

Thomas A. Duster, Ph.D.

*Assistant Teaching Professor • Geography & Environmental Sciences • University of Colorado Denver
North Classroom 3518 • PO Box 173364 • Campus Box 172 • Denver, CO 80217
Phone: (720) 707-5473 • Email: thomas.duster@ucdenver.edu*

EDUCATION

- 2014 **Ph.D. – Environmental Geoscience**
University of Notre Dame (South Bend, IN)
Performance: 3.93 GPA (on a 4.0 scale)
Dissertation: *Experimental Determination of Metal Sorption and Transport Parameters for Graphene Oxide*
- 2004 **M.Sc. – Environmental Biogeochemistry**
University of Newcastle (Newcastle, England)
Performance: *Distinction* graduation honors
Thesis: *Iron and Sulfate Reduction Rates in an Acid Mine Drainage Treatment Wetland*
- 2001 **B.S. – Wildlife Biology** (Aquatic Restoration, Honors)
University of Montana (Missoula, MT)
Performance: 4.0 GPA (on a 4.0 scale); *Summa cum laude* graduation honors
Thesis: *Characterization of Bull Trout Migration Patterns using Microsatellite DNA*

PROFESSIONAL EXPERIENCE

- Aug 2020 – Present **Assistant Professor (Clinical-/Teaching-Track)**, Department of Geography & Environmental Science, University of Colorado Denver, Denver, CO.
- Aug 2018 – July 2020 **Senior Instructor**, Department of Geography & Environmental Science, University of Colorado Denver, Denver, CO.
- Aug 2017 – July 2018 **Instructor**, Department of Geography & Environmental Science, University of Colorado Denver, Denver, CO.
- Jan 2017 – May 2017 **Instructor**, Department of Biology, Regis University, Denver, CO.
- Dec 2015 – Jan 2017 **Staff Scientist**, Advanced Chemicals and Materials Division, National Institute of Standards & Technology, Boulder, CO.
- Dec 2013 – Dec 2015 **National Research Council Postdoctoral Fellow**, Advanced Chemicals and Materials Division, National Institute of Standards & Technology, Boulder, CO.
- Fall 2010 & Fall 2011 **Instructor**, Department of Civil Engineering & Geological Sciences, University of Notre Dame, South Bend, IN.
- Mar 2007 – July 2009 **Project Manager (Soils)**, Intermountain Laboratories, Sheridan, WY.
- Mar 2006 – Feb 2007 **Project Manager (Water)**, HDR | Surface Water Resources, Sacramento, CA.
- Jan 2005 – Dec 2005 **Research Program Coordinator**, Department of Microbiology, Montana State University, Bozeman, MT.
- Feb 2002 – July 2003 **(Associate) Environmental Scientist**, Surface Water Resources, Sacramento, CA.

PEER REVIEWED PUBLICATIONS

Journal Articles

- 2026 Crawford, B.; Anthamatten, P., **Duster, T.** *Sensor network configurations for multi-hazard monitoring in urban areas.* Environmental Monitoring and Assessment, Submitted.
- 2022 Rees, A.; Harwood, M.; Praley, M.; Wee, B.; **Duster, T.** *Validating the spaces of our lives in geography education: A Response to the Pandemic.* Geography Teacher, 19: 87–92.
- 2017 **Duster, T.**; Szymanowski, J.; Fein, J. *Experimental measurements and surface complexation modeling of U(VI) adsorption onto multi-layered graphene oxide: The importance of adsorbate-adsorbent ratios.* Environmental Science & Technology, 51: 8510–8518.
- 2017 Showalter, A.; **Duster, T.**; Szymanowski, J.; Na, C.; Fein, J.; Bunker, B. *An x-ray absorption fine structure spectroscopy study on metal adsorption to graphene oxide.* Journal of Colloids & Interface Science, 508: 75–86.
- 2016 **Duster, T.**; Na, C.; Bolster, D.; Fein, J. *Transport of single-layered graphene oxide nanosheets through quartz and iron oxide coated sand columns.* Journal of Environmental Engineering, 143: 04016079.
- 2015 **Duster, T.**; Szymanowski, J.; Na, C.; Showalter, A.; Bunker, B.; Fein, J. *Surface complexation modeling of proton and metal sorption onto graphene oxide.* Colloids and Surfaces A: Physicochemical & Engineering Aspects, 466: 28–39.
- 2014 **Duster, T.**; Fein, J. *Comparison of the aggregation behavior of TiO₂ nanoparticles exposed to fulvic acid and Bacillus subtilis (bacterial) exudates.* Water, Air, & Soil Pollution, 225: 2189.

