

WILLIAM NGUYEN

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EDUCATION

The University of Texas at Austin

August 2020 - Present

Ph.D. in Geological Sciences

Supervisor: Dr. M. Bayani Cardenas

University of Maryland, College Park

August 2016 - August 2020

B.S. in Geology with Honors

Thesis: *The influence of road salts on the mobilization of bioreactive elements in regenerative stormwater conveyance systems*

Supervisor: Dr. Sujay Kaushal and Jenna Reimer

PROFESSIONAL EXPERIENCE

The University of Texas at Austin

August 2022 - June 2023

Teaching Assistant

Austin, TX

- Instructed laboratory sections (19 students) for GEO 476K/391C: Groundwater Hydrology/Physical Hydrogeology - Fall 2022
- Instructed laboratory sections (11 students) for GEO 387C/476M: Aqueous Geochemistry - Spring 2023
- Instructed 14 students for GEO 376L: Field Methods in Hydrogeology - Summer 2023

The University of Texas at Austin

August 2020 - Present

Graduate Student Researcher

Austin, TX

- Funded by NSF 852653 Collaborative Research: The dynamic iron curtain surrounding fluctuating rivers and its impacts on arsenic fate and transport
- Researching groundwater-surface water interactions and their effect on redox zonation in seasonally and tidally flooded riverbanks: numerical modeling of the Meghna River, Bangladesh

Woods Hole Oceanographic Institution

May 2019 - August 2019

Summer Student Fellow

Woods Hole, MA

- Coastal Groundwater Geochemistry Laboratory of the Department of Marine Chemistry and Geochemistry.
- Funded by NSF-REU "Ocean Sciences & Engineering at Woods Hole Oceanographic Institution".
- Analyzed mechanisms of water movement using ^{224}Ra – ^{228}Th disequilibria and endmember mixing analyses; quantified solute transport through underground seepage and at the sediment-water interface.
- Supervisors: Drs. Matthew Charette and Joseph Tamborski

Texas A&M University

May 2018 - August 2018

NSF-REU Undergraduate Researcher

College Station, TX

- Department of Civil Engineering; Geology & Geophysics
- Funded by NSF-REU "Ecohydrology of Tropical Montane Forests - Diversity in Science, Interdisciplinary Breadth, and Global Awareness"
- Partitioned source waters using stable isotope tracers ($\delta^{18}\text{O}$ and δD); analyzed fate and transport of nutrients through forested, mountainous watersheds in Costa Rica
- Supervisors: Drs. Gretchen Miller and Peter Knappett

University of Maryland, College Park

May 2017 - May 2019

Field & Lab Assistant

College Park, MD

- Biogeochemistry Laboratory of the Department of Geology
- Focused on biogeochemical cycles and their interactions with urban developments: element cycles (C, N, P), road salt, and urban karst
- Supervisor: Dr. Sujay Kaushal

University of Maryland, College Park

Research Intern

October 2015 - August 2016

College Park, MD

- Geomorphology and Ecohydrology Laboratory of the Department of Geology
- Completed a research capstone on the hydrologic and geomorphic controls of stream temperature
- Examined the role of stormwater runoff and channel geometry on stream warming in the Anacostia watershed
- Supervisor: Dr. Karen Prestegard

JOURNAL PUBLICATIONS

[7] **Nguyen W.**, Datta, S., Knappett, P.S.K., Cardenas, M.B. (2025). The effects of tidal and seasonal scale flooding and soil texture on surface water-groundwater interactions along a fluvio-deltaic floodplain: the Meghna River, Bangladesh (in revision). *Water Resources Research*.

