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EDUCATION

- 01/2008** PhD in Physics, Chemistry and Biology of the Environment, Université Louis Pasteur, Strasbourg, France. *Advisor: Prof. Laurence Warr (CNRS-France, University of Greifswald, Germany).* Title of thesis: *Hydration of swelling clays and bacteria interaction - An experimental in-situ reaction study.*
- 07/2004** MS (Diploma) in Mineralogy, Geology and Geochemistry, Ruprecht Karls University of Heidelberg, Germany. *Advisor: Laurence Warr.* Title of thesis: *Low temperature mineral alteration in fault zones of the Lizard Ophiolite Complex, SW-England.*

APPOINTMENTS

- 09/2019- current** Associate Professor of Geochemistry, University of Vermont
07/2017- 09/2019 Co-Director of the Environmental Science Program (CAS), University of Vermont
08/2013- 09/2019 Assistant Professor of Geochemistry, University of Vermont
10/2012-07/2013 Assistant Research Scientist, University of Arizona
1/2010-09/2012 Postdoctoral Research Associate, University of Arizona
9/2008-12/2009 Visiting Postdoctoral Scholar, University of Arizona
12/2007-2/2008 Graduate Research Assistant, Ernst Moritz Arndt University, Germany

RESEARCH INTERESTS:

My research interests include laboratory and field-based investigations of Earth surface processes (i.e. Critical Zone processes) including: carbon dynamics, dissolved organic matter (DOM) chemistry, catchment hydrology and biogeochemistry, ecology, biotic and abiotic primary and secondary mineral alteration and weathering, clay mineralogy, and general environmental geochemistry.

PUBLICATIONS IN PEER-REVIEWED JOURNALS:

Please note that J.N.Berger = J.N.Perdrial. Graduate students = ***bold italics***. Undergraduate students = *italics*.

Submitted and in preparation:

- ***Juice SM***, Schaberg PG, Kosiba AM, Waite CE, Hawley GJ, Wang D, **Perdrial, J.N.** Adair C. E., (submitted). Soil type modifies the impacts of warming and snow exclusion on plant-microbe asynchrony losses of carbon and nutrients. *Ecology*. (Impact factor 5.175).
- ***Juice SM***, Schaberg PG, Kosiba AM, Waite CE, Hawley GJ, Wang D, **Perdrial, J.N.** Adair C. E., (submitted). Soil type modifies the impacts of warming and snow exclusion on carbon and nutrient *Ecology*. (Impact factor 5.175).
- Shanley, J., Taylor, V., Chalmers, A., **Perdrial, J.N.**, Stubbins, A., (submitted). The role of DOM quality in total mercury and methylmercury dynamics in a forested headwater stream. *Hydrological Processes*. (Impact factor 3.26).
- ***Ryan, K.***, Shanley, J., Taylor, V., Chalmers, A., **Perdrial, J.N.**, Stubbins, A., (submission for 01/2021). Comparing Fluxes of Dissolved Organic Carbon During Throughfall and Stream Events in a Forested Catchment. *Hydrological Processes*. (Impact factor 3.26).
- ***Sterle, G, Perdrial, N.P.***, Li L, ***Adler T***, Underwood K, Rizzo D, Wen H, Addor N, Newman A, Harpold A (submission for 01/2021) CAMELS-Chem: Stream Water Chemistry and Attributes To Facilitate Large Sample Studies. *Hydrology and Earth System Sciences*: (Impact factor 4.256).

- Underwood KL, Rizzo DM, Hanley JP, *Sterle G*, Harpold AA, **Adler T**, Li L, Wen H, **Perdrial JN** (submission for 01/2021) Application of machine-learning tools to extract patterns in Long-term DOC monitoring data: an integrated, multi-scale approach. *Water Resources Research: (Impact factor 4.36)*.
- Seybold, E.C., Kincaid, D., Musselman, K., Schroth, A., Adair, C., **Perdrial, J.N.**, Dwivedi, R., Classen, A., (in prep). Undiscovered Losses: Widespread co-occurrence of wintertime rain on snow events and nutrient pools in the continental US.

