Meinhard Bayani Ramos Cardenas
(shortened as M. Bayani Cardenas)
J. Nalle Gregory Regents Professor in Geological Sciences
Department of Earth and Planetary Sciences, Jackson School of Geosciences, The University of Texas at Austin
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Curriculum Vitae as of May 2026

Biographical Information

Born: 1977 in Göttingen, Germany as a Filipino citizen
Nationality: Philippines; USA
Marital status: Married with two adult children

Academic Background

Ph.D. in Earth and Environmental Science (Hydrology), 2006, New Mexico Inst. of Mining and Technol.
Dissertation: Dynamics of fluids, heat and solutes along sediment-water interfaces
Adviser: John L. Wilson; Committee: Fred Phillips, Robert Bowman, Enrique Vivoni, Daniel Stephens
M.S. in Geology (Hydrogeology), 2002, University of Nebraska-Lincoln
Thesis: Detailed three-dimensional hydrogeologic study of a modern streambed
Adviser: Vitaly A. Zlotnik; Committee: Norman Smith, Darryll Pederson
B.S. in Geology, 1999, University of the Philippines-Diliman

Research Profile

Discipline: Hydrology - surface and subsurface
Environments: Terrestrial, aquatic, coastal, marine, semi-arid, tropical, arctic
Processes: Flow and transport phenomena, including non-isothermal, variable-density, and multiphase flows, and multi-component reactive transport
Methods: Laboratory experiments (analogue experiments and chemical analyses), field observations (conventional water sampling and hydraulic monitoring, geophysics, and remote sensing), hydro-informatics and data science, mathematical modeling (computational/numerical, analytical, statistical, artificial intelligence/machine learning)
Applications: Water quality and quantity

Professional Appointments

2020-present, J. Nalle Gregory Regents Professor in Geological Sciences, The University of Texas at Austin
2016-2020, Professor, The University of Texas at Austin
2011-2016, Associate Professor, The University of Texas at Austin
2006-2011, Assistant Professor, The University of Texas at Austin
2002-2006, Research Assistant, New Mexico Bureau of Geology and Mineral Resources
2004-2005, Teaching Assistant, New Mexico Inst. of Mining and Technology
1999-2002, Teaching and Laboratory Assistant, University of Nebraska-Lincoln

Honors and Recognition

2025: Birdsall-Dreiss and LaMoreaux Lecturer, Geological Society of America (GSA) Hydrogeology Division
2024: G. Moses and Carolyn G. Knebel Distinguished Teaching Award in Field/Experiential Education
2017: Faculty Science Performance Award (Top Full Prof.), Dept. of Geological Sciences, UT Austin
2016: Faculty Science Performance Award (Top Assoc. Prof.), Dept. of Geological Sciences, UT Austin
2015: Faculty Science Performance Award (Top Assoc. Prof.), Dept. of Geological Sciences, UT Austin
2011: Faculty Science Performance Award (Top Asst. Prof.), Dept. of Geological Sciences, UT Austin
2012: Kohout Early Career Award, GSA Hydrogeology Division
Fred Holmsley Moore Distinguished Lecturer, University of Virginia

2011: Hydrologic Sciences Early Career Award, American Geophysical Union (AGU) Hydrology Section
AGU Editors' Citation for Excellence in Refereeing - Water Resources Research
AGU Editors' Citation for Excellence in Refereeing - Geophysical Research Letters
2010: National Science Foundation CAREER Award
G. Moses and Carolyn G. Knebel Distinguished Teaching Award (UT-Jackson School of Geosciences)
2009: Top Referee Award, Journal of Hydrology (Elsevier)
Big XII Faculty Fellowship
2008: Balik Scientist, Department of Science and Technology, Republic of the Philippines
2007: G. Moses and Carolyn G. Knebel Distinguished Teaching Award (UT-Jackson School of Geosciences)
2005: American Geophysical Union Horton Research Grant (Hydrology Section)
New Mexico Water Resources Research Institute Student Grant
2004: American Geophysical Union Outstanding Student Paper Award (Hydrology Section)
2003: CH2M-Hill Outstanding Hydrology Teaching Assistant (New Mexico Tech)
2002-2006: Frank M. Kottlowski Fellowship (New Mexico Tech)
2001: American Association of Petroleum Geologists Paul Danheim Nelson Award
2001: Nebraska Geological Society Yatkola-Edwards Research Grant
2000 and 2001: University of Nebraska-Lincoln Department of Geosciences Summer Fellowship
1999: Arthur Saldivar-Sali Award (Best Senior Thesis in Geology, University of the Philippines-Diliman)
1999: Outstanding BS Geology Graduate (University of the Philippines-Diliman)
1996-1999: College Scholar/Dean's List (University of the Philippines-Diliman)

Honors and recognition to current and former supervised students and post-docs

2025

American Geophysical Union Outstanding Student Paper Award – Neelarun Mukherjee
Dept. of Energy PI Meeting Travel Grant – Neelarun Mukherjee

2024

Geol. Soc. of America Student Research Grant (Outstanding Proposal) – Cameron deFabry
Outstanding Teaching Assistant UT-EPS – Ebony Williams
Dept. of Energy PI Meeting Travel Grant – Neelarun Mukherjee

2023

Undergraduate Research Fellowship – David Keith
CUAHSI Travel Grant – Neelarun Mukherjee
CUAHSI Travel Grant – William Nguyen
Outstanding Teaching Assistant UT-DGS – William Nguyen
Outstanding Graduate Student in Hydrogeology Field Camp UT DGS – Cameron deFabry
Best Represented Research Group Jackson School Annual Research Symposium – Entire Research Group

2022

Geol. Soc. of America Student Research Grant – Ebony Williams
AAPI in Geoscience: Inclusivity, Leadership, and Experience (AGILE) fellowship – Amber Nguyen
Champions of Diversity mentee fellowship – Amber Nguyen

2021

Office of Science Graduate Student Research Award (Dept. of Energy) – Anna Turetcaia

2020

National Science Foundation Graduate Research Fellowship – William Nguyen
NASA FINESST Fellowship– Sophy Wu (as co-supervisor; supervised by Prof. Ann Chen)
Best Poster Presentation (2nd place), Jackson School Annual Research Symposium – Micaela Pedrazas

2019

Outstanding Teaching Assistant UT-DGS – Stephen Ferencz
Geol. Soc. of America Student Research Grant – Cansu Demir
Geol. Soc. of America Student Research Grant – Micaela Pedrazas
Ivanhoe Foundation Fellowship – Micaela Pedrazas
Best Seminar Presentation Award UT-DGS – Michael O'Connor

2018

Fulbright Fellowship (Turkish Fulbright Commission) – Cansu Demir
Linus Pauling Distinguished Postdoctoral Fellowship (Pacific Northwest Nat. Lab.) – Matthew Kaufman

Office of Science Graduate Student Research Award (Dept. of Energy) – Michael O'Connor
Best Undergraduate Presentation, Jackson School Annual Research Symposium – Sebastian Muñoz

2017

American Geophysical Union Horton Research Grant – Michael O'Connor
American Geophysical Union Outstanding Student Paper Award – Sebastian Muñoz
American Geophysical Union Outstanding Student Paper Award – Matthew Kaufman
CUAHSI Pathfinder Fellowship – Michael O'Connor

2016

UT-DGS Outstanding Teaching Assistant – Michael O'Connor
American Assoc. of Petroleum Geologists Student Research Grant – Michael O'Connor
Geol. Soc. of America Student Research Grant – Michael O'Connor
Geol. Soc. of America Student Research Grant – Stephen Ferencz
Geol. Soc. of America Student Research Grant – Matthew Kaufman
Outstanding Graduate Student in UT Hydrogeology Field Camp – Stephen Ferencz

2015

Geol. Soc. of America Student Research Grant (Outstanding Proposal) – Michael O'Connor
Geol. Soc. of America Alexander Sisson Research Award – Michael O'Connor
USGS Mendenhall Postdoctoral Research Fellow – Kevin Befus

2014

American Geophysical Union Outstanding Student Paper Award – Matthew Kaufman
American Geophysical Union Outstanding Student Paper Award – Kevin Befus
American Geophysical Union Horton Research Grant – Kevin Befus
Best MS Student Presentation, Jackson School MS Student day – Alyse Briody
Best Represented Research Group (1st Place), Jackson School Annual Research Symposium
Outstanding Graduate Student in UT Hydrogeology Field Camp – Matthew Kaufman

2013

American Assoc. of Petroleum Geologists Frank E. Kottlowski Memorial Grant – Lichun Wang

2012

Petroleum School of Norway Travel Award – Kuldeep Chaudhary
Ivanhoe Foundation Fellowship – Raquel Flinker

2011

Ozarka Earth Science Scholarship – Kevin Befus
American Geophysical Union Outstanding Student Paper Award – Audrey Sawyer
Geol. Soc. Of America Student Research Grant – Kevin Befus
Geol. Soc. Of America Student Research Grant (Outstanding Proposal) – Peter Zamora
ExxonMobil Student Research Grant – Kuldeep Chaudhary
ConocoPhillips SPIRIT Scholar – Kuldeep Chaudhary
University of Texas COOP Undergraduate Research Fellowship – Ben Bass
National Science Foundation Graduate Research Fellowship – Anne Dunckel

2010

Assoc. Sci. of Limnology & Oceanography Summer Meeting Outstanding Student Poster – Audrey Sawyer
National Science Foundation Graduate Research Fellowship – Katy Gerecht
Geol. Soc. of America Student Research Grant (Outstanding Proposal) – Kuldeep Chaudhary
Massachusetts Water Resour. Res. Conf. First Place Student Poster – Katy Gerecht
UT-DGS Tech Sessions Outstanding MS Student Presentation – John Nowinski
UT-DGS Tech Sessions Outstanding MS Student Presentation – Travis Swanson
ConocoPhillips SPIRIT Scholar – Travis Swanson

2009

American Geophysical Union Horton Research Grant – Audrey Sawyer
Geol. Soc. of America Student Research Grant – Travis Swanson
Geol. Soc. of America Student Research Grant – John Nowinski
James A. Gibbs Hydrogeology and Engineering Geology Graduate Fellowship – Blair Stanley (now Francis)
ConocoPhillips SPIRIT Scholar – Blair Stanley (now Francis)
ConocoPhillips SPIRIT Scholar – Travis Swanson
Hess Fellowship – Travis Swanson

2008

Geol. Soc. of America Student Research Grant – Blair Stanley (now Francis)

UT-DGS Outstanding Teaching Assistant – Audrey Sawyer
Geol. Soc. of America Student Research Grant (Outstanding Proposal) – Audrey Sawyer
American Assoc. of Petroleum Geologists Student Research Grant – Audrey Sawyer
BP Fellowship – John Nowinski
University of Texas COOP Undergraduate Research Fellowship – Anne Dunckel

2007

Noble Energy Fellowship – Blair Stanley (now Francis)

Advising, Mentoring, and Supervision

Post-doctoral fellows, serves or served as supervisor or co-supervisor (denoted by *):

Name	Period	Most recent known position
Lichun Wang	2015-2018	Assoc. Professor, Tianjin University
Wen Deng	2010 - 2014	Asst. Professor, Missouri Univ. of Sci. and Technol.
Benjamin Hardt*	2010 - 2012	Mendenhall Postdoctoral Fellow, USGS
Judson Partin*	2008 - 2011	Research Associate, UT Inst. for Geophysics