Conference Proceeding

- 2016 Showalter, A.; **Duster, T.**; Szymanowski, J.; Na, C.; Fein, J.; Bunker, B. (2016). *Sorption mechanism of metals to graphene oxide.* Journal of Physics: Conference Series, 712: 012094.

Invited Book Chapter

- 2015 **Duster, T.** *The importance of exposure dose in communicating the ecotoxicology of engineered nanomaterials.* Science and the Law: How the Communication of Science Affects Policy Development in the Environment, Food, Health, and Transport Sectors, American Chemical Society (publisher), William Town (editor).

GRANTS AND FELLOWSHIPS

- 2025 **Biotic Controls on Metal and Carbon Sequestration Across Ecosystems**, W.M. Keck Foundation after nomination by the CU Denver Vice Chancellor's Office of Research Development and Strategy. Collaborators: Briles (CLAS/GES; PI), Brown (Anschutz; Co-PI), and Duster (CLAS/GES; Co-PI). Amount Requested: \$1.4M. Decision: Currently in review.
- 2023 **Mobile Home Park Water Quality**, Colorado Department of Public Health and Environment. Collaborators: Corona Environmental Consulting (PI), Sullivan (CLAS/Sociology; Co-PI), and Duster (CLAS/GES; Co-PI). Amount Requested: \$1.6M. Decision: Not funded.

- 2023 **An OER Textbook for ENVS 1044**, Teaching Innovation and Program Strategy Division, University of Colorado Denver. Collaborator: Kelsey (CLAS/GES; Co-PI). Amount Requested: \$1500. Amount Received: \$1500.
- 2020 **Mitigation of Heavy Metals and Low Dissolved Oxygen in Chase Gulch Reservoir**, Colorado Water Center. Collaborators: Garrison (CLAS/GES; Student PI) and Duster (CLAS/GES; Advisor). Amount Requested: \$3500. Decision: Not funded.
- 2020 **Capital Equipment (Laboratory) Grant**, College of Liberal Arts & Sciences, University of Colorado Denver. Funding secured to purchase pH, electrical conductivity, and nutrient meters for classroom usage. Amount Requested: \$8500. Amount Funded: \$8500.
- 2019 **Non-Tenure Track Faculty Development Grant**, College of Liberal Arts & Sciences, University of Colorado Denver. Funding secured to attend a training workshop on geochemical modeling software that is now used in my Aquatic Chemistry course. Amount Requested: \$1000. Amount Funded: \$1000.
- 2015 **Summer Undergraduate Research Fellowship**, National Institute of Standards & Technology. Funding provided a summer research opportunity for one undergraduate student in my laboratory. The student that filled this position went on to receive a NIST Undergraduate Researcher Accolade.
- 2013 **National Research Council Postdoctoral Fellowship**, National Institute of Standards & Technology. Funding provided salary, overhead, laboratory supplies, and research travel for my postdoctoral scientist position at a prominent national lab.
- 2012 **Center for Aquatic Conservation Fellowship**, University of Notre Dame. Funding provided a full tuition waiver, \$30,000/year stipend, and overhead for one semester within my PhD program.
- 2009 **Arthur J. Schmitt Foundation Fellowship**, University of Notre Dame. Funding provided a full tuition waiver, \$30,000/year stipend, and overhead for eight semesters within my PhD program.

NON-PEER REVIEWED PUBLICATIONS

Commentary/Opinion

- 2016 **Duster, T.** *An integrated approach to standard methods, materials, and databases for the measurements used to develop surface complexation models.* *Environmental Science & Technology*, 50: 7274–7275.

NON-PEER REVIEWED CONFERENCE/MEETING PRESENTATIONS

(*) denotes undergraduate student advisee / (**) denotes graduate student advisee

Talks

- 2025 **Duster, T.;** Garrison, A.** *Iron, manganese, and dissolved oxygen profiles at Chase Gulch Reservoir, Central City, Colorado.* American Water Resources Association Conference, Denver (CO).
- 2017 **Duster, T.** *Improving reactive transport modeling using a community standards framework for surface complexation modeling.* RemTEC Summit, Denver (CO).