[6] Kwak, K., Varner, T.S., **Nguyen, W.**, Kulkarni, H.V., Buskirk, R., Huang, Y., Saeed, A., Hosain, A., Aitkenhead-Peterson, J., Ahmed, K.M., Akhter, S.H., Cardenas, M.B., Datta, S., Knappett, P.S.K. (2024). Hotspots of dissolved arsenic generated from buried silt layers along fluctuating rivers. *Environmental Science & Technology*, <https://doi.org/10.1021/acs.est.4c02330>

[5] Cardenas, M.B., Chiarino, I., Sananda, J.M., **Nguyen, W.**, Rempe, D. (2024), Water Sample collection methods for Rn Analysis by Scuba Diving: Insights on Groundwater Flushing of Anchialine Cave Systems of the Yucatan Peninsula. *Water Resources Research*, <http://dx.doi.org/10.1029/2023WR036019>

[4] Varner, T.S., Kulkarni, H.V., **Nguyen, W.**, Kwak, K., Cardenas, M.B., Knappett, P.S.K., Ojeda, A.S., Malina, N., Bhuiyan, M.U., Ahmed, K.M., Datta, S. (2022), Contribution of sedimentary organic matter to arsenic mobilization along a potential natural reactive barrier (NRB) near a river: The Meghna River, Bangladesh. *Chemosphere*, <https://doi.org/10.1016/j.chemosphere.2022.136289>

[3] Kaushal, S.S., Mayer, P.M., Likens, G.E., Reimer, J.E., Maas, C.M., Rippy, M.A., Grant, S.B., Hart, I., Utz, R.M., Shatkay, R.R., Wessel, B.M., Maietta, C.E., Pace, M.L., Duan, S., Boger, W.L., Yaculak, A.M., Galella, J.G., Wood, K.L., Morel, C.J., **Nguyen, W.**, Querubin, S.E.C., Sukert, R.A., Lowien, A., Houde, A.W., Roussel, A., Houston, A.J., Cacopardo, A., Ho, C., Talbot-Wendlandt, H., Widmer, J.M., Slagle, J., Bader, J.A., Chong, J.H., Wollney, J., Kim, J., Shepherd, L., Wilfong, M.T., Houlihan, M., Sedghi, N., Butcher, R., Chaudhary, S. and Becker, W.D. (2023), Five state factors control progressive stages of freshwater salinization syndrome. *Limnology and Oceanography Letters*, <https://doi.org/10.1002/lol2.10248>

[2] Kaushal, S. S., Reimer, J. E., Mayer, P. M., Shatkay, R. R., Maas, C. M., **Nguyen, W.**, Boger, W. L., Yaculak, A. M., Doody, T. R., Pennino, M. J., Bailey, N. W., Gallela, J. G., Weingrad, A., Collison, D. C., Wood, K. L., Haq, S., Newcomer Johnson, T. A., Duan, S., & Belt, K. T. (2022). Freshwater salinization syndrome alters retention and release of chemical cocktails along flowpaths: From stormwater management to urban streams. *Freshwater Science*, 41(3), 000-000.

[1] Kaushal, S. S., Wood, K. L., Galella, J. G., Gion, A. M., Haq, S., Goodling, P. J., Haviland, K. A., Reimer, J. E., Morel, C. J., Wessel, B., **Nguyen, W.**, Hollingsworth, J. W., Mei, K., Leal, J., Widmer, J., Sharif, R., Mayar, P. M., Newcomer Johnson, T. A., Newcomb, K. D., Smith, E., & Belt, K. T. (2020). Making ‘chemical cocktails’—Evolution of urban geochemical processes across the periodic table of elements. *Applied Geochemistry*, 119, 104632.