PhD students, serves or served as supervisor or co-supervisor (denoted by *):

Name	Started under my supervision	Passed candidacy	Graduation
Grace Castle	Summer 2025	na	In progress
Zijian Qin*	Fall 2024	na	In progress
Cameron M. deFabry	Summer 2022	Spring 2024	In progress
Neelarun Mukherjee	Fall 2021	Spring 2024	In progress
William D. Nguyen	Fall 2020	Fall 2023	In progress
Cansu Demir	Fall 2018	Fall 2020	Summer 2024
Yue Wu*	Fall 2017	Fall 2019	Summer 2023
Anna B. Turetcaia	Fall 2017	Spring 2019	Summer 2022
Stephen B. Ferencz	Fall 2015	Fall 2017	Spring 2020
Michael T. O'Connor	Fall 2014	Spring 2016	Spring 2019
Matthew H. Kaufman	Fall 2013	Spring 2015	Summer 2018
Eric J. Guiltinan	Fall 2013	Spring 2015	Summer 2018
Lizhi Zheng	Fall 2012	Spring 2014	Summer 2017
Lichun Wang	Fall 2010	Spring 2012	Summer 2015
Peter B. Zamora	Fall 2010	Spring 2012	Summer 2015
Kevin M. Befus	Fall 2010	Spring 2012	Summer 2015
Kuldeep Chaudhary	Spring 2010	Fall 2010	Summer 2013
Audrey H. Sawyer	Fall 2007	Spring 2008	Spring 2011

MS & MA students, serves or served as supervisor:

Name	Started under my supervision	Graduation
Amber Nguyen	Fall 2024	Spring 2026
Aya Shika Bangun	Fall 2021	Summer 2023
Ebony L. Williams	Fall 2021	Summer 2023
Micaela Pedrazas	Fall 2018	Spring 2020
Jeffery Watson	Fall 2014	Summer 2016
Raquel Flinker	Fall 2012	Fall 2014
Alyse Briody	Fall 2012	Summer 2014
Michael Kanarek	Fall 2012	Summer 2013
F. Alexander Norman	Fall 2010	Spring 2013
Wai Sum Chan	Fall 2010	Summer 2011
John D. Nowinski	Fall 2008	Spring 2010
Travis E. Swanson	Spring 2008	Spring 2010

Ashleigh Barber-Bomar	Summer 2008	Spring 2009
Meredith Mackey	Summer 2008	Spring 2009
Blair A. Francis (nee Stanley)	Fall 2007	Spring 2009

BS students who worked on a capstone project or honors thesis, serves or served as supervisor:

Name	Started under my supervision	Institution	Thesis/project completed
Mikaela Johnson	Fall 2025	UT	In progress
Hudson Finley Davis	Fall 2024	UT	In progress
Sydney Villaruel	Spring 2024	UT	Spring 2025
David G. Keith	Fall 2022	UT	Spring 2024
Amber Nguyen	Spring 2022	UT	Fall 2023
Austin Luu	Spring 2022	UT	Summer 2023
Morgan Teel	Fall 2021	UT	Spring 2022
Christian Roumelis	Spring 2019	UT	Spring 2020
Kindra Nicholaides	Spring 2017	UT	Spring 2018
Sebastian Muñoz	Spring 2017	UT	Spring 2018
Aimee E. Ford	Spring 2014	UT	Spring 2015
Julianne P. Wooten	Fall 2012	UT	Fall 2012
Benjamin J. Bass	Fall 2010	UT	Fall 2011
Michael S. Markowski	Summer 2009	UT	Spring 2010
Katelyn E. Gerecht	Summer 2009	Smith College	Spring 2010
Anne E. Dunckel	Summer 2008	UT	Fall 2009

BS students, served as undergraduate research assistant supervisor:

Name	Year
Jacob Mehr	2020-2022
Zachary Mungia	2018-2019
Sebastian Muñoz	2016-18
Kindra Nicholaides	2016-18
Lane Cockrell	2016-17
Austin Rio Mursinna	2016
Collin Roland	2016

BS students, served as Research Experience for Undergrads or Teachers supervisor:

Name	Institution	Year
Lauryn Martinez	Univ. of Puerto Rico-Mayaguez	2017
Hannah Leiberg	Univ. of Maryland-Baltimore Co.	2013
Nancy Pattyn	Anderson High School	2010
Katelyn Gerecht	Smith College	2009
Selene Castillo	Baylor University	2009
Anne Dunckel	Univ. of Texas	2008
Laura Merner	Clark University	2007

Visiting students or scientists, serves or served as supervisor or host:

Name	Date of visit	Institution	Supervisor
M. Drazen Medina	2022	independent	na
Fu Liao	2019-20	China Univ. of Geosciences-Beijing	Guangcai Wang
Dr. Xiaobing Chen	2019	Hohai University (China)	na
Anzy Lee	2018	Purdue University	Antoine Aubeneau
Jiaqing Zhou	2016-2017	Wuhan University (China)	Yi-Feng Chen

Xiaobing Chen	Summer 2014	Hohai University (China)	Li Chen
Adam Kessler	Spring 2013	Monash University (Australia)	Perran Cook
Tyler Cyronak	Summer 2012	Southern Cross Univ. (Australia)	Bradley Eyre
Douglas Tait	Summer 2012	Southern Cross Univ. (Australia)	Isaac Santos
Laura Bardini	Spring 2011	Politecnico di Torino (Italy)	Luca Ridolfi
Jesus Gomez	Fall 2009	New Mexico Tech	John Wilson
Louis Areepitak	Summer 2008	Texas A&M-Kingsville	Jianhong Ren
Dr. Moon-su Kim	2007-2008	Nakdong River IER (S. Korea)	na
Daniel Käser	Fall 2007	Lancaster University (UK)	Andrew Binley

High school students supervised who worked on science projects:

Name	Institution	Project completed
Alperen Karanci	Harmony Science Academy	Spring 2010

Doctoral students, served or serves as dissertation committee member (graduated):

Name	Department	Defended	Supervisor
Zachary Murphy	Geological Sciences	Fall 2023	Peter Flemings
Alison Tune	Geological Sciences	Spring 2021	Daniella Rempe
Wen-ying Wu	Geological Sciences	Summer 2021	Zong-Liang Yang
Lingcheng Li	Geological Sciences	Summer 2020	Z.-L. Yang & Ashley Matheny
Charles Abolt	Geological Sciences	Spring 2019	Michael Young
Baiyuan Gao	Geological Sciences	Summer 2018	Peter Flemings
Peirong Lin	Geological Sciences	Spring 2018	Zong-Liang Yang
Colin McNeece	Geological Sciences	Spring 2018	Marc Hesse
Allan Jones	Geological Sciences	Fall 2017	Kevan Moffett
John Warden	Geological Sciences	Fall 2016	Dan Breecker
Kimberly Gilbert	Geological Sciences	Fall 2015	Philip Bennett
Lauren Andrews	Geological Sciences	Fall 2015	Ginny Catania
Gihye Shin	Civil Engineering	Fall 2015	Ben Hodges
Brian Kiel	Geological Sciences	Spring 2015	Lesli Wood
Wendy Robertson	Geological Sciences	Spring 2014	Jack Sharp
Eugenio Santillan	Geological Sciences	Spring 2014	Philip Bennett
Kyung-won Chang	Geological Sciences	Fall 2013	Marc Hesse
Corrine Wong	Geological Sciences	Spring 2013	Jay Banner
Megan Franks	Geological Sciences	Spring 2012	Philip Bennett
Julia Schneider	Geological Sciences	Fall 2011	Peter Flemings
Erin Eastwood	Geological Sciences	Spring 2011	Gary Kocurek
Jeffrey Nittrouer	Geological Sciences	Fall 2010	David Mohrig
Donald Slottke	Geological Sciences	Spring 2010	Jack Sharp
Enrique Rosero	Geological Sciences	Spring 2009	Zong-Liang Yang
Mauricio Santillana	Comp. and Applied Math.	Spring 2008	Clint Dawson

Doctoral students, served on candidacy exam committee:

Name	Department	Candidacy exam	Supervisor
Min-Gyu Kim	Civil, Arch., & Env. Eng.	Fall 2025	Matthew Bartos
Zachary Murphy	Geological Sciences	Fall 2019	Peter Flemings
Alison Tune	Geological Sciences	Spring 2018	Daniella Rempe
Ningjie Hu	Geological Sciences	Spring 2018	Jake Covault
Wen-Ying Wu	Geological Sciences	Fall 2017	Zong-Liang Yang
Max Daniller-Varghese	Geological Sciences	Spring 2017	Wonsuck Kim
Lingcheng Li	Geological Sciences	Spring 2017	Zong-Liang Yang
Charles Abolt	Geological Sciences	Spring 2017	Michael Young

Alison Northup	Integrative Biology	Spring 2016	Timothy Keitt
Dmitrii Merzlikin	Geological Sciences	Fall 2015	Sergey Fomel
Colin McNeece	Geological Sciences	Fall 2014	Marc Hesse
Baiyuan Gao	Geological Sciences	Fall 2014	Peter Flemings
Jenna Kromann	Geological Sciences	Spring 2014	Jack Sharp
Peirong Lin	Geological Sciences	Spring 2014	Zong-Liang Yang
Allan Jones	Geological Sciences	Spring 2014	Kevan Moffett
Gihye Shin	Civil Engineering	Spring 2013	Ben Hodges
Meredith Bush	Geological Sciences	Spring 2013	Brian Horton
Lauren Andrews	Geological Sciences	Spring 2012	Ginny Catania
Travis Swanson	Geological Sciences	Spring 2012	David Mohrig
John Warden	Geological Sciences	Spring 2012	Dan Breecker
Rudra Chatterjee	Geological Sciences	Fall 2011	John Lassiter
Wendy Robertson	Geological Sciences	Spring 2011	Jack Sharp
Virginia Smith	Geological Sciences	Fall 2010	David Mohrig
Corrine Wong	Geological Sciences	Spring 2010	Jay Banner
Eugenio Santillan	Geological Sciences	Spring 2010	Philip Bennett
Kimberly Gilbert	Geological Sciences	Spring 2010	Philip Bennett
Jeffrey Nittrouer	Geological Sciences	Spring 2009	David Mohrig
Erin Eastwood	Geological Sciences	Spring 2009	Gary Kocurek
Megan Franks	Geological Sciences	Spring 2009	Philip Bennett
Carla Sanchez	Geological Sciences	Spring 2009	Ron Steel

Doctoral students at other institutions, serves or served on dissertation committee or supervision:

Name	Institution	Dissertation defense	Supervisor
Raymond S. Rodolfo	University of the Philippines	na	TBD
Danica Mancenido	University of the Philippines	December 2020	Fernando Siringan
Pin Shuai	Texas A&M University	Summer 2016	Peter Knappett
Adam Kessler	Monash University	Spring 2015	Perran Cook
Jesus Gomez	New Mexico Tech	Summer 2013	John Wilson

MS students at other institutions, serves or served on thesis committee:

Name	Institution	Thesis defense	Supervisor
Aljon Eligado	University of the Philippines	Summer 2020	Caroline Jaraula
Raymond S. Rodolfo	Ateneo De Manila University	Fall 2017	Rene Claveria
Rezaul Haider	Utah State University	Spring 2017	Bethany Neilson
Maria Isabel Senal	University of the Philippines	Summer 2013	Gil Jacinto

