fall Meeting 2020, USA. <https://agu.confex.com/agu/fm20/meetingapp.cgi/Paper/762017>

Gomez-Velez, J.D., Cardenas M.B., **Gonzalez-Duque D.**, Harvey J.W., Krause S., Scheibe T.D., Scott D., Wang C., Boyer E.W., Xingyuan C., Grant S.B., Hornberger G.M., Perez G., Schmadel N.M., and Stegen J. 2020. Redrawing the River Network: Towards a New Generation of Continental-Scale Water Quality Models. H204-08. USA, <https://agu.confex.com/agu/fm20/meetingapp.cgi/Paper/662311>.

Lucero, D.D., Horne, M., **González-Duque, D.**, Person, M.A., Kelly, S., Gomez-Velez, J., Pepin, J.D., Folsom, M.,

Witcher, Peacock, J. 2019. Interpreting the Plumbing of the Rincon Geothermal System using Electromagnetic Survey and Hydrothermal Models, GP13B-0600, AGU Fall Meeting, San Francisco (USA), December 09-12, 2019. <https://agu.confex.com/agu/fm19/meetingapp.cgi/Paper/620264>

Ruiz-Carrascal, D., Ángel-Sanint, E., Gutiérrez-Lagoueyte, M.E., Ortega-Arango, S., **González-Duque, D.**, Restrepo-Correa, I., Posada-Posada, M.I., and Gutiérrez-Pemberthy, J.G. (2018). Towards enhancing and disseminating scientific knowledge on the upper-tropospheric warming and its impacts on the overall integrity of páramo environments. II International Conference on Research for Sustainable Development in Mountain Regions (Symposium 9: Climate Change Adaptation in Mountainous Regions), Mountains 2018, Nova Friburgo, Brazil, December 11-15, 2018.

Ruiz-Carrascal, D., Restrepo-Correa, I., and **González-Duque, D.** 2018. Reconstructing late Pleistocene to Holocene glacial advances to assess the fast warming of the northern Andes. IV International Conference on El Niño Southern Oscillation: ENSO in a warmer climate. Session III: ENSO and other modes of climate variability (intraseasonal, decadal, centennial). October 16-18, 2018. Guayaquil – Ecuador.

Ruiz-Carrascal, D., Gutiérrez-Lagoueyte, M.E., **González-Duque, D.**, and Restrepo-Correa, I. 2018. Reconstructing temperature and moisture variability in the upper ranges of the Colombian Andes to assess the fast warming of the northern Andes. MtnClim 2018 - Anticipating climate change impacts in mountains: embracing variability. Focus area: causes and consequences of temperature and hydroclimate variability during the Common Era. Rocky Mountain Biological Laboratory, Gothic, Colorado, USA, September 17 – 21, 2018.

Ruiz D, Herzog SK, Gutiérrez ME, **González-Duque D**, Cuevas-Moreno J, del Valle JI, Andreu-Hayles L, Herrera DA, and Martínez R 2017. Tropical Andean ecosystems and the need to keep warming limits below a +1.5°C threshold. 2017 American Geophysical Union Fall Meeting; session number and title: GC53A: The rocky road to 1.5 degrees: (re)evaluating the Paris targets II. New Orleans Ernest N. Morial Convention Center, New Orleans, Louisiana, USA, December 11-15, 2017.

Ortega S, Angel E, **González-Duque D**, Alvarez-Villa OA, and Ruiz-Carrascal D. Reconstructing synthetic hourly time series of near-surface air temperatures in a mountainous region of the tropical Andes. Session' GC51D Taking the temperature of the Earth: challenges, trends, and applications across all Earth surface domains', Program Global Environmental Change, 2016 AGU Fall Meeting, San Francisco (USA), December 2016. <https://agu.confex.com/agu/fm16/meetingapp.cgi/Paper/193208>

Angel E, Ortega S, **González-Duque D**, and Ruiz-Carrascal D. Potential decline in geothermal energy generation due to rising temperatures under climate change scenarios. Session 'GC53G Renewable energy: wind, solar, marine, and open topics II', Program Global Environmental Change, 2016 AGU Fall Meeting, San Francisco (USA), December 2016. <https://agu.confex.com/agu/fm16/meetingapp.cgi/Paper/191891>

Convened and Chaired Sessions at International Scientific Conferences.....

Person, M.A., B. Dugan, A. Micallef, A. S. Mayer, and **Gonzalez-Duque, D.** 2023. New Developments in the Exploration for and Development of Inland Brackish Water Resources and Continental Shelf Freshened Groundwater Poster. AGU, San Francisco, USA. <https://agu.confex.com/agu/fm23/meetingapp.cgi/Session/184804>

Becker, P.S., S. Rathore, **Gonzalez-Duque, D.**, and Garayburu-Caruso, V. 2022. Groundwater-Surface Water Interactions: Integrating Physical, Biological, and Chemical Patterns and Processes Across Systems and Scales. AGU, Chicago, USA. <https://agu.confex.com/agu/fm22/meetingapp.cgi/Paper/1212057>

Turetaia, A., Kurz, M.J., Kaufman, M., Schneidewind, U., Kaufman, M., **Gonzalez-Duque, D.**, and Kurz, M.J. 2021. Groundwater-Surface Water Interactions: Integrating Physical, Biological, and Chemical Patterns and Processes Across Systems and Scales III Oral. AGU, New Orleans, LA. <https://agu.confex.com/agu/fm21/meetingapp.cgi/Session/137100>

Seminars.....