CONFERENCE PRESENTATIONS

- [28] P. S. K. Knappett, K. Kwak, T. S. Varner, **W. D. Nguyen**, H. V. Kulkarni, Z. E. Buskirk, K. M. Ahmed, S. Datta, M. B. Cardenas, “Silt layers in sandy riverbanks counteracts the removal of arsenic within hyporheic zones” *Goldschmidt 2025*, Prague, CR (Poster)
- [27] **Nguyen, W. D.**, K. Kwak, T. Varner, S. Datta, P. S. K. Knappett, M. B. Cardenas, “Semi-diurnal and seasonal surface water-groundwater interactions along a tidal and seasonally flooded river corridor: the Meghna River, Bangladesh” *AGU Fall Meeting 2024*, Washington, D.C. (eLightning)
- [26] Datta, S., T. Varner, H. V. Kulkarni, K. Kwak, **W. D. Nguyen**, M. B. Cardenas, P. S. K. Knappett, “Partitioning of sedimentary arsenic in intertidal zone sediment: Meghna River, Bangladesh” *AGU Fall Meeting 2024*, Washington, D.C. (Poster)
- [25] Varner, T., K. Kwak, H. V. Kulkarni, **W. D. Nguyen**, M. B. Cardenas, P. S. K. Knappett, “Sedimentary organic matter and iron mineralogy control solid-phase arsenic behavior in the hyporheic zone of the Meghna River, Bangladesh” *Goldschmidt 2024*, Chicago, IL (Poster)
- [24] Datta, S., T. Varner, K. Kwak, **W. D. Nguyen**, M. B. Cardenas, P. S. K. Knappett, “Arsenic and Iron Association in Sediment Comprising the Hyporheic Zone of the Meghna River in Bangladesh” *GSA 2024*, Anaheim, CA (Talk)
- [23] Cardenas, M. B., I. Chiarino, J. Sananda, **W. D. Nguyen**, D. M. Rempe, “Insights from an assessment of water sample collection methods for ^{222}Rn analysis by scuba diving: Cross-flowing fresh and saline groundwater in the world’s largest anchialine cave systems in the Yucatan Peninsula” *AGU Fall Meeting 2023*, San Francisco, CA (Talk)
- [22] Kelly, A., A. Nguyen, J. Sananda, **W. D. Nguyen**, M. B. Cardenas, D. M. Rempe, “Physican and Chemical Hydrogeology of a Barrier Island in the Yucatan Peninsula” *AGU Fall Meeting 2023*, San Francisco, CA (Poster)
- [21] Montoya, S., M. Callan, D. M. Rempe, M. B. Cardenas, P. C. Bennett, J. Sananda, **W. D. Nguyen**, “Geochemical study of the karst aquifers and cave systems of the eastern Yucatan Peninsula: Implications for carbonate weathering” *AGU Fall Meeting 2023*, San Francisco, CA (Poster)
- [20] Keith, D. G., M. Teel, **W. D. Nguyen**, T. McKinney, E. Williams, A. Bangun, A. Turetaia, J. Mehr, M. B. Cardenas, “The stratification dynamics of Lake Travis in Austin, Texas, USA and the effects of drought” *AGU Fall Meeting 2023*, San Francisco, CA (Poster)
- [19] Wachtel, C., E. Everton, S. Husted, R. Buskirk, **W. Nguyen**, F. Aburto, G. McKay, J. K. Brumbelow, A. P. Smith, P. S. K. Knappett, “Rainfall Pauses in a Pre-Montane Rainforest Drive Fermentative Degradation of Organic Carbon from Tropical Andisols” *AGU Fall Meeting 2023*, San Francisco, CA (Poster)
- [18] Buskirk, R., P. S. K. Knappett, **W. D. Nguyen**, M. B. Cardenas, S. Datta, “The Role of Dissolved Tidal Mixing and Dissolved Organic Carbon on Fe-Oxide Permeable Natural Reactive Barrier Formation Along the Meghna River, Bangladesh” *GSA 2023*, Pittsburgh, PA (Poster)
- [17] Keith, D.G., N. Mukherjee, C. M. deFabry, S. A. Cabraal, L. Schmidt, A. Turetaia, **W. D. Nguyen**, P. C. Bennett, T. M. Shanahan, M. B. Cardenas, “Hydrologic, Geophysical, and Geochemical Characterization of an Aquifer along the Beach of a Barrier Island” *AGU Fall Meeting 2022*, Chicago, IL (Poster)
- [16] Varner, T., H. B. Kulkarni, K. Kwak, **W. D. Nguyen**, M. B. Cardenas, P. S. Knappett, and S. Datta, “Impact of fluctuating river levels on sedimentary arsenic mobilization along the dynamic surface water-groundwater interface of the Meghna River, Bangladesh” *GSA Connects 2022*, Denver, CO (Talk)
- [15] Varner, T., H. B. Kulkarni, **W. D. Nguyen**, K. Kwak, Z. Buskirk, M. B. Cardenas, A. Ojeda, P. S. Knappett, N. Malina, and S. Datta, “Role of sedimentary organic matter on arsenic mobilization in a