In review, accepted published in 2020:

- **Perdrial, J.N.**, Sullivan PL, Dere A, West N (2020) Editorial: Critical Zone (CZ) Export to Streams as Indicator for CZ Structure and Function. *Frontiers in Earth Science* 8(37).
- **Landsman-Gerjoi M, Perdrial, J.N., Lancellotti B**, Seybold E, Schroth AW, Adair C, Wymore A (2020) Measuring the Influence of Environmental Conditions on Dissolved Organic Matter Biodegradability and Optical Properties: A Combined Field and Laboratory Study. *Biogeochemistry* **149**, 37–52.
- Kincaid D, Seybold EC, Adair C, Bowden WB, **Perdrial, J.N.**, Vaughan MCH, Schroth AW (2020) Land Use and Season Influence Event-scale Nitrate and Soluble Reactive Phosphorus Exports and Export Stoichiometry from Headwater Catchments. *Water Resources Research*
- MacNeille, R. B., Lohse, K., Godsey, S., Derryberry, D., McCorkle, E., Parson, S., Baxter, C., **Perdrial, J.N.** (2020) Stream structure at low flow: biogeochemical patterns of intermittent streams over space and time. *Frontiers*.
- **Stewart, B.**, Wen, H., Shanley, J.B., Kirchner, J.W., Norris, D., **Adler, T., Bristol, A.**, Harpold, A.A., **Perdrial, J.N.**, Rizzo, D.M., **Sterle, G.**, Underwood, K.L., Li, L. (submitted). From soil to stream: reading subsurface water chemistry from in-stream chemistry
- **Adler T**, Underwood KL, Rizzo DM, Harpold AA, Sterle G, Li L, Wen H, *Stinson L*, **Bristol C**, Shanley J, Lini A, Perdrial N, **Perdrial JN** (in review). Drivers of Dissolved Organic Carbon (DOC) in Forested Headwater Catchments: A Multi Scale Approach. *Frontiers Biogeoscience*:

2019:

- **Cincotta, M., Perdrial, J.N., Shavitz, A., Libenson, A., Landsman, M.**, Perdrial, N., **Armfield, J., Adler, T.**, Shanley, J. (in review). Soil aggregates as a source of dissolved organic carbon to streams: an experimental study on the effect of solution chemistry on water extractable carbon, *Frontiers in Earth Science: Biogeosciences*.
- **Armfield, J., Perdrial, J.N., Gagnon, A., Ehrenkranz, J.**, Perdrial, N., **Cincotta, M.**, Ross, D., Shanley, J., Underwood, K., Ryan, P. (2019). Does stream water composition at Sleepers River in Vermont reflect dynamic changes in soils during recovery from acidification? *Frontiers in Earth Science: Biogeosciences*. <https://doi.org/10.3389/feart.2018.00246>.
- Wen H, **Perdrial, J.N.**, Bernal S, Abbott BW, Dupas R, Godsey SE, Harpold A, Rizzo D, Underwood K, **Adler T**, Hale R, *Sterle G*, Li L (2019) Temperature controls production but hydrology controls export of dissolved organic carbon at the catchment scale. *Hydrol. Earth Syst. Sci. Discuss.* 2019: 1-35.
- **Radke, A.**, Godsey, S., Lohse, K., McCorkle, E., **Perdrial, J.N.**, Seyfried, M.S., Holbrook, S. (2019). Spatiotemporal Heterogeneity of Water Flowpaths Controls Dissolved Organic Carbon Sourcing in a Snow-dominated, Headwater Catchment. *Front. Ecol. Evol.*, <https://doi.org/10.3389/fevo.2019.00046>.
- Bierman, P., Schmidt, A H., **Campbell, M., K.**, Dethier, D. P., Dix, M., Racela, J., **Perdrial, J.**, *Massey-Bierman, M. E.*, Sibello Hernández, R. Y., Cartas Aguila, H. A., Guillén Arruebarrena, A., García Moya, A., and Alonso-Hernández, C. (2019). !Cuba! River Water Chemistry Reveals Rapid Chemical Weathering, the Echo of Uplift, and the Promise of More Sustainable Agriculture. *GSA today*.