Gonzalez-Duque, D. 2025. From Mountains to Coasts: Groundwater dynamics and their impact on solute transport. Earth Sciences Seminar. The Ohio State University,

Columbus, OH, USA. <https://earthsciences.osu.edu/events/earth-sciences-seminar-dr.-daniel-gonzalez-duque-mountains-coasts-groundwater-dynamics-and>

Gonzalez-Duque, D. 2024. From Mountains to Bedforms: Multiscale Groundwater Dynamics and its Influence on Solute and Energy Fate and Transport. Groundwater Hydrology Group (GHS), Universitat Politècnica de Catalunya (UPC), Barcelona, Spain. <https://www.h2ogeo.upc.edu/novedad/76%7D>

Teaching

Civil and Environmental Department

Teaching Assistant for Water Resources Engineering, Vanderbilt University. Dr. Alan Bowers

Nashville, TN, USA

Spring 2024

- Graded homework assignments and exams.
- Prepared lectures and software training labs
- Held office hours

Civil and Environmental Department

Teaching Assistant for Fluid Mechanics Laboratory, Vanderbilt University. Dr. Alan Bowers

Nashville, TN, USA

Fall 2023

- Grade laboratory reports.
- Prepare and guide laboratory experiments
- Hold office hours

Civil and Environmental Department

Teaching Assistant for Water Resources Engineering, Vanderbilt University. Dr. Eugene Labeouf

Nashville, TN, USA

Spring 2020

- Graded homework assignments and exams.
- Prepared lectures and software training labs
- Held office hours

Civil and Environmental Department

Teaching Assistant for Fluid Mechanics, Vanderbilt University, Dr. Jesus Gomez-Velez

Nashville, TN, USA

Fall 2019

- Graded homework assignments and exams.
- Held office hours

Universidad EIA

Instructor for Object Oriented Programming

Medellin, Colombia

Spring 2018 - Fall 2018

- Taught biomedical and mechatronic engineering students the basis of object-oriented programming in Python.
- Prepared and graded homework assignments and exams.

Universidad EIA

Instructor for Research Methodology

Medellin, Colombia

Spring 2016 - Fall 2018

- Taught the fundamental concepts of the scientific method to engineering students.
- Prepared and graded homework assignments and exams.

Universidad Nacional de Colombia

Teacher Assistant for Hydrology, Dr. German Proveda Jaramillo

Medellin, Colombia

Fall 2015 - Spring 2016

- Prepared and graded homework assignments and exams.
- Prepared and taught lectures
- Held office hours

Universidad Nacional de Colombia

Teacher Assistant for Research Seminar, Dr. Jaime Ignacio Velez Upegui

Medellin, Colombia

Spring 2015

- Prepared and graded homework assignments and exams.
- Prepared and taught classes
- Held office hours

Awards & Honors

- AGU Horton Research Grant 2022
- Carl E. Adams Graduate Award, Civil & Environmental Engineering, Vanderbilt University 2019-2020
- Faculty Scholarship, Department of Geoscience, Universidad Nacional de Colombia 2014-2016
- Research Assistantship, Inter-American Institute for Global Change Research (IAI) 2014
- Undergraduate honorary mention thesis, Environmental Engineering, Universidad EIA 2014
- Environmental Engineering scholarship, Environmental Engineering, Universidad EIA 2009-2014

Technical Skills

- **Coding:** Advanced proficiency in Python; proficiency in Linux and Git; basic proficiency in MATLAB and R
- **Modeling:** Proficiency in COMSOL Multiphysics, MODFLOW, and PFLOTRAN
- **Geographic Information Systems:** Advanced proficiency in ArcGIS (ArcMap, ArcPro); proficiency with QGIS
- **Microsoft Office:** Advanced proficiency in Excel, Word, and PowerPoint
- **Technical Writing & Reports:** Ability to carefully detail methodological approaches, including data acquisition and limitations; advanced proficiency in preparing figures in Python; advanced proficiency in preparing reports in LaTeX

Training

- Summer of Applied Geophysics Experience (SAGE) 2022
- Responsible Conduct of Research Training through online CITI course & in-person 2020

Professional Affiliations

- American Geophysical Union (AGU)
- International Association of Hydrogeologists (IAH)

Leadership & Community Involvement

Vanderbilt Graduate Student Council
Data Analyst

Nashville, TN
February 2023 – December 2023

Hands on Nashville
Volunteer – Nashville flood recovery assistance after April 2021 floods

Nashville, TN
April 2021

References

Dr. Audrey H. Sawyer
Full Professor, School of Earth Sciences
The Ohio State University
(614) 292-8383 — sawyer.143@osu.edu

Dr. Jesus Gomez-Velez
Senior Research Scientist, Environmental Science Division
Oak Ridge National Laboratory (ORNL)
(865) 341-2305 — gomezvelezjd@ornl.gov

Dr. Mark Person
Professor of Hydrology, Earth & Environmental Science
New Mexico Tech

(575) 835-6506 — mark.person@nmt.edu

Dr. George Hornberger

Emeritus Distinguish Professor of Civil & Environmental Science

Emeritus Distinguish Professor of Earth & Environmental Science

Emeritus Craig E. Philip Professor of Engineering

Vanderbilt University

(615) 323-1144 — george.m.hornberger@Vanderbilt.edu