potential natural reactive barrier (NRB) along the fluctuating Meghna River, Bangladesh” *Goldschmidt 2022*, Honolulu, HI (Talk)

[14] Kwak, K., T. Varner, **W. Nguyen**, H. V. Kulkarni, P. S. Knappett, S. Datta, and M. B. Cardenas, “Freshly deposited overbank sediments create an arsenic release hotspot in riverbanks of a tidally and seasonally fluctuating river” *Goldschmidt 2022*, Honolulu, HI (Poster)

[13] Teel, M., **W. Nguyen**, C. Demir, S. T. McKinney, J. Mehr, and M. B. Cardenas, “Thermal and chemical stratification of Lake Travis” *Jackson School Research Symposium 2022*, Austin, TX (Poster)

[12] **Nguyen, W.**, M. B. Cardenas, S. Datta, K. Kwak, T. Varner, C. Demir, M. N. Pedrazas, and P. Knappett, “Groundwater-surface water interactions in seasonally and tidally flooded riverbanks: numerical modeling of the Meghna River, Bangladesh” *AGU Fall Meeting 2021*, New Orleans, LA (eLightning)

[11] Varner, T., H. V. Kulkarni, **W. Nguyen**, K. Kwak, M. B. Cardenas, P. Knappett, and S. Datta, “Geochemical characteristics of sediments from a potential natural reactive barrier and arsenic contaminated aquifer in Bangladesh” *AGU Fall Meeting 2021*, New Orleans, LA (Poster)

[10] Demir, C., M. B. Cardenas, S. T. McKinney, **W. Nguyen**, E. Bristol, E. Bullock, A. Sanders, I. Schaal, M. Charette, and J. W. McClelland, “Groundwater Flow and Transport in a Coastal Aquifer in the Arctic” *AGU Fall Meeting 2021*, New Orleans, LA (Talk)

[9] Husted, S., R. Buskirk, **W. Nguyen**, A. P. Smith, S. Calabrese, H. V. Kulkarni, S. Datta, P. Knappett, J. K. Brumbelow, and G. W. Moore, “Inorganic and Organic Carbon Fluxes from Tropical Andisols and Andesitic Sapolite in a Pre-Montane Forest” *AGU Fall Meeting 2021*, New Orleans, LA (Poster)

[8] Varner, T., H. B. Kulkarni, **W. Nguyen**, M. B. Cardenas, K. Kwak, P. S. Knappett, M. U. Bhuiyan, K. M. Ahmed, S. Ahkter, and S. Datta, “Geochemical controls on arsenic mobilization in a potential permeable natural reactive barrier (PNRB)” *Goldschmidt 2021*, Virtual (Talk)

[7] Kaushal, S., K. Wood, J. Reimer, S. Haq, A. Gion, K. Haviland, C. Morel, B. Wessel, **W. Nguyen**, J. Hollingsworth, K. Mei, J. Leal, J. Widmer, R. Sharif, W. L. Boger, A. Yaculak, J. Kryger, D. Collison, J. B. Aisin, T. Doody, K. Belt, T. A. Newcomer Johnson, and P. Meyer, “Making ‘Chemical Cocktails’ in Streams across the Periodic Table of Elements,” *AGU Fall Meeting 2020*, Online (Talk)