MS students, served as thesis committee member (graduated):

Name	Department	Graduated	Supervisor
Evan King	Geological Sciences	Spring 2023	Daniella Rempe
Cameron deFabry	Geological Sciences	Summer 2022	Mrinal Sen
Jacob Helper	Geological Sciences	Spring 2022	Jaime Barnes
Austin Rechner	Geological Sciences	Summer 2020	Ashley Matheny
Adenike Tokan-Lawal	Geological Sciences	Summer 2014	Peter Eichubl
L. Joy Mercier	Geological Sciences	Summer 2014	Jack Sharp
William Betts	Geological Sciences	Spring 2014	Peter Flemings
Lindsey Sydow	Geological Sciences	Summer 2013	Philip Bennett
Molly Kent	Geological Sciences	Spring 2011	Philip Bennett
Michael Passarello	Geological Sciences	Spring 2011	Jack Sharp
Jennifer Cessna	Geological Sciences	Spring 2011	Marc Hesse
Mishal Al-Johar	Geological Sciences	Fall 2010	Jack Sharp

Corrine Wong	Geological Sciences	Spring 2009	Jay Banner
Elspeth Steinhauer	Geological Sciences	Spring 2008	Philip Bennett

BS students, served as honors thesis committee member (graduated):

Name	Department	Thesis defense	Supervisor
Logan Schmidt	Geological Sciences	Spring 2017	Joe Levy
Katherine Markovich	Geological Sciences	Spring 2012	Suzanne Pierce
Sarah Doyle	Geological Sciences	Spring 2010	Jack Sharp
Spencer Whitman	Geological Sciences	Spring 2010	David Mohrig
Katherine Dlubac	Geological Sciences	Spring 2008	Jack Holt
Elke Baitis	Geological Sciences	Spring 2008	David Mohrig

Supervision of Theses and Dissertations

Parenthetical statement denotes immediate position of student after graduation or last known position

Doctoral dissertations in progress:

Grace Castle, started Summer 2025, topic: Lake-groundwater interactions in the Arctic

Zijian Qin, started Fall 2024, co-supervising led by Prof. J. Chen, topic: User-friendly InSAR data products and the application to surface monitoring over the Permian Basin

Cameron M. deFabry, started Fall 2022, topic: Subsidence and its connection to hydrologic and anthropogenic processes in the fluvial-deltaic region of Dhaka, Bangladesh

Neelarun Mukherjee, started Fall 2021, topic: Flow and reactive transport processes in supra-permafrost aquifers in the Arctic

William D. Nguyen, started Fall 2020, topic: Reactive transport of iron and arsenic in dynamic surface water-groundwater mixing zones of the Meghna River in Bangladesh

MS theses in progress:

None at the moment

BS honors theses or research projects in progress:

None at the moment

Doctoral dissertations completed (including position after graduation or most recent employment):

Cansu Demir, completed summer 2024: Spatiotemporal dynamics of groundwater flow and transport along Arctic coasts: Exploring subterranean estuaries, fluxes, and seasonal drivers (Postdoctoral Fellow, Los Alamos National Laboratory)

Yue Wu, completed Summer 2023 (lead supervised by J. Chen, Cardenas is co-adviser): Monitoring soil water and soil organic carbon storage patterns at the Arctic Foothills, Alaska, using InSAR (Aerospace Information Research Institute of the Chinese Academy of Sciences, Assistant Researcher)

Anna B. Turetcaia, completed Summer 2022: Aerobic metabolism of organic matter across the terrestrial-aquatic interface through the lens of flume experiments and models (Postdoctoral Fellow, Pacific Northwest National Laboratory)

Stephen B. Ferencz, completed Spring 2020: Surface water-groundwater exchanges under conditions of daily river stage fluctuations: implications for fluid, solute, and heat dynamics in dam regulated river corridors (Postdoctoral Fellow, Sandia National Laboratory then Staff Scientist Pacific Northwest National Laboratory)

Michael T. O'Connor, completed Spring 2019: Controls governing active layer thermal hydrology: How predictable subsurface properties influence thaw, groundwater flow, and soil moisture (Geological Society of America Congressional Science Fellow, then Dept. of Energy)

Matthew H. Kaufman, completed Summer 2018: Physical, chemical, and microbial dynamics in the hyporheic zone (Linus Pauling Distinguished Postdoctoral Fellow then Staff Scientist, Pacific Northwest National Laboratory; now Assistant Professor, Worcester State University)

Eric J. Guiltinan, completed Summer 2018: Multiphase flow properties of sealing caprocks for CO_2 geological storage
(Postdoctoral Fellow then Staff Scientist, Los Alamos National Laboratory)

Lizhi Zheng, completed Summer 2017: Nitrate removal efficiency in hyporheic zones: the effect of temperature and bedform dynamics
(Associate Researcher, Tianjin Normal University)

Peter B. Zamora, completed Summer 2015, topic: Mixing dynamics of groundwater-seawater systems at the land ocean interface
(Assistant Professor, University of North Carolina-Wilmington)

Lichun Wang, completed Spring 2015: Flow and transport through and deformation of rough fractures: analytical and numerical modeling studies
(Associate Professor, Tianjin University)

Kevin M. Befus, completed Spring 2015, topic: Groundwater flow controls on coastal water quality and global groundwater ages
(Assistant Professor, University of Wyoming then University of Arkansas)

Kuldeep Chaudhary, completed Summer 2013, title: Pore scale controls of fluid flow laws and the capillary trapping of CO_2
(Assistant Professor, Kent State University)

Audrey H. Sawyer, completed Spring 2011, title: Complexity in river-groundwater exchange due to permeability heterogeneity, in-stream flow obstacles, and river stage fluctuations
(Assistant then Associate Professor, Ohio State University)

MS theses completed (including most recent known employment):

Amber T. Nguyen, completed Spring 2026, title: Seawater-groundwater mixing dynamics in a groundwater-fed estuary: Ría Celestún, Yucatán, Mexico

Aya Shika Vinaytha Bangun, completed Summer 2023, title: Hydrogeochemistry of submarine groundwater discharge in a volcanic coastal area: Mabini Peninsula, Philippines (Texas Commission on Environmental Quality)

Ebony Williams, completed Summer 2023, title: Multi-scale thermal mapping of submarine groundwater discharge in coastal ecosystems of volcanic islands (continued as PhD student at UT)

Micaela Pedrazas, completed Spring 2020, title: Ice-free lagoon sediment in areas of continuous Arctic permafrost revealed through electrical resistivity imaging
(LRE Water)

Jeffery Watson, completed Summer 2016, title: Thermal dynamics of a riparian aquifer subject to flooding: Lower Colorado River, Texas, USA
(Hays-Trinity Groundwater Conservation District)

Raquel H. Flinker, completed Fall 2014, title: Grassland soil moisture dynamics in response to CO_2 and biodiversity manipulations
(Schlumberger, Brazil)

Alyse C. Briody, completed Summer 2014, title: Flow, nutrient, and stable isotope dynamics of groundwater in the parafluvial/hyporheic zone of a regulated river during a small pulse
(USGS New Mexico Water Science Center)

Michael R. Kanarek, completed Summer 2013, title: Understanding the effects of wildfire on soil moisture dynamics, plant water uptake, and recharge using electrical resistivity
(INTERA)

F. Alexander Norman, completed Spring 2013, title: An experimental assessment of the influence of bedforms on coupled hyporheic flow and heat transport

John D. Nowinski, completed Summer 2010, title: Intra-meander groundwater-surface water interactions in a losing experimental stream
(CH2M)

Travis E. Swanson, completed Spring 2010, title: Heat transport and tracing within the hyporheic zone of pool-riffle-pool sequences
(PhD student at the University of Texas at Austin, then Shell)

Blair A. Francis (nee Stanley), completed Spring 2009, title: Effects of dam-induced daily river stage fluctuations on groundwater flow paths
(BP)

BS honors and undergrad theses or capstone projects completed:

Mikaela Johnson, completed Spring 2026: Estimating seepage zone lengths along global coastlines using hydraulic conductivity and submarine groundwater discharge data
Hudson Finley Davis, completed Spring 2026: Analysis of well depths from 1920-2023 for the major aquifers of Texas
(graduate student at the Univ. of Delaware)
Sydney Villaruel, completed, Spring 2025: Hydro-stratigraphy of active layer soils in an arctic watershed
(graduate student at the Univ. of South Carolina)
David Keith, completed, Spring 2024: Lake Travis hydrochemistry through drought
Amber T. Nguyen, completed, Fall 2023: The Coral Triangle: A hotspot for submarine groundwater discharge
(graduate student at UT Austin)
Austin Luu, completed, Summer 2023: Analyzing hydrochemical conditions of Waller Creek, Austin, Texas
Morgan E. Teel, completed Spring 2022: Thermal and chemical stratification of Lake Travis
(scientist at Southwest Research Institute)
Christian Roumelis, completed Spring 2020: Far-field interactions between a river and an aquifer due to regulated and natural floods
(graduate student at Ohio State University)
Sebastian Muñoz, completed Spring 2018: Heat transport variability across the streambed of a large, regulated river subject to hydropeaking
(Fulbright Fellow, Chile; graduate student at Brown University)
Kindra Nicholaides, completed Spring 2018: Arctic groundwater model informed by characterization of tundra soils
(scientist at Southwest Research Institute)
Aimee E. Ford, Plan II Honors, completed Spring 2015, topic: Hyporheic flow and dissolved oxygen distribution in fish nests
(law student at the University of Michigan)
Julianne P. Wooten, completed Fall 2012, title: Hyporheic exchange flows and biogeochemical patterns near a meandering stream: East Fork of the Jemez River, Valles Caldera National Preserve, New Mexico
Benjamin J. Bass, completed Fall 2011, title: Seasonal soil moisture dynamics throughout a semiarid valley ecotone using quasi-3D time-lapse electrical resistivity imaging
(graduate student at Rice University)
Michael S. Markowski, completed Spring 2010, title: Characterizing groundwater-surface water interactions in a regulated river using electrical resistivity
(graduate student at Texas State University)
Anne E. Dunckel, completed Fall 2009, title: Thermal imaging of microbial mats provides clues to thermophile community structure: El Tatio Geyser, Chile
(graduate student at the University of Virginia)

Professional and Public Service

Internal service (University of Texas at Austin):

2026: Graduate Adviser and Chair of the Graduate Studies Committee, JSG
Reviewer for different internal proposal reviews, Office of the Vice President for Research, UT
2025: UT Portfolio Team Advisory Council, UT
Reviewer for different internal proposal reviews, Office of the Vice President for Research, UT
2024: UT Portfolio Team Advisory Council, UT
5-year Review Committee (Tim Shanahan, Associate Professor), DEPS
Tenure and Promotion Review Committee (Mary Poteet, Asst. Prof. of Practice), DEPS
Ad Hoc Committee on Assessment on Proposal Processing, DEPS
Water, Climate and Environment program faculty review, DEPS
2023: Assoc. Chair for Water, Climate and Environment program, DGS
2022: Assoc. Chair for Water, Climate and Environment program, DGS
Ad Hoc Review Committee for Full Professor promotion, UT-MSI