- 2016 **Duster, T.**; Swarup, K.*; Holm, J.; Greenlee, L. *Three-dimensional graphene oxide hydrogels for water treatment applications*. American Chemical Society Conference, San Diego (CA).
- 2013 **Duster, T.**; Na, C.; Bolster, D.; Fein, J. *Transport of single-layered graphene oxide through porous media*. Geological Society of America Conference, Denver (CO).
- 2013 **Duster, T.** *Adaptive management tools for engineered nanomaterials in municipal wastewater effluents*. American Chemical Society Conference, Indianapolis (IN).
- 2013 **Duster, T.**; Szymanowski, J.; Fein, J. *Significant high-pH adsorption of aqueous uranyl complexes onto many-layered graphene oxide*. American Chemical Society Conference, Indianapolis (IN).
- 2012 **Duster, T.**; Wang, H.; Willner, M.; Na, C.; Fein, J. *Surface complexation modeling of proton and metal adsorption onto graphene oxide*. Goldschmidt Conference, Montreal (Canada).

Posters

- 2015 **Duster, T.**; Greenlee, L. *Engineered nanoparticle systems: Recent cutting-edge innovations in water treatment and remediation*. RemTEC Summit, Denver (CO).
- 2014 Patel, T.*; Gannett, W.; Keller, M.; Greenlee, L.; **Duster, T.** *Fabrication and functionalization of a novel graphene-based QCM sensor*. Annual Biomedical Research Conference for Minority Students, San Antonio (TX).

SEMINARS/WORKSHOPS

Workshops Convened/Organized

- 2020 Rees, A.; Harwood, M.; Praley, M.; Russell, N.; Wee, B.; **Duster, T.** *Teaching, learning, and coping in the age of COVID-19*. University of Colorado Denver, Department of Geography and Environmental Science, Denver (CO).
- 2016 **Duster, T.** *Standard methods, materials, and databases for surface complexation measurements*. American Chemical Society Conference Workshop, San Diego (CA).

Invited Seminars/Colloquia

- 2017 **Duster, T.** *Sweat the small stuff: Why confronting landscape-scale water quality challenges requires nano-scale knowledge*. University of Colorado Denver, Department of Geography and Environmental Science, Denver (CO).
- 2016 **Duster, T.**; Swarup, K.*; Holm, J.; Greenlee, L. *A superior water purification technology using graphene oxide hydrogels*. Federal Water Treatment Interagency Working Group Meeting, Bethesda (MD).
- 2016 **Duster, T.** *Standard methods, materials, and databases for the development of surface complexation models: Applications in reactive contaminant transport and water technology*. University of Colorado Boulder, Environmental Engineering Program, Boulder (CO).
- 2015 **Duster, T.**; Greenlee, L. *Engineered nanomaterials for treatment of organic dyes and dissolved metals in water*. U.S. Army Corps of Engineers Engineer Research and Development Center, Vicksburg (MS).

COURSES TAUGHT

University of Colorado Denver (Instructor of Record)

ENVS	1044/1045	Introduction to Environmental Science & Lab
ENVS	4500/5500	Sp Topics: The Food-Energy-Water Nexus along the Front Range
ENVS	4720/5720	Climate Change: Causes, Impacts, & Solutions
ENVS/GEOG	4740/5740	Soil Science & Geography
ENVS/BIOL	4780/5780	Aquatic Ecology
ENVS	5410	Aquatic Chemistry
GEOG/GEOL	4270/5270	Glacial Geomorphology
GEOL	1073/1074	Physical Geology: Surficial Processes & Lab
GEOL	1083/1084	Physical Geology: Internal Processes & Lab

University of Colorado Denver (Undergraduate Laboratory Curriculum Coordinator)

ENVS	1045	Introduction to Environmental Science Lab
GEOL	1074	Physical Geology: Surficial Processes Lab
GEOL	1084	Physical Geology: Internal Processes Lab

Develop laboratory activities, including a final lab project; supervise and mentor the instructional activities of up to eight graduate student lab instructors per semester; collaborate with Auraria Library staff on a literature and citation workshop for our students; sign-off on all final grading.