2018:

- **Perdrial J.N.**, Brooks P.D., **Swetnam T.**, Rasmussen C., Lohse K.A., Litvak, M., Harpold, A.A., **Broxton, P.**, Mitra, B., Meixner, T., *Condon, K.*, **Huckle, D.**, **Stielstra, C.**, **Vazquez-Ortega, A.**, **Lybrand, R.**, **Holleran, M.**, **Orem, C.**, Chorover, J. (2018). A net ecosystem carbon budget for snow dominated forested headwater catchments: linking water and carbon fluxes to critical zone carbon storage. *Biogeochemistry*. 138(3):225-243. (Effort 70%, Impact factor 3.43).
- Hernandez-Ruiz, S., **Perdrial, J.N.**, Segreaves, D. (accepted). Evaluation of Corrosion Control Products on a Distribution System through Crowdsourcing. *Environmental Science and Pollution Research*. (Effort 25%, Impact factor 2.8).

2017:

- Wymore, A.S., West, N.R., Maher, K., Sullivan, P.L., Harpold, A.A., Karwan, D., Marshall, J.A., **Perdrial, J.N.**, Rempe, D.M., Ma, L. (2017). Growing New Generations of International Critical Zone Scientists. *Earth Surface Processes and Landforms*. (42):2498-2502 (Effort 20%, Impact factor 2.43).
- Li, L., Maher, K., Navarre-Sitchler, A., *Druhan, J.*, Meile, C., Lawrence, C., Moore, J., **Perdrial, J.N.**, Sullivan, P., Thompson, A., Jin, L., Bolton, E.W., Brantley, S., Dietrich, W., Mayer, K.U., Steefel, C.I., Valocchi, A., Zachara, J., Kocar, B., McIntosh, J., *Tutolo, B.M.*, Kumar, M., Sonnenthal, E., *Bao, Ch.*, Beisman, J.(2017). Expanding the role of reactive transport models in critical zone processes. *Earth Science Reviews* (165): 280-301 (Effort 12%, Impact factor 7.34).
- McIntosh, J., *Schaumberg, C.*, **Perdrial, J.N.**, Harpold, A.A., *Vazquez-Ortega, A.*, Rasmussen, C., Vinson, D., *Zapata-Rios, X.*, Brooks, P.D., Meixner, T., Pelletier, J., Derry, L., Chorover, J. (2017). Geochemical evolution of the Critical Zone across variable time scales informs concentration-discharge relationships: Jemez River Basin Critical Zone Observatory. *Water Resources Research*. (53): 4169-4196 (Effort 25%, Impact factor 3.79).
- Clark, K.E., Shanley, J.B., Scholl, M.A., Perdrial, N., **Perdrial, J.N.**, Plante, A.F., McDowell, W.H. (2017). Tropical River suspended sediment and solute dynamics in storms during an extreme drought. *Water Resources Research* (53): 3695-3712 (Effort 25%, Impact factor 3.79).

2016:

- Miller, M. Boyer, E., McKnight, D., Brown, M., Iavorivska, L., Hunsaker, C. Inamdar, S. McDowell, W., Kaplan, L., Gabor, R., Lin, H., Johnson, D., **Perdrial, J.N.** (2016). Regional Variation in Organic Matter Quantity and Quality among Five Critical Zone Observatories. *Water Resources Research*. 52-10: 8201-8216. (Effort 8%, Impact factor 3.79)
- *Caulk, R. A.*, E. Ghazanfari, **Perdrial, J.N** and N. Perdrial (2016). "Experimental investigation of fracture aperture and permeability change within Enhanced Geothermal Systems." *Geothermics* 62: 12-21. (Effort 10%, Impact factor 2.32).
- *Vázquez-Ortega, A.*, *D. Huckle*, **Perdrial, J.N**, M. K. Amistadi, M. Durcik, C. Rasmussen, J. McIntosh and J. Chorover (2016). "Solid-phase redistribution of rare earth elements in hillslope pedons subjected to different hydrologic fluxes." *Chemical Geology* 426: 1-18. (Effort 15% [MS co-adviser], Impact factor 3.48).