DEI Committee member, JSG
2021: Assoc. Chair for Water, Climate and Environment program, DGS
2020: Internal Department Chair Candidates Interview Committee, chair, JSG
Civil Engineering Faculty (Planet Texas 2050) Search Committee, member
Appointments Committee, chair, JSG
Surface and Hydrologic Processes Research Theme, leader, JSG
2019: Post-tenure Review Committee (Terry Quinn, Full Professor), DGS
Third-year Pre-tenure Review Committee (Daniella Rempe, Asst. Professor), DGS
Teaching Evaluation (Daniella Rempe, Asst. Professor), DGS
Ad-hoc Committee for Investigation of Behavioral Issues, Graduate Studies Committee, JSG
Appointments Committee, JSG (chair beginning fall 2019)
Reviewer, Dr. Cécile DeWitt-Morette France-UT Endowed Excellence Grants, UT VP for Research
Task Force on Window Signage Rules for Faculty and Staff Offices, UT Office of the President
2018: Appointments Committee, member, JSG
2017: Hydrologic and Water Science Faculty Search Committee, chair, DGS
2016: Committee on Strategic Plan Implementation, Graduate Studies Committee, member, JSG
Space Management Committee, member, DGS
MSc Program Review Committee, member, JSG
Undergraduate Curriculum Redesign Committee, DGS
2015: MSc Program Review Committee, member, JSG
Water Science Faculty Search Committee, member, DGS
2014: Faculty Performance Review Committee, DGS
2013: Faculty Performance Review Committee, DGS
Committee for developing dissertation format and expectations, JSG
Conceptualized, organized and led field trip to the Philippines for the JSG Undergraduate Honors Research Program
2012: Hydrogeology and Glaciology Discipline, leader, JSG
2011: Hydrogeology Faculty Search Committee, chair, DGS
Hydrogeology and Glaciology Discipline, leader, JSG
Admissions, Awards and Support Committee, member, JSG
2010: Hydrogeology and Glaciology Discipline, leader, JSG
PhD Curricular Review and Revisions Committee, member, JSG
Admissions, Awards and Support Committee, member, JSG
Technical Sessions Committee, DGS, member
2009: BS Environmental Science Curriculum Design Committee, UT
2008: Earth Surface and Hydrologic Processes Faculty/ Researcher Search Committee, member, JSG
2007: Earth Surface and Hydrologic Processes Faculty/ Researcher Search Committee, member, JSG
Geoscience Education Faculty Position Search Committee, member, DGS
BS Geology Option III (Hydrogeology) Curriculum Revision Committee, chair, DGS
Ad Hoc Undergraduate Teaching Equipment Grant Committee, member, DGS

Educational Outreach:

2024: Organized guest lectures in kinder classrooms, Austin ISD Kiker Elementary School
2023: Organized guest lectures in kinder classrooms, Austin ISD Kiker Elementary School
2022: Organized guest lectures in kinder classrooms, Austin ISD Kiker and Oaksprings Elementary Schools
2023: Field work including high school teachers in the Philippines
2021: Guest lecture (via Zoom), Austin ISD Kiker Elementary School, kinder class
2020: Speaker, Scuba Nights Lockdown Edition, Scuba Academy Manila/Scuba Schools International
2018: Speaker, Austin ISD Kiker Elementary School, 5thGrade career fair
2017: Speaker, Austin ISD Kiker Elementary School, 5th Grade career fair
Guest lecture, Austin ISD Kiker Elementary School, kinder class
2016: Guest lecturer, Austin ISD Kealing Middle School, 8th Grade science class
2015: Public science lecture on paleoclimate and climate change to officials and employees of Puerto Princesa City, Philippines
Guest lecturer/ field trip supervisor, Austin ISD LBJ Liberal Arts and Science Academy AP Environmental Science class

Guest participant, University of Texas/Fish and Wildlife Service Kaktovik Marine Science Camp, Alaska
2014: Guest lecturer/ field trip supervisor, Austin ISD LBJ Liberal Arts and Science Academy AP Environmental Science class
Guest lecturer, Austin ISD Kiker Elementary School, 1st Grade science class
Resource person, Austin ISD Kiker Elementary School, 5th Grade career fair
2013: Guest lecturer, Austin ISD Kiker Elementary School, 5th Grade science class
2012: Guest lecturer/ field trip supervisor, Austin ISD LBJ Liberal Arts and Science Academy AP Environmental Science class
2011: Guest lecturer/ field trip supervisor, Texas A&M Wetland and Riparian Seminar
Guest lecturer/ field trip supervisor, Austin ISD Crockett High School AP Environmental Science class
Guest lecturer/ field trip supervisor, Austin ISD LBJ Liberal Arts and Science Academy AP Environmental Science class
Flume experiment demonstrations, Anderson High School Environmental Systems class
2010: Guest lecturer, Colorado River Foundation Teacher Institute
Guest lecturer/ field trip supervisor, Texas A&M Wetland and Riparian Seminar
Guest lecturer/ field trip supervisor, Austin ISD LBJ Liberal Arts and Science Academy AP Environmental Science class
2009: Guest lecturer/ field trip supervisor, Texas A&M Wetland and Riparian Seminar
2008: Guest lecturer, Jackson School of Geosciences - GeoFORCE
2007-present: Participant (supervisor, lecturer and field trip leader), UT-Environmental Science Institute Research Experience for Undergraduates program

External service:

Editor: AGU Advances (2022-)
Geophysical Research Letters (2013-2019)

Associate Editor: Reviews of Geophysics (2010-2014); Water Resources Research (2010-2013)
Hydrogeology Journal (2009-2012)

Guest Paper Editor: Proceedings of the National Academy of Sciences (2013, 2014, 2020, 2023)

Manuscript reviewer:
Advances in Water Resources; ASCE Journal of Hydrologic Engineering; Biogeosciences; Computational Geosciences; Computers and Geosciences; Ecosystems; Environmental Fluid Mechanics; Environmental Research Letters; Environmental Science and Technology; Eos; Estuarine, Coastal, and Shelf Science; Freshwater Science; Geography Compass; Geology; Geophysical Research Letters; Ground Water; Hydrogeology Journal; Hydrology and Earth System Sciences; Hydrological Processes; International Journal of Rock Mechanics and Mining Sciences; Journal of Environmental Management; Journal of Geophysical Research – Biogeosciences; Journal of Geophysical Research – Earth Surface; Journal of Hydrology; Journal of Marine Systems; Limnology and Oceanography; Limnology and Oceanography: Fluids and Environments; Nature; Nature Communications; Nature Geoscience; Nature Reviews Earth & Environment; PNAS; Remote Sensing of Environment; Science; Science Advances; Science of the Total Environment; Sedimentology; Transport in Porous Media; Water Research; Water Resources Management; Water Resources Research

Book chapter reviewer:
Treatise in Fluvial Geomorphology (Elsevier)

Proposal review panel member: National Science Foundation (Hydrologic Sciences; Water Sustainability and Climate-Category 2; Panel Review of CUAHSI); Department of Energy (Subsurface and Biogeochemical Research; Early Career Grants)

Proposal reviewer: National Science Foundation (Hydrologic Sciences; Major Research Instrumentation; Paleo Perspectives on Climate Change; Geomorphology and Land Use Dynamics; CAREER; Arctic Natural Sciences); Department of Energy (Basic Energy Sciences; Office of Science Graduate Student Research); Israel Science Foundation; Swiss National Science Foundation; Austrian Science Fund; Royal Society Te Aparangi (Marsden Fund); German Research Foundation; American Chemical Society-Petroleum Research Fund; United States

Geological Survey National Institute for Water Resources; Graduate Women in Science Fellowships; Utah State University

Committee membership in professional societies:
2026-present: Geological Society of America Birdsall-Dreiss-LaMoreaux Lectureship Committee
2022-2024: American Geophysical Union Hydrologic Sciences Award Committee
2021-2022: American Geophysical Union Hydrologic Sciences Task Force on Future Honors
2012-2014: American Geophysical Union Hydrologic Sciences Early Career Award Committee
2013-2014: Geological Society of America Hydrogeology Kohout Early Career Award Committee
2011-2013: Geological Society of America Hydrogeology Division O. E. Meinzer Award Committee
2010-2014: American Geophysical Union Hydrology Section Groundwater Technical Committee

Chaired sessions in conferences:
2021: Philippine-American Academy of Science and Engineering Annual Scientific Meeting, "Earth and Environmental Sciences" (virtual)
2020: Philippine-American Academy of Science and Engineering Annual Scientific Meeting, "Earth and Environmental Sciences" (virtual)
2012: Association for the Sciences of Limnology and Oceanography Aquatic Sciences Meeting, Lake Biwa, Japan, "Groundwater-surface water interactions in freshwater and marine environments"
2010: American Geophysical Union Fall Meeting, San Francisco, CA, "CO_2 Sequestration Inside Pores: From Molecules to Microbes" (two sessions)
American Geophysical Union Fall Meeting, San Francisco, CA, "Emerging Topics in Interdisciplinary Hydrology: Biogeochemistry, Ecology, and Geomorphology"
2009: American Geophysical Union Fall Meeting, San Francisco, CA, "Everything, everywhere, every time: Integration of high-resolution data with high-fidelity hydrologic models"
2008: Geological Society of America Annual Conference held in Houston TX, "Groundwater-surface water interactions"
2007: Geological Society of America Annual Conference held in Denver CO, "50 years of hydrogeology in the desert: A tribute to Mahdi Hantush and his legacy"
2006: Geological Society of America Annual Conference held in Philadelphia PA, "Stream-hyporheic Interactions: Hydrology, Geochemistry, and Biology"

Publications

Researcher ID: http://www.researcherid.com/rid/B-4940-2011
Google Scholar: http://scholar.google.com/citations?user=peswPxUAAAAJ&hl=en&oi=ao
Underline denotes an author closely supervised or worked with Cardenas.
Subscripts: G-graduate student, GC-collaborating graduate student, UG-undergraduate student, PD-post-doctoral fellow, VS-visiting researcher
Cardenas is often second author or follows student authors in supervised student-led publications in earlier publications; Cardenas is more recently listed as last-author in supervisee's publications.

Peer-reviewed papers under review or revision:

Kwak, K.^{GC}, T. S. Varner^{GC}, W. D. Nguyen^{G}, R. Buskirk^{GC}, R. Tarannum^{GC}, M. Hasan^{GC}, K. M. Ahmed, M. B. Cardenas, S. Datta, and P. S. K. Knappett, Groundwater arsenic discharge into a large tidal river across dry periods.

Liu, J., D. L. Valentine, …, **M. B. Cardenas**, …, and E. D. Young, Natural $^{15}N^{15}N$ abundances constrain fixed nitrogen loss.

Mukherjee, N.^{G}, B. Gao, E. T. Coon, P. Shuai, D. Hill^{GC}, B. T. Neilson, R. M. Cory, G. W. King, J. Chen, and **M. B. Cardenas**, The effects of precipitation variability on supra-permafrost thermal hydrology: flashy hillslopes with more outflow.

Mukherjee, N.^{G}, B. Gao, E. T. Coon, P. Shuai, D. Hill^{GC}, B. T. Neilson, G. W. King, J. Chen, and **M. B. Cardenas**, Seasonal to decadal changes in supra-permafrost soil and aquifer hydrology: broader, deeper, and longer activity.