Regis University (Instructor of Record)

GEOL	208/209	Introduction to Geology & Lab
------	---------	-------------------------------

University of Notre Dame (Instructor of Record)

ENVG	30320	Introduction to Soil Science
------	-------	------------------------------

University of Notre Dame (Teaching Assistant)

ENVG	20100/21100	Physical Geology & Lab
ENVG	30300	Surficial Processes
ENVG	40300	Geochemistry

INTERNSHIP/INDEPENDENT STUDY INSTRUCTION

Fall 2024	Shaker, Raghad (MSES)	Independent study, 3 credits, Ecological restoration in Sharaan Nature Reserve (Saudi Arabia)
Summer 2024	Sawyer, Tristan (BA)	Internship, 3 credits, CDM Smith
Spring 2024	Sawyer, Tristan (BA)	Internship, 3 credits, Mile High Flood District
Spring 2024	Ambrose, Courtney (BA)	Internship, 3 credits, U.S. Geological Survey
Spring 2024	Rushton, Joshua (MSES)	Internship, 1 credit, Green Leaf Environmental
Spring 2024	Pieseski, Nicholas (MSES)	Internship, 1 credit, U.S. Geological Survey

Fall 2023	Culbertson, Abbie (MSES)	Internship, 1 credit, Mile High Flood District
Summer 2023	Burcar, Weston (MSES)	Internship, 3 credits, Formation Environmental
Spring 2023	Sharp, Jackson (MSES)	Internship, 3 credits, U.S. Geological Survey
Spring 2023	Sharp, Jackson (MSES)	Independent study, 1 credit, PHREEQC in geochemistry
Spring 2023	Tripple, Joseph (BA)	Internship, 3 credits, Denver Botanic Gardens
Spring 2023	Nelson, Alex (BA)	Internship, 2 credits, CSU Plant Extension Office
Spring 2022	Erickson, Trent (MSES)	Internship, 1 credit, Hirsch-Gibney, Inc.
Spring 2021	Philpott, Allison (MSES)	Independent study, 1 credit, PFAS effects on fish and macroinvertebrates
Fall 2020	Kocher, Angelina (MSES)	Independent study, 1 credit, Soil science laboratory activities
Fall 2019	Dorsk, Mitchell (MSES)	Independent study, 3 credits, Rare earth element geochemistry

THESIS CHAIR / PRIMARY RESEARCH ADVISOR

2020 – 2023	Garrison, Alexa (MSES), Dept. of Geography & Environmental Sciences, University of Colorado Denver. <i>An exploration of iron, manganese, and dissolved oxygen: A profile of Chase Gulch Reservoir, Central City, Colorado.</i>
2018 – 2020	Dorsk, Mitchell (MSES), Dept. of Geography & Environmental Sciences, University of Colorado Denver. <i>Using rare earth elements and geochemical patterns as in-situ groundwater tracers at the Bonita Peak Mining District Superfund Site.</i>

THESIS COMMITTEE MEMBER

Presently	Andrew Sirois (MSES), Dept. of Geography & Environmental Sciences, University of Colorado Denver. Topic: Geochemistry of alpine fens. Title: Pending.
Presently	Camryn Bricker (MSES), Dept. of Geography & Environmental Sciences, University of Colorado Denver. Topic: Vegetation dynamics in the high-Arctic. Title: Pending.
2022	Deemie, Salina (MSES), Dept. of Geography & Environmental Sciences, University of Colorado, Denver. <i>Urban farmland soil-to-atmosphere carbon flux under rotational goat grazing.</i>
2021	Gillard, Margaret (MSES), Dept. of Geography & Environmental Sciences, University of Colorado Denver. <i>Using an interdisciplinary approach to understanding human-black bear conflicts in Colorado: A geospatial analysis.</i>
2020	McClung, Jeremy (MSES), Dept. of Geography & Environmental Sciences, University of Colorado Denver. <i>Late Holocene climate impacts on marine benthic foraminifera in Ha Long Bay, Vietnam.</i>

2020 McKay, Erin (MSES), Dept. of Geography & Environmental Sciences, University of Colorado Denver. *A late Holocene sedimentary analysis of a shallow marine environment in Ha Long Bay, Vietnam.*