2015:

- *Vázquez-Ortega, A.*, **Perdrial, J.N**, A. Harpold, *X. Zapata*, C. Rasmussen, J. McIntosh, M. Schaap, J. Pelletier, P. Brooks, M. K. Amistadi and J. Chorover (2015). "Rare earth elements as reactive tracers of biogeochemical weathering in forested rhyolitic terrain." *Chemical Geology* 391 19-32. (Effort 35% [MS-co-adviser], Impact factor 3.48).
- *Stielstra, C.M.*, Lohse, K.A., Chorover, J., McIntosh, J.C., Barron-Gafford, G.A., **Perdrial, J.N.**, Litvak, M., Barnard, H.R., Brooks, P.D. (2015). Climatic and landscape influences on soil moisture are primary determinants of soil carbon fluxes in seasonally snow-covered forest ecosystems. *Biogeochemistry* 123(3):447-465. (Effort 10%, Impact factor 3.73).

2014:

- **Perdrial, J.N.**, J. McIntosh, A. Harpold, P. Brooks, P. Troch, *J. Ray*, *X. Zapata-Rios*, *C Porter*, J.Chorover. (2014). Controls of stream water carbon in seasonally snow-covered mountain

catchments: impact of water fluxes, catchment aspect and seasonal processes. *Biogeochemistry* 118(1-3): 273-290. (Effort 90%, Impact factor 3.73).

- **Perdrial, J.N.**, Perdrial N., **Porter C.**, **Vazquez-Ortega A.**, *Leedy J.* and Chorover J. (2014). Experimental assessment of fiberglass passive capillary wick sampler (PCap) suitability for inorganic soil solution constituents, *Soil Science Society of America Journal*, 78, 486-495. (Effort 85%, Impact factor 2.0).

Prior to 2013:

- **Perdrial, J.N.**, N.Perdrial, A. Harpold, X. Gao, **R. Gabor**, *K. LaSharr*, J. Chorover (2012). Impacts of sampling dissolved organic matter with capillary wicks versus aqueous soil extraction. *Soil Science Society of America Journal* (76):2019–2030. (Effort 80%, Impact factor 2.0).
- Chorover J., Troch P.A., Rasmussen C., Brooks P., Pelletier J., Breshears D.D., Huxman T., Lohse K., McIntosh J., Meixner T., Papuga S., Schaap M., Litvak M., **Perdrial J.N.**, Harpold A., and Durcik M. (2011) How Water, Carbon, and Energy Drive Critical Zone Evolution: The Jemez-Santa Catalina Critical Zone Observatory. *Vadose Zone Journal* 10(3): 884-899. (Effort 15%, Impact factor 2.2).
- **Perdrial, J.N.** and L.N. Warr (2011). Hydration behavior of MX80 bentonite in a confined volume system: Implications for backfill design. *Clays and Clay Minerals* 59(6): 640-653. (Effort 80%, Impact factor 1.4).
- N. Perdrial, **Perdrial, J.N.**, J.E. Delphin, F. Elsass, N. Liewig (2010). Temporal and spatial monitoring of mobile nanoparticles in a vineyard soil: evidence of nanoaggregate formation. *European Journal of Soil Science*, **61**, 456-468. (Effort 20%, Impact factor 2.4).
- **Perdrial, J.N.**, L.N. Warr, M-C. Lett F. Elsass and N. Perdrial (2009). Interaction between smectite and bacteria: implications for bentonite backfill in nuclear waste disposal. *Chemical Geology*, 264, 281-294. (Effort 80%, Impact factor 3.7).
- L.N. Warr, **J.N. Berger**, M-C. Lett and M. Kodja (2009). Clay-enhanced bioremediation of marine oil pollution *Applied Clay Science*, 46, 337-345. (Effort 25%, Impact factor 2.3).
- L.N. Warr, **J.N. Berger** (2007). Hydration of bentonite in natural waters: Application of “confined volume” wet-cell X-ray diffractometry. *Physics and Chemistry of the Earth* 32, 247–2. (Effort 40%, Impact factor 1.5).