Demir, C.^{G}, J. D. Gomez-Velez, J. A. Guimond, J. W. McClelland, M. A. Charette, and **M. B. Cardenas**, Time-varying hydroclimatic and oceanic controls on Arctic submarine groundwater discharge inferred using explainable

AI.

Malhotra, A., …, **M. B. Cardenas**, …, J. C. Stegen, Harnessing artificial intelligence to automate environmental predictions.

Bay, B. [GC], B. L. Kurylyk, C. Demir [G], M. B. Cardenas, and J. A. Guimond, Propagation of ocean water level signals through a dynamic Arctic coastal active layer.

Bahamón-Pinzón, D. [PD], H. G. Siegel [PD], A. Leclercq, J. Banner, C. Pinon, S. Almanza, K. Haragan, L. Mullins, F. Pagán, **M. B. Cardenas**, N. Siddiqui, and D. Montoya, Identifying impacts and causes of drinking water quality issues through community -based participatory research in a suburban neighborhood in Texas: The case of Austin's Colony.

Bullock, E. J. [GC], R. Mason, I. V. Schaal [GC], E. M. Bristol [GC], **M. B. Cardenas**, J. W. McClelland, P. Henderson, and M. A. Charette, Inorganic and Methylmercury Inputs to Arctic Coastal Waters from Submarine Groundwater Discharge.

Bullock, E. J. [GC], R. Mason, E. Bristol, S. Peterson, I. Schaal, C. Tweedie, **M. B. Cardenas**, J. McClelland, and M. A. Charette, Storage and release of mercury species from coastal Arctic soils, thawing permafrost, and groundwater.

deFabry, C. M. [G], J. Chen, K. M. Ahmed, M. R. Khan, P. S. K. Knappett, M. Shamsudduha, K. Wang., and **M. B. Cardenas**, Above- and below-ground hydrologic changes simultaneously drive seasonal and long-term deformation around a mega-city in a mega-delta.

Elegado, A. F. K. P. [GC], C. G. Conaco, A. T. Bautista, N. D. S. Mendoza, R. S. Rodolfo, **M. B. Cardenas**, M. R. Lapus, M.-C. Liang, and C. M. B. Jaraula, The microbiome and biogeochemistry of a shallow hydrothermal vent near biodiverse tropical reefs.

Gomez-Velez, J. D., X. Chen, J. C. Stegen, T. D. Scheibe, and **M. B. Cardenas**. Riverbed respiration is important for local and global CO_2 cycles.

Li, B. [GC], **M. B. Cardenas**, X. Chen, and X. Liu, Effects of realistically-complex laminated cross-bedding on hyporheic exchange.

Tureţcaia, A. B. [G], M. H. Kaufman, A. J. Kessler, B. Li, X. Chen, X. Liu, J. C. Stegen, and **M. B. Cardenas**, Response of a river channel-hyporheic zone system to organic matter addition: Insights from experiments and simple models.

Wang, L., Lin, P., Zheng, L., Wang, T., Chen, X., and **M. B. Cardenas**, Transport time of water-borne materials through global river networks and its control of organic carbon decomposition.

Wang, L., J. D. Gomez-Velez, L. Zheng, S. Sun, C.-Q. Liu, and **M. B. Cardenas**, Multidecadal decrease in CO_2 fluxes from global rivers due to increasing atmospheric CO_2 and hydrologic changes.

Peer-reviewed papers in print, in press or accepted:

2026

180. Demir, C [G], J. A. Guimond, E. Bristol [GC], E. J. Bullock [GC], J. W. McClelland, M. A. Charette, and **M. B. Cardenas**, Hydrological and thermal dynamics of a supra-permafrost subterranean estuary, *Water Resources Research*.

179. Wu, Y [G], J. Chen, M. T. O'Connor [G], G. W. Kling, and **M. B. Cardenas**, Estimating the stocks and uncertainty of seasonally-thawed soil organic carbon and nitrogen overlying permafrost in the Arctic Foothills of Alaska, *Arctic Science*.

178. Zhou, J.-Q., R. Mao, X. Luo, **M. B. Cardenas**, Y.-F. Chen, C. Li, H. Tang, C.-B. Zhou, and M. Manga, Probing rock rupture with naturally occurring nuclide signals, *Proceedings of the National Academy of Sciences*, 123(15), doi:10.1073/pnas.260243412, 2026.

177. Chen, X., J. Yin [GC], and **M. B. Cardenas**, Mega-hyporheic zones: interfacial porewater exchange through tidal compound megadunes, *Journal of Hydrology*, 672, doi:10.1016/j.jhydrol.2026.135323, 2026.

176. Bristol, E. [GC], M. Behnke, R. Spencer, A. McKenna, M. Charette, **M. B. Cardenas**, and J. W. McClelland, Supra-permafrost groundwater is a source of highly biodegradable dissolved organic matter to the Arctic Ocean, *Environmental Science & Technology*, 60, 2, 1819–1830, doi:10.1021/acs.est.5c08206, 2026.

2025

175. Spera, A. C. [GC], J. W. McClelland, C. Demir [G], **M. B. Cardenas**, and J. A. Guimond, Saltwater inundation's concurrent effects on below-ground thermal hydrology and above-ground properties of Arctic coastal tundra, *Science of the Total Environment*, doi:10.1016/j.scitotenv.2025.180906, 1008, 2025.

174. Nguyen, W. D. [G], S. Datta, P. S. K. Knappett, and **M. B. Cardenas**, 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, *Water Resources Research*, 61(10), doi:10.1029/2025WR039919, 2025.

173. Wu, Y. [G], J. Chen, **M. B. Cardenas**, and G. W. Kling, High-resolution regional estimation of soil water storage

above permafrost using InSAR, *Hydrology and Earth System Sciences*, 29, 3481–3502, doi:10.5194/hess-29-3481-2025, 2025.

172. Zamora, P. B. [G], H. B. Cabria, R. S. Rodolfo [G], Fernando P. Siringan, Kevin M. Befus [G], and **M. B. Cardenas**, Enhanced submarine groundwater discharge and freshening of a subterranean estuary from rain, *Journal of Hydrology*, 659, doi:10.1016/j.jhydrol.2025.133253, 2025.
171. Zhu, T. [GC], S. Zhao, B Xu, D. Liu, **M. B. Cardenas**, H. Yu, Y. Zhang, X. Chen, K. Xiao, L. Yi, H.-M. Cho, S. Liu, Z. Zhang, E. Lian, W. C. Burnett, G. Chen, Z. Yu, and I. R. Santos, Large scale submarine groundwater discharge dominates nutrient inputs to China's coast, *Nature Communications*, doi: 10.1038/s41467-025-58103-y, 2025.
170. Sekhon, N., A. Gao, S. Mallick, J. W. Partin, **M. B. Cardenas**, and D. E. Ibarra, Assessing matrix and non-matrix, single and multi-point calibration of trace elements using LA-ICP-MS on a tropical speleothem, *Rapid Communications in Mass Spectrometry*, 15, e9983, doi:10.1002/rcm.9983, 2025.
169. Tomer, A. S. [GC], T. McKenzie, C. Majtenyi-Hill, A. Cabral, Y. Y. Yau, M. Call, X. Chen, R. E. Correa, K. Davis, L. Jeffrey, M. Sadat-Noori, D. Tait, J. Webb, D. T. Maher, L. Henrikson, S. Bonaglia, S. Zhao, **M. B. Cardenas**, I. R. Santos, Groundwater enriches CO_2 in diverse global coastal ecosystems, *Science Advances*, 11(2), doi:10.1126/sciadv.adr3240, 2025.

2024

168. Demir, C [G], J. W. McClelland, E. Bristol [GC], M. A. Charette, and **M. B. Cardenas**, Coastal supra-permafrost aquifers of the Arctic and their significant groundwater, carbon, and nitrogen fluxes, *Geophysical Research Letters*, 51(22), doi:10.1029/2024GL109142, 2024.
167. Williams, E. L. [G], C. B. Kratt, R. S. Rodolfo, M. R. Lapus, R. R. Lardizabal, A. S. Bangun [G], A. T. Nguyen [UG], S. W. Tyler, and **M. B. Cardenas**, Multi-scale thermal mapping of submarine groundwater discharge in coastal ecosystems of a volcanic area, *Geophysical Research Letters*, 51(22), doi:10.1029/2024GL111857, 2024.
166. Mukherjee, N. [G], J. Chen, B. T. Neilson, G. W. Kling, and **M. B. Cardenas**, Water and carbon fluxes from a supra-permafrost aquifer to a stream across hydrologic states, *Journal of Hydrology*, 645, 132285, doi:10.1016/j.jhydrol.2024.132285, 2024.
165. Li, B. [GC], **M. B. Cardenas**, X. Chen, and X. Liu, Mechanistic definition and prediction of the mass exchange coefficient between rivers and hyporheic zones: the α of two Ωs, *Journal of Hydrology*, 644, 132054, doi:10.1016/j.jhydrol.2024.132054, 2024.
164. Kwak, K. [GC], T. Varner, W. D. Nguyen [G], H. Kulkarni, R. Buskirk, A. Arman, A. Hosain, J. Aitkenhed-Peterson, K. M. Ahmed, S. Akter, **M. B. Cardenas**, S. Datta, and P. S. K. Knappett, Hotspots of dissolved arsenic generated from buried silt layers along fluctuating rivers, *Environmental Science & Technology*, 54(4), 15159-15169, doi: 10.1021/acs.est.4c02330, 2024.
163. **Cardenas, M. B.,** I. Chiarino, J. Sananda,[GC] W. D. Nguyen [G], and D. M. Rempe, Discrete water sample collection methods for Rn-222 analysis by scuba diving: Insights on groundwater flushing of anchialine cave systems of the Yucatán Peninsula, *Water Resources Research*, 60(8), doi:10.1029/2023WR036019, 2024.
162. Bullock, E. J. [GC], I. V. Schaal, **M. B. Cardenas**, J. W. McClelland, P. Henderson, and M. A. Charette, Seasonality of submarine groundwater discharge to an Arctic coastal lagoon assessed with radium isotopes, *Limnology and Oceanography*, 69, 1429-1438, doi:10.1002/lno.12585, 2024.
161. Wilson, S. J. [GC], A. Moody, T. McKenzie, **M. B. Cardenas**, … and I. R. Santos, Global subterranean estuaries modify groundwater nutrient loading to the ocean, *Limnology and Oceanography Letters*, 9, 411-422, doi:10.1002/lol2.10390, 2024.
160. Buskirk, R. E. [GC], P. S. K. Knappett, **M. B. Cardenas**, S. Datta, W. Borowski, and I. Mendoza-Sanchez, A low-cost programable reversing flow column apparatus for investigating mixing zones, *Groundwater*, 62(3), 459-468, doi:10.1111/gwat.13359, 2024.
159. Huang, Y., J. Evaristo, Z. Li, K. P. Chun, E. H. Sutanudjaja, **M. B. Cardenas**, M. F. P. Bierkens, J. W. Kirchner, and M. Th. Van Genuchten, The nature and extent of bomb tritium remaining in deep vadose zone: a synthesis and prognosis, *Vadose Zone Journal*, e20304, doi:10.1002/vzj2.20304, 2024.
158. Varner, T. S. [GC], H. V. Kulkarni, K. Kwak, **M. B. Cardenas**, P. S. K. Knappett, and S. Datta, Diverse sedimentary organic matter within the river-aquifer interface drives arsenic mobility along the Meghna River Corridor in Bangladesh, *Applied Geochemistry*, 161, doi:10.1016/j.apgeochem.2023.105883, 2024.