SERVICE

- 2020 – Present **Associate Graduate Program Director**, Dept. of Geography & Environmental Sciences, University of Colorado Denver. Select, place, train, and mentor around twenty (graduate student) teaching assistants and lab instructors, including the development of an orientation and monthly meetings; assist with periodic curriculum updates for the MA and MS programs; assist with admissions efforts (including recruitment) for the MA and MS programs; assist with the organization and implementation of non-thesis exams; provide general course and career advising to graduate students; develop social activities for graduate students, including four events during the remote pandemic semesters; assist with an annual new-student departmental orientation; communicate with students and alumni about departmental initiatives.
- 2021 – Present **Founder and Ongoing Faculty Advisor, *Confluence***. Dept. of Geography & Environmental Sciences, University of Colorado Denver. Developed and launched a student-led, peer-reviewed departmental journal that provides students the opportunity to promote truly special works and go through the peer-review process; provide guidance to a student-editor as they receive submissions from faculty, arrange the peer-review process among current and former students, and perform editorial and digital publishing tasks.
- 2021 – Present **Elected Member, Longmont Water Board**. City of Longmont (CO). Review and suggest changes to the City's raw water procurement policies, including those related to the calculation of raw water fees on annexed development projects; advise on public outreach and educational activities.
- 2020 – Present **(Co-)Advisor, Water Systems MSES Specialization**. Dept. of Geography & Environmental Sciences, University of Colorado Denver. Provide specific course and career advising to graduate students in the Water Systems specialization; participate in a departmental efforts to update specialization requirements.
- 2018 – Present **Non-Thesis Advisor**, Dept. of Geography & Environmental Sciences, University of Colorado Denver. Advise the academic activities of and provide professional development guidance to six active and at least nineteen graduated non-thesis MA/MS students; chair their non-thesis exams.
- 2025 **Leadership and Service Faculty Award Selection Committee**, College of Liberal Arts and Sciences, University of Colorado Denver. Reviewed award nominations and assisted with the selection of a winner for the IRC-track; invited honor due to my own past receipt of this award.
- 2025 **Merit Review Committee**, Dept. of Geography & Environmental Sciences, University of Colorado Denver. Reviewed annual merit review submissions and assisted with the assignment of performance ratings for IRC faculty.
- 2022 – 2024 **Member, Recruitment and Outreach Committee**, Dept. of Geography & Environmental Sciences, University of Colorado Denver. Recruit students to the department, especially the MA and MS graduate programs, including one-on-one meetings and email communications prior to the application deadline.

- 2020 – 2022 **Member, Student & Faculty Affairs Committee**, Dept. of Geography & Environmental Sciences, University of Colorado Denver. Revised department bylaws related to the Graduate Program Director position, the Associate Graduate Program Director position, and the guidelines regarding IRC involvement in and/or leadership of thesis committees; explored alternative merit review models; led two Outstanding Graduate Student nominations; reviewed and recommended to the faculty departmental scholarship recipients.
- 2019 – 2020 **Chair, Research, Equipment, & Space Committee**, Dept. of Geography & Environmental Sciences, University of Colorado Denver. Coordinated an effort to secure over \$117,000 of internal capital equipment funding; managed the remodel of a lab space.
- 2020 **Co-Convener, *Teaching, Learning, and Coping in the Age of COVID-19 Workshop***. Dept. of Geography & Environmental Sciences, University of Colorado Denver. As part of a once-per-semester installment of the GES pandemic seminar series, co-organized and co-facilitated a graduate student panel presentation on the successes and challenges of teaching and learning during the coronavirus pandemic. Occurred remotely on 10/16/2020.
- 2012 – 2017 **Ad hoc journal reviewer** for manuscripts published in *Env Sci & Technol*, *Env Pollut*, *Env Sci & Pollut Res*, *Sci Total Env*, & several others.
- 2014 – 2015 **Member, Federal Water Treatment Interagency Working Group**, National Institute of Standards & Technology.
- 2014 **Co-chair, *Water & Wastewater Technical Session***, North American Membrane Society Conference, Houston (TX).
- 2012 **Chair and moderator, *Social Change through Leadership Conference***, Arthur J. Schmitt Foundation, Chicago (IL).

AWARDS, HONORS, AND CERTIFICATIONS

- 2023 **CLAS Excellence in Leadership and Service by IRC Faculty Award** for *superior contributions to the CLAS/GES graduate programs*.
- 2019 – 2020 **ACUE Course in Effective Teaching Practices**, Center for Excellence in Teaching & Learning, University of Colorado Denver. Completed a year-long course on inclusive teaching practices that included online instruction and written reflection assignments.
- 2016 **Postdoctoral Accolade** for *exceptional engagement of the water treatment and contaminant transport communities to address customer needs for thermodynamic data*, National Institute of Standards & Technology.
- 2013 **Striving for Excellence in Teaching Certificate**, Kaneb Center, University of Notre Dame.
- 2006 **Pathfinder Award** for *outstanding teamwork in addressing the needs of the Sacramento River Water Reliability Study*, HDR | Surface Water Resources, Inc.
- 2003 **USA Alumni Scholarship**, University of Newcastle.