PEER REVIEWED, INVITED BOOK CHAPTER:

- **Perdrial, J.N.**, Thompson, A., Chorover, J. (2015). “Soil geochemistry in the Critical Zone: Influence on atmosphere, surface- and ground-water composition” in “Principles and dynamics of the Critical Zone”, Houser, C., Giardino, R. (eds) 19: 173-201. (Effort 85%).

NON-PEER REVIEWED PUBLICATIONS:

- **Perdrial, J.N.**, Karwan, D., Harpold, A.A., Wymore, A. (2016). How can we facilitate (international) cross CZO research? Results of a test survey on collaboration with CZO’s in the US (white Paper, effort 80%).
- **Perdrial, J.N.**, MK Amistadi, *K. LaSharr, Rebecca Lybrand, D. Huckle, M. Pohlmann, R. Maxwell, A. Vazquez-Ortega, X. Zapata-Rios, T. Lau*, N. Abramson, *L. Guthridge, D. Bernard, J. Chorover* (2013). CZO Lab Handbook: best lab practices in CZO aqueous geochemistry. (Effort 60%)
- Harpold, A.A., D. Karwan, **J.N. Perdrial**, *J.A. Marshall, J. Driscoll, A. Neal, and C. Phillips* (2013): [Graduate Research Group White Paper, Cross-CZO Research Potential](#) (white paper). (Effort 35%).

CONFERENCE PRESENTATIONS:

Note: graduate students = ***bold italics***, undergraduate students = *italics*.

2020:

National and international meetings:

- **Perdrial J**, Rizzo, D.M., Underwood, K.L., Lee, B., Toolin, R., Seybold, E.C., Harpold, A.A., Boisrame, G., Abbott, B., Li, L., Hamshaw, S., Blouin, M., Walls, L., ***Sterle, G., Bristol, C.,***

Ruckhaus, M., Stewart, B., Chorover, J., Shanley, J. (2020). Critical Zone Network Cluster research: Using Big Data approaches to assess ecohydrological resilience across scales. AGU Fall Meeting, December 1-17, online, talk.

- **Stewart, B.,** Wen, H., Shanley, J.B., Kirchner, J.W., Norris, D., **Adler, T., Bristol, A.,** Harpold, A.A., **Perdrial, J.N.,** Rizzo, D.M., **Sterle, G.,** Underwood, K.L., Li, L. From soil to stream: reading subsurface structure from stream chemistry. AGU Fall Meeting, December 1-17, online, talk.
- **Ryan, K.,** Shanley, J., Taylor, V., Chalmers, A., **Perdrial, J.N.,** Stubbins, A.. Comparing Fluxes of Dissolved Organic Carbon During Throughfall and Stream Events in a Forested Catchment. AGU Fall Meeting, December 1-17, online, poster.
- **Perdrial J,** Adler T, Bristol C, Underwood K, Rizzo D, Wen H, Li L, Harpold A, Sterle G & Hanley J (2020). Combining Complex Systems Analyses with Process Observations to Understand Stream Dissolved Organic Carbon Across Scales. Goldschmidt Conference, virtual, June 21-26.
- Gary Sterle, **J. N. Perdrial,** Thomas Adler, Kristen Underwood, Donna M. Rizzo, Hang Wen, Li Li and Adrian Harpold, (2020). Augmenting CAMELS (Catchment Attributes and Meteorology for Large-sample Studies) with atmospheric and stream water chemistry data. Ecological Society of America virtual meeting, August 3-6.
- Kristen Underwood, John Hanley, Donna M. Rizzo, *Gary Sterle,* Adrian Harpold, Thomas Adler, Li Li, Hang Wen and **J. N. Perdrial,** (2020). Use of machine learning to extract patterns from long-term monitoring data across the US. Ecological Society of America virtual meeting, August 3-6.
- **Caitlin Bristol, Thomas