2023

157. Jewell, K., K. D. Myers, M. Lipsi, S. Hossain, S. Datta, **M. B. Cardenas**, J. Aitkenhead-Peterson, T. Varner, K. Kwak, A. Raymond, S. Akhter, K. M. Ahmed, and P. S. K. Knappett, Redox trapping of arsenic in hyporheic zones modified by silicate weathering beneath floodplains, *Applied Geochemistry*, 159, doi:10.1016/j.apgeochem.2023.105831, 2023.

156. Turețcaia, A. B. [G], V. A. Garayburu-Caruso, M. H. Kaufman, R. E. Danczak, J. C. Stegen, R. K. Chu, J. G. Toyoda, **M. B. Cardenas**, and E. B. Graham, Rethinking aerobic respiration in the hyporheic zone under variation in carbon and nitrogen stoichiometry, *Environmental Science & Technology*, 57, 15499-15510, doi:10.1021/acs.est.3c04765, 2023.
155. Guimond, J. A., C. Demir [G], B. L. Kurylyk, M. A. Walvoord, J. W. McClelland, **M. B. Cardenas**, Wind-modulated groundwater discharge along a microtidal Arctic coastline, *Environmental Research Letters*, 18(9), doi:10.1088/1748-9326/acf0d8, 2023.
154. Varner, T. S. [GC], H. V. Kulkarni, M. U. Bhuiyan, **M. B. Cardenas**, P. S. K. Knappett, and S. Datta, Mineralogical associations of sedimentary arsenic within a contaminated aquifer determined through thermal treatment and spectroscopy, *Minerals*, 13(7), doi:10.3390/min13070889, 2023.
153. Liao, F. [G], **M. B. Cardenas**, X. Chen, and G. Wang, Riverine groundwater discharge estimation in a dynamic river corridor using ^{222}Rn, *Hydrological Processes*, 37(1), doi:10.1002/hyp.14788, 2023.

2022

152. Varner, T. S. [GC], H. V. Kulkarni, W. D. Nguyen, K. Kwak, **M. B. Cardenas**, P. S. K. Knappett, A. S. Ojeda, N. Malina, M. U. Bhuiyan, K. M. Ahmed, and S. Datta, Contribution of sedimentary organic matter to arsenic mobilization along a potential natural reactive barrier (NRB) near a river: the Meghna River, Bangladesh, *Chemosphere*, 308, doi:10.1016/j.chemosphere.2022.136289, 2022.
151. Huang, Y. [GC], P. S. K. Knappett, M. Berube. S. Datta, **M. B. Cardenas**. K. A. Rhodes, N. T. Dimova, I. Choudhury, K. M. Ahmed, and A. van Geen, Mass fluxes of dissolved arsenic discharging to the Meghna River are sufficient to account for the mass of arsenic in riverbank sediments, *Journal of Contaminant Hydrology*, 251, doi:10.1016/j.jconhyd.2022.104068, 2022.
150. Xu, B., **M. B. Cardenas**, I. R. Santos, W. C. Burnett, M. A. Charette, V. Rodellas, S. Li, E. Lian, and Z. Yu, Closing the global marine ^{226}Ra budget reveals the biological pump as a dominant removal flux, *Geophysical Research Letters*, 49(12), doi:10.1029/2022GL098087, 2022.
149. Wang, L., **M. B. Cardenas**, T. Wang, J.-Q. Zhou, L. Zheng, Y.-F. Chen, and X. Chen, The effect of permeability on Darcy-to-Forchheimer flow transition, *Journal of Hydrology*, 610, doi:10.1016/j.jhydrol.2022.127836, 2022.
148. Lee, A. [GC], A. F. Aubeneau, **M. B. Cardenas**, and X. Liu, Hyporheic exchange due to cobbles on sandy beds, *Water Resources Research*, 58(1), doi: 10.1029/2021WR030164, 2022.

2021

147. Ferencz, S. B. [G], **M. B. Cardenas**, and B. T. Neilson, Aerobic respiration in riparian exchange zones of regulated river corridors, *Hydrological Processes*, 35(11), doi:10.1002/hyp.14386, 2021.
146. Zamora, P. B. [G], **M. B. Cardenas**, and P. L. M. Cook, Groundwater-surface water interactions in a river estuary and the importance of geomorphology: Insights from hydraulic, thermal and geophysical observations, *Hydrological Processes*, 35(10), doi:10.1020/hyp.14372, 2021.
145. Correa, R. E. [GC], **M. B. Cardenas**, R. S. Rodolfo, M. R. Lapus, J. C. Fullon, K. L. Davis, A. Giles, J. C. Fullon, M. Hajati, N. Moosdorf, C. J. Sanders, and I. R. Santos, Submarine groundwater discharge releases CO_2 to a coral reef, *ACS EST Water*, 1(8), 1756–1764, doi:10.1021/acsestwater.1c00104, 2021.
144. Flinker, R. H. [G], **M. B. Cardenas**, T. G. Caldwell, G. N. Flerchinger, R. Rich, and P. B. Reich, Promise and pitfalls of modeling grassland soil moisture in a free-air CO_2 enrichment experiment (BioCON) using the SHAW model, *Pedosphere*, 31(5), 783-795, doi: 10.1016/S1002-0160(21)60037-1, 2021.
143. Sobolevskaia, V. [G], **M. B. Cardenas**, A. K. Hasanov, and P. S. K. Knappett, Aquifer diffusivity estimation through joint inversion of the amplitude ratios and time lags of dominant frequencies of fluctuating head, *Water Resources Research*, 57(6), doi: 10.1029/2020WR027912, 2021.
142. Yuan, Y. [GC], X. Chen, **M. B. Cardenas**, X. Liu, and L. Chen, Hyporheic exchange driven by submerged rigid vegetation: a numerical study, *Water Resources Research*, 57(6), doi:10.1029/2019WR026675, 2021.
141. Liao, F. [G], **M. B. Cardenas**, S. Ferencz [G], X. Chen, and G. Wang, Tracing bank storage and hyporheic exchange dynamics using ^{222}Rn: Virtual and field tests and comparisons with other tracers, *Water Resources Research*, 57(5), doi: 10.1029/2020WR028960, 2021.
140. Zlotnik, V. A., K. D. Cole, **M. B. Cardenas**, and A. V. Zlotnik, Enabling the application of large footprint open-bottom permeameters through new shape factors, *Water Resources Research*, 57(5), doi: 10.1029/2020WR029315, 2021.
139. Pedrazas, M. N. [G], **M. B. Cardenas**, A. Hossain, C. Demir [G], K. M. Ahmed, S. H. Akhter, L. Wang, S. Datta, and P. S. K. Knappett, Application of electrical resistivity to map the stratigraphy and salinity of fluvio-deltaic aquifers: case studies from Bangladesh reveal benefits and pitfalls, *Hydrogeology Journal*, doi: 10.1007/s10040-021-02342-y, 2021.
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Books or book chapters:

Lawler, D., **M. B. Cardenas**, G. Old, and D. Sear, Geomorphology and Sediments of the Hyporheic Zone, In The Hyporheic Handbook: A handbook on the groundwater–surface water interface and hyporheic zone for environment managers, UK Environment Agency, pp 16-47, 2009.

Cardenas, M. B., and J. L. Wilson, Driving while under the influence: pumping-driven circulation under the influence of regional groundwater flow, in *A New Focus on Groundwater–Seawater Interactions* (Proceedings of Symposium HS1001 at IUGG2007, Perugia, July 2007), edited by Ward Sanford, Christian Langevin, Maurizio Polemio & Pavel Povinec. IAHS Publ. 312, 2007, 229-236.

Scholarly Presentations

Invited lectures:

2026

Instituto Politecnico Nacional – "Insights on groundwater renewability from age and residence time analysis"
Instituto Politecnico Nacional – "Hydrobiogeochemistry of terrestrial-aquatic interfaces from pore to continental scales"

2025

More than 100 lectures as the GSA Hydrogeology Division Birdsall-Dreiss and LaMoreaux Lecturer
"Hydrobiogeochemistry of terrestrial-aquatic interfaces from pore to continental scales" 16
"How a river's periodic pulse affects its liver: hyporheic zones in the Anthropocene" 11
"Tidal and seasonal groundwater-surface water mixing zones: hot or cold spots for arsenic contamination?" 5
"Groundwater on ice: hydrogeology and the fate of permafrost carbon in Arctic watersheds" 14
"Land-ocean connectivity in Arctic lagoons due to groundwater" 1
"Ridge to reef volcanic hydrogeology: submarine groundwater in the world's most biodiverse coasts" 17
"Devastation of a coastal aquifer from the most powerful storm ever: a story of resilience and recovery" 13
"Insights on groundwater renewability from age and residence time analysis" 19
"Beyond Darcy and Fick – Micro-scale insights on nonlinear continuum flow and transport" 6

2024

Tianjin University – "Water cycling across terrestrial-aquatic interfaces from pore to planetary scales"
Tianjin University – "A global perspective on groundwater age and turnover rates: insights on renewability, vulnerability and elasticity"
Tianjin Normal University – "Water cycling across terrestrial-aquatic interfaces from pore to planetary scales"

2023

China University of Geosciences-Wuhan – "Connections between coastal groundwater, coral reefs, calderas and carbon cycling"
China University of Geosciences-Wuhan – "How the pulse of a river affects its liver"
China University of Geosciences-Wuhan – "The importance of hydrology on the fate of carbon trapped in permafrost in the Arctic"
Seoul National University – "Connections between coastal groundwater, coral reefs, calderas and carbon cycling"
Seoul National University – "The importance of hydrology on the fate of carbon trapped in permafrost in the Arctic"
National Institute of Environmental Research, Korea – "Cascading disequilibrium: glimpses into dynamic hydro-biogeochemical processes in river corridors"
Korea Society of Soil and Groundwater Environment Meeting – "Water cycling across terrestrial-aquatic interfaces from pore to planetary scales "

2022

University of Minnesota – "Water cycling across terrestrial-aquatic interfaces from pore to planetary scales"
Brown University – "The importance of hydrology on the fate of carbon trapped in permafrost in the Arctic"
Texas A&M University- "A global perspective on groundwater age and turnover rates: insights on renewability, vulnerability and elasticity"

2021

Badong International Geohazards Symposium – "The fate of carbon trapped in permafrost in the Arctic: one of the biggest hazards of the planet"

2020

Old Dominion University – "Coastal groundwater, coral reefs, calderas and carbon cycling: Connections that are common?"
Geological Society of the Philippines – "Groundwater and surface water as a single resource: novel insight from Philippine studies"
University of Dhaka – "A global perspective on groundwater resources: renewability, vulnerability, and elasticity"

2019

Goldschmidt Meeting – "Cascading disequilibrium: a glimpse into dynamic hydro-biogeochemical processes in hyporheic zones"
University of the Philippines-Marine Science Institute – "Land-ocean subsurface connections in volcanic terrain and its impact on coastal ocean acidification"