[6] **Nguyen, W.**, R. Buskirk, D. D. Riddle, L. Gomez, R. Hamid, G. Aguilar, E. Prior, G. Miller, A. P. Smith, J. Aitkenhead-Petersen, K. Brumbelow, G. W. Moore, and P. S. K. Knappett, “Mass Fluxes of Nitrogen and Carbon from Soil Water to a First-Order Mountain Stream in a Pristine Costa Rican Rain Forest in Response to Individual Rain Events,” *GSA 2020 Connects Online*, Virtual (Poster/Talk)

[5] **Nguyen, W.**, J. Tamborski, and M. Charette, “Applications of the Radium Quartet to Quantify Water Exchange in Salt Marshes,” *AGU Fall Meeting 2019*, San Francisco, CA (Poster)

[4] Riddle, D., P. Knappett, G. Aguilar, R. Hamid, M. Zapata, **W. Nguyen**, L. Gomez, J. Brumbelow, and G. Moore, “Rain or Shine: Changes in Water and Mass Fluxes of a Pristine Watershed in Response to Rainfall Events and Regional Drought,” *AGU Fall Meeting 2019*, San Francisco, CA (Poster)

[3] Keebler, A., M. Everett, M. Rivera, **W. Nguyen**, G. Moore, J. Brumbelow, and L. Gomez, “Electromagnetic Geophysical Mapping of a Stream Channel in a Tropical Montane Rainforest in Costa Rica,” *AGU Fall Meeting 2018*, Washington DC (Poster)

[2] Gomez, L., **W. Nguyen**, P. Knappett, A. Duffy, E. Prior, A. Keebler, G. Moore, and J. Brumbelow, “Measuring Mass Fluxes of Nutrients to a First-Order Stream within a Pristine Mountain Rainforest in Costa Rica,” *AGU Fall Meeting 2018*, Washington, DC (Poster)

[1] **Nguyen, W.**, L. Gomez, A. Duffy, P. Knappett, G. Miller, J. Brumbelow, E. Prior, A. Keebler, and G. Moore, “Streamflow Responses to Runoff and Shallow Groundwater Fluctuations within Two

Nested Watersheds in Costa Rica,” *AGU Fall Meeting 2018*, Washington, DC (Poster)

MENTORING

Morgan Teel - Undergraduate

August 2021 - May 2022

GRANTS & AWARDS

Outstanding Teaching Assistant Award - Spring 2023

May 2023

National Science Foundation Graduate Research Fellowship
\$138,000

August 2020 - August 2025

UT Austin Recruitment Fellowship
\$28,000

August 2020 - August 2021

Green Scholarship in Environmental Science & Restoration
\$7,143

October 2019

OUTREACH & OTHER EXPERIENCE

Student Representative for Search Committee
for Professor of Practice in Aqueous Geochemistry
and Environmental Science - UT Austin

November 2023 - October 2024

Asian Americans & Pacific Islanders
in Geosciences (AAPIIG) - Steering Committee

February 2024 - Present

Guest Lecturer for Kiker Elementary School, Kindergarten

February 2024

Graduate Student Executive Committee - Treasurer

August 2022 - May 2023

Guest Lecturer for Kiker Elementary School, Kindergarten

May 2022

Kids Excelling in Math & Science Mentor

August 2019 - March 2020

UMD Geology Club - Treasurer

August 2019 - May 2020

Maryland Day Volunteer for UMD Department of Geology

May 2019

UMD Geology Club - President

August 2018 - May 2019

Maryland Day Volunteer for UMD Department of Geology

May 2018

TECHNICAL STRENGTHS

Programming Languages
Software

R, MATLAB, Python
COMSOL Multiphysics, PFLOTRAN, PHREEQC