2018

American Geophysical Union Fall Meeting – "Perpetual hyporheic motion (and reaction): A glimpse into the dynamic world of the hyporheic zone"
International Association for Hydro-Environment Engineering and Research Groundwater Symposium (Nanjing, China) – "A global perspective on groundwater age and turnover rates: renewability, vulnerability, and elasticity"
International Association of Hydrogeologists Congress – "Denitrification in the banks of fluctuating rivers: the effects of river stage amplitude, sediment hydraulic conductivity and dispersivity, and ambient groundwater flow"
University of Southern Denmark – "Water cycling across aquatic interfaces: how it works and why it matters from the pore to the continental scale"
Göttingen University, Germany – "Water cycling across aquatic interfaces: how it works and why it matters from the pore to the continental scale"
Tuebingen University, Germany – "Water cycling across aquatic interfaces: how it works and why it matters from the pore to the continental scale"

2017

Hohai University, China – "How the pulse of a river affects its liver"
Wuhan University, China – "A global perspective on groundwater resources: renewability, vulnerability, and elasticity" and "Water cycling across aquatic interfaces: how it works and why it matters from the pore to the continental scale"
China University of Geosciences, Wuhan, China – "Water cycling across aquatic interfaces: how it works and why it matters from the pore to the continental scale"
Oak Ridge National Laboratory – "Water cycling across aquatic interfaces: how it works and why it matters from the pore to the continental scale"
University of Utah – "Water cycling across aquatic interfaces: how it works and why it matters from the pore to the continental scale"
Pacific Northwest National Laboratory – "A global perspective on groundwater resources: renewability, vulnerability, and elasticity"
Pacific Northwest National Laboratory – "Water cycling across aquatic interfaces: how it works and why it matters from the pore to the continental scale"
University of the Philippines-Diliman (Geological Sciences) – "A global perspective on groundwater age and turnover rates: renewability, vulnerability, and elasticity"
University of Texas Bureau of Economic Geology – "Water cycling across aquatic interfaces: how it works and why it matters from the pore to the continental scale"
Johns Hopkins University – "Water cycling across aquatic interfaces: how it works and why it matters from the pore to the continental scale"
University of Nebraska-Lincoln – "Water cycling across aquatic interfaces and why it matters from the pore scale to the continental scale"

2016

China University of Geosciences- Beijing – "Taking stock of Earth's groundwater and its renewability"
China University of Geosciences- Beijing – "Water cycling across aquatic interfaces and why it matters from the pore scale to the continental scale"
Hohai University, China – "Taking stock of Earth's groundwater and its renewability"
Hohai University, China – "Water cycling across aquatic interfaces and why it matters from the pore scale to the continental scale"

2015

American Geophysical Union Fall Meeting – "Devastation of aquifers from super typhoon Haiyan's storm surge"
Palawan State University, Philippines – "Paleo-climate insights from Palawan stalagmites: the Western Pacific region's response to global climate change"
Western Palawan University, Philippines – "Paleo-climate insights from Palawan stalagmites: the Western Pacific region's response to global climate change"
Holy Trinity University, Puerto Princesa, Philippines – "Paleo-climate insights from Palawan stalagmites: the Western Pacific region's response to global climate change"
Baylor University (Geology) – "Water cycling across aquatic interfaces and why it matters from the pore scale to the continental scale"
Mapua Institute of Technology, Philippines (Civil, Environmental, and Geological Engineering) – "Devastation of aquifers from super typhoon Haiyan's storm surge"
Mapua Institute of Technology, Philippines (Civil, Environmental, and Geological Engineering) – "Taking stock of Earth's groundwater and its renewability"
Ateneo de Manila University, Philippines (Environmental Science) – "Devastation of aquifers from super typhoon Haiyan's storm surge"
University of the Philippines-Los Baños, Philippines (Environmental Science and Management) – "Devastation of aquifers from super typhoon Haiyan's storm surge"
University of the Philippines- Los Baños, Philippines (Environmental Science and Management) – "Taking stock of Earth's groundwater and its renewability"
University of the Philippines-Diliman (Geological Sciences) – "Devastation of aquifers from super typhoon Haiyan's storm surge"
University of the Philippines-Diliman (Geological Sciences) – "Taking stock of Earth's groundwater and its renewability"
University of Michigan (Earth and Environmental Sciences) – "Water cycling across aquatic interfaces, and why it matters from the pore scale to the continental scale"

2014

European Geosciences Union, Vienna, Austria – "The residence times of surface water-groundwater exchange from 10^{-3} to 10^{3} m and why long tails matter"

2013

American Geophysical Union Fall Meeting – "The old and the new: the use of classical regional groundwater flow models to address problems of the future"
University of Wisconsin-Madison (Civil and Environmental Engineering) – "River-groundwater interactions: local processes with global consequences"
University of Wisconsin-Madison (Geoscience) – "Terrestrial smokers: thermal springs due to hydrothermal convection of groundwater connected to surface water"
University of the Philippines-Diliman (Geological Sciences) – "Pore-scale controls on the trapping of supercritical CO_2 in reservoirs"
University of the Philippines-Diliman (Marine Science) – "Groundwater inputs into the coastal ocean: large-scale patterns, local dynamics, and implications on material and energy budgets"
Oregon State University (Water Resources Seminar) – "Coupled processes along the surface water-groundwater interface: advances from modeling and measurements"
Portland State University and USGS – "How the pulse of a river affects its liver"

2012

American Geophysical Union Fall Meeting – "Applications of electrical resistivity imaging for characterizing groundwater-surface water interactions from local to regional scales"
Texas Riparian Association Annual Meeting – "How the pulse of a river affects its liver"
University of Virginia (Civil and Environmental Engineering) – "How the pulse of a river affects its liver"
University of Virginia (Environmental Sciences) – "Coupled processes along the surface water-groundwater interface: advances from modeling and measurements"
University of Virginia (Environmental Sciences) – "Coastal sediment as bio-geo-reactors powered by waves"

University of the Philippines-Diliman (Geological Sciences) – "How can a limestone outcrop warm up a very cold river?"
University of the Philippines-Diliman (Geological Sciences) – "Discovery and analysis of 'terrestrial smokers' in Taal Volcano"
University of the Philippines-Diliman (Geological Sciences) – "Geophysical imaging of ground water-surface water interactions in rivers, lakes and the coastal ocean"
University of Texas - Marine Science Institute – "Groundwater inputs into the coastal ocean: large-scale patterns, local dynamics, and implications on material and energy budgets"

2011

Texas A & M University (Water Resources Seminar) – "Coastal sediment as bio-geo-reactors powered by waves"
River Corridor Restoration Conference 2011 Keynote Lecture (EAWAG: Swiss Federal Institute of Aquatic Science and Technology, Switzerland) – "River-aquifer connectivity as a restoration target: what, why and how"
University of California-Berkeley (Civil and Environmental Engineering) – "The surface water-groundwater continuum: hydraulics, biogeochemistry and geophysics"

2010

American Geophysical Union Fall Meeting – "Integrating turbulent flow, biogeochemical, and poromechanical processes in rippled coastal sediment"
American Geophysical Union Fall Meeting – "Detection and characterization of local to regional groundwater inputs to rivers, lakes and oceans with electrical imaging"
University of the Philippines-National Institute of Geological Sciences – "The effects of river dynamics on river-aquifer interactions"
American Society of Limnology and Oceanography Aquatic Sciences Meeting – "Fluid dynamic interactions near sediment-water interfaces in aquatic and coastal environments"
University of Texas at San Antonio (Water Resources Seminar) – "Effects of dams on groundwater-surface water interactions"
American Geophysical Union/American Society of Limnology and Oceanography/ The Oceanography Society Ocean Sciences Joint Meeting – "Time-averaged versus transient forcing by waves of porewater circulation and transport in permeable sediment"

2009

American Geophysical Union Fall Meeting – "Effects of inertia and directionality on flow and transport in a fracture"
Geological Society of America Annual Conference – "The familiar as a frontier: persistent transient stream-groundwater interactions"
University of Texas at Arlington (Geology) – "Coastal sediment as bio-geo-reactors powered by waves"
Max-Planck Institute for Marine Microbiology, Bremen, Germany – "Constraining denitrification in permeable coastal sediment using linked biogeochemical and hydrodynamic models"
European Geosciences Union, Vienna, Austria – "Towards the 'hyporheic meter'-predicting hyporheic exchange from bedforms to bars to bends"

2008

University of the Philippines-Diliman (Geological Sciences) – "Power-law scaling of residence times: the geomorphological signature of ground water-surface water connection at nested scales"
University of the Philippines-Diliman (Marine Science) – "Constraining denitrification in permeable coastal sediment using linked biogeochemical and hydrodynamic models"
University of Minnesota (St. Anthony Falls Laboratory/ National Center for Earth Surface Dynamics) – "Surface water-groundwater interactions across scales"

2007

American Geophysical Union Fall Meeting – "Understanding processes in streambeds with reductive models and high-resolution data"
Geological Society of America Annual Conference – "Power-law scaling of residence times: the geomorphological signature of ground water-surface water connection at nested scales"
University of Lancaster (Hyporheic Zone Network Keynote Lecture) – "Exchange across the surface water-ground water interface from bedforms to bends to basins"
University of Texas at Austin (Inst. of Geophysics) **–** "Complex surface water-ground water interactions revealed"
University of Nevada-Reno (Graduate Program of Hydrologic Sciences) **–** "Understanding surface water-ground water interactions from bedforms to basin using high-fidelity models"

2006

Gordon Research Conference on Permeable Sediments Plenary Lecture – "Dynamics of fluids, solutes, and heat along sediment-water interfaces: a multiphysics modeling study"
American Geophysical Union Fall Meeting – "Multiphysics modeling of processes along sediment-water interfaces: towards fundamental understanding and mechanistic predictions"
Geological Society of America Annual Conference – "Flumes, finite-elements, field observations, Fourier-series and fractals: fundamental linkages in hyporheic zone research"
University of Texas at Austin (Geological Sciences) – "The surface water-groundwater interface: crossing boundaries"
University of Virginia (Environmental Sciences) – "The surface water-groundwater interface: crossing boundaries"
University of Wyoming (Geology and Geophysics) **–** "The surface water-groundwater interface: crossing boundaries"
University of Pittsburgh (Geology and Planetary Science) **–** "The surface water-groundwater interface: crossing boundaries"
Georgia State University (Geosciences) **–** "The surface water-groundwater interface: crossing boundaries"

Research Grants and Sponsored Projects

Current or funded projects:

Dynamics of interconnected surface-subsurface flow and reactive transport processes across the hillslope-riparian zone-river corridor continuum of cold, high-latitude watersheds, funded by *Department of Energy-Biological and Environmental Research* ($1,000,000, UT portion-$900,000 with subawards to USU and UM), UT PI and lead: M. Bayani Cardenas, Utah State Univ. PIs: Bethany Neilson and Pin Shuai, Univ. of Michigan PIs: Rose Cory and George Kling, ORNL PI: Ethan Coon, 2023-2026.

Completed projects:

Implementation grant: Community Resilience integrated into an Earth System Science Learning Ecosystem (CRESSLE), funded by the *National Science Foundation* ($7,000,000), UT PI: Jay Banner, co-PIs: Monica Ramirez-Andreotta, Lucy Atkinson, Tianna Bruno; M. Bayani Cardenas is funded senior personnel co-leading a research task. *This grant was abruptly cancelled in its third year by the government due to change in funding priority, policy, and philosophy.*

Collaborative Research: The physical and chemical dynamics of groundwater flow across the land-sea interface in Arctic lagoon ecosystems, funded by *National Science Foundation* ($1,273,700, UT portion-$794,976), UT (lead institution) PI: M. Bayani Cardenas, co-PI: James McClelland, Woods Hole Oceanographic Inst. PI: Matthew Charette, 2020-2023.

Collaborative Research: The dynamic iron curtain surrounding fluctuating rivers and its impacts on arsenic fate and transport, funded by *National Science Foundation* ($849,986, UT portion-$253,841), UT PI: M. Bayani Cardenas, Texas A&M Univ. (lead institution) PI: Peter Knappett, UT San Antonio PI: Saugata Datta, 2019-2022.

Unseen belowground connection between land and sea and its impacts on water quality and ecosystem health of coral reefs around volcanic islands of the Philippines, funded by *UT Texas Global Faculty Research Seed Grant* ($10,000), PI: M. Bayani Cardenas, Co-PI: Raymond Rodolfo (Ateneo de Manila University, Philippines), Co-PI: Kathryn Jadloc (Silliman University, Philippines), 2022.

Advancing InSAR Technology for Monitoring and Prediction of the Hydrologic State of Permafrost Terrain in the Arctic, funded by *National Aeronautics and Space Administration – Terrestrial Hydrology Program* ($600,000, UT portion-$305,000), UT PI and lead: Jingyi Chen, co-PI: M. Bayani Cardenas, Univ. of Michigan PI: George Kling, 2019-2022 (extended until 2023).

Respiration in hyporheic zones: connecting mechanics, microbial biogeochemistry, and models, funded by the *Department of Energy-Biological and Environmental Research* ($600,000), UT PI and lead: M. Bayani Cardenas, Pennsylvania State University PI: Xiaofeng Liu, PNNL PIs: Xingyuan Chen, Maoyi Huang, and James C. Stegen, 2017-2020 (extended until 2022).

Collaborative Research: The effects of river regulation on lateral and integrated longitudinal mass and energy transfers in coupled terrestrial-aquatic systems, funded by *National Science Foundation* ($682,264, UT portion-$360,923), UT PI (lead institution): M. Bayani Cardenas, co-PI: Philip Bennett, Utah State Univ. PI: Bethany Neilson, 2014-2017.

Center for Frontiers of Subsurface Energy Security, funded by the *Department of Energy-Basic Energy Sciences*

($10,920,000 UT team), PI: Larry Lake, co-PI: M. Bayani Cardenas (1 of 20 PIs at UT), 2014-2018.

The effects of typhoon Haiyan's storm surge on coastal aquifers, funded by *National Science Foundation* ($49,581), PI: M. Bayani Cardenas, co-PI: Philip Bennett

CAREER: Multiphysics research and education for understanding coupled mechanical-biogeochemical surface-subsurface processes, funded by *National Science Foundation* ($569,390), sole-PI: M. Bayani Cardenas, 2010-2015.

Collaborative Research: Holocene hydrologic variability across the Western Pacific Warm Pool, funded by *National Science Foundation* ($504,522), PI: Judson Partin, co-PIs: Jay Banner, Fred Taylor, M. Bayani Cardenas, 2010-2013.

Center for Frontiers of Subsurface Energy Security: Task 1, Subpore Processes, funded by *Department of Energy-Basic Energy Sciences* ($1,650,000 out of a total of $15.5M awarded to UT team), PI: Philip Bennett, co-PI: M. Bayani Cardenas, 2009-2014.

Quantification of denitrification in permeable sediments using a combination of measurements and two-dimensional modeling, funded by *Australian Research Council - Discovery Projects* ($160,000), PI: Perran L. M. Cook (Monash University, and grant is administered at Monash University), co-PI: M. Bayani Cardenas, 2009-2012.

Assessing, quantifying, and predicting the role of large wood debris as a driver of hydrologic connectivity, funded by *National Science Foundation* ($282,683): sole PI: M. Bayani Cardenas, 2009-2012.

Paleoclimate of the Western Pacific Warm Pool, funded by *University of Guam* ($80,000), PI: Jay Banner, co-PIs: M. Bayani Cardenas, Fred Taylor, Terry Quinn, 2008-2010.

Balik Scientist Program, funded by *Philippine Department of Science and Technology* ($7,000): M. Bayani Cardenas, 2008.

Measurement and ecological implications of multi-scale three-dimensional geomorphology-driven surface water-ground water connections at the Outdoor Stream Lab, funded by *National Center for Earth Surface Dynamics* (a National Science Foundation Science and Technology Center) Visitor Program ($28,300): Visiting PI: M. Bayani Cardenas, 2008.

Hydrodynamics of groundwater-surface water interactions in gaining and losing channels: an experimental study, funded by *University of Texas Faculty Development Program* Summer Research Assignment (funded for two months summer support): M. Bayani Cardenas. 2007.

Current-topography driven exchange processes between water columns and heterogeneous permeable sediments, funded by *American Chemical Society-Petroleum Research Fund* ($40,000), sole-PI: M. Bayani Cardenas, 2008-2010

Numerical investigation of fluid flow above and below sediment-water interfaces, funded by the *New Mexico Water Resources Research Institute* for $5000, 2006

Travel Grants from the New Mexico Tech Graduate Student Association

Courses Taught and Developed

University of Texas at Austin

The numbers in parentheses denote in order: number of students completing the course survey, instructor rating (out of 5), and course rating (out of 5).

2024: Fall: GEO 476K (Groundwater Hydrology) (9, 4.4, 4.6)
Summer: GEO 376L (Field Methods in Groundwater Hydrology) (2, 4.5, 5.0)
Spring: GEO 303 (Intro. to Geology; 2 sections) (37, 4.4, 4.0 and 46, 4.4, 3.9)

2023: Fall: GEO 476K (Groundwater Hydrology) (6, 5.0, 5.0)
Summer: GEO 376L and 382C (Field Methods in Groundwater Hydrology) (3/1,5.0/5.0,5.0/5.0)
Spring: GEO 346C (Intro. to Physical and Chemical Hydrogeology) (9, 4.4, 4.4)

2022: Fall: GEO 476K (Groundwater Hydrology) (11, 4.6, 4.8)
Summer: GEO 376L and 382C (Field Methods in Groundwater Hydrology) (1/1,5.0/5.0,5.0/5.0)
Spring: GEO 346C (Intro. to Physical and Chemical Hydrogeology) (7, 4.9, 4.6)

2021: Fall: GEO 476L (Groundwater Hydrology) (7, 4.7, 4.6)
Spring: GEO 346C* (Intro. to Physical and Chemical Hydrogeology) (6, 4.2, 3.7)
GEO 371C and 391C (Intro. to Mathematical Modeling for Geoscientists) (1/8, 4.0/3.4, 4.0/3.4)
* class was held virtually

2020: Fall: GEO 476K* and 391C* (Groundwater Hydrology) (5, 5.0, 4.8)
Spring: GEO 346C** (Intro. to Physical and Chemical Hydrogeology) (10, 4.9, 4.8)
* class was held virtually except for two lab sessions

** class was interrupted by the COVID-19 pandemic and shifted to on-line after spring break

2019: Fall: GEO 476K and 391C (Groundwater Hydrology) (10, 4.8, 4.6; 2, 5.0, 5.0)
Spring: GEO 346C (Intro. to Physical and Chemical Hydrogeology) (26, 4.4, 4.1)

2018: Fall: GEO 476K (Groundwater Hydrology) (16, 4.2, 3.9)
Spring: GEO 303 (Introduction to Geology) (86, 4.0, 3.7)

2017: Summer: GEO 376L (Field Methods in Hydrogeology) (5, 4.8, 4.8)
Spring: GEO 371C and 391C (Intro. to Mathematical Modeling for Geoscientists) (12, 4.3, 4.1)

2016: Fall: GEO 376S and 382S (Physical Hydrology, grad and undergrad classes taught jointly) (20, 5.0, 4.8)
Summer: GEO 376L (Field Methods in Hydrogeology) (15, 4.8, 4.7)
Spring: GEO 346C (Intro. to Physical and Chemical Hydrogeology) (21, 4.6, 4.6)

2015: Fall: GEO 376S and 382S (Physical Hydrology, grad and undergrad classes taught jointly) (12, 4.4, 4.3)

2014: Fall: GEO 376S and 382S (Physical Hydrology, grad and undergrad classes taught jointly) (22, 3.5, 3.3)
Summer: GEO 376L (Field Methods in Hydrogeology) (17, 4.8, 4.5))
Spring: GEO 371C and 391C (Intro. to Mathematical Modeling for Geoscientists) (13, 4.5, 4.2)

2013: Fall: GEO 376S and 382S (Physical Hydrology) (20, 4.3, 3.9)

2012: Fall: GEO 376S and 382S (Physical Hydrology, grad and undergrad classes taught separately)
(17, 4.6, 4.2) (21, 4.5, 4.2)
Summer: GEO 376L (Field Methods in Hydrogeology) (18, 4.9, 4.9)
Spring: GEO 382G (Fluid Physics for Geologists) (7, 4.3, 3.7)

2011: Fall: GEO 376S and 382S (Physical Hydrology, grad and undergrad classes taught separately)
(19, 4.4, 4.2) (8, 3.9, 3.9)

2010: Fall: GEO 376S and 382S (Physical Hydrology, grad and undergrad classes taught separately)
(19, 4.2, 3.9) (9, 4.0, 4.0)
Summer: GEO 376L (Field Methods in Hydrogeology)
Spring: GEO 346C (Intro. to Physical and Chemical Hydrogeology) (45, 3.7, 3.4)

2009: Fall: GEO 376S and 382S (Physical Hydrology) (17, 4.8, 4.3)
Summer: GEO 392M (Modern Geological Sciences-UTeach)
Spring: GEO 346C (Intro. to Physical and Chemical Hydrogeology) (44, 4.4, 4.0)

2008: Fall: GEO 376s and 382S (Physical Hydrology)
Summer: GEO 376L (Field Methods in Hydrogeology) (9, 4.4, 4.5)
Spring: GEO 346C (Environmental Hydrogeology) (36, 4.4, 4.1)
GEO 391C (Surface water-groundwater interactions) (11, 4.4, 3.6)

2007: Fall: GEO 376S and 382S (Physical Hydrology) (14, 4.4, 4.1)
Summer: GEO 376L (Field Methods in Hydrogeology)
Spring: GEO 346C (Environmental Hydrogeology) (35, 4.6, 4.3)

New Mexico Inst. of Mining and Technology (as Graduate Teaching Assistant)

2004: Fall: HYD 532 (Groundwater Modeling)
Spring: HYD 508 (Flow and Transport in Geophysical Systems)

University of Nebraska-Lincoln (as Graduate Teaching Assistant)

2002: Spring: GEO 101 lab (Introductory Geology Lab, 2 sections per semester)

2001: Spring and Fall: GEO 101 lab (Introductory Geology Lab, 2 sections per semester)

2000: Spring: GEO 101 lab (Introductory Geology Lab, 2 sections per semester)
Fall: Structural Geology

1999: Fall: GEO 101 lab (Introductory Geology Lab, 2 sections per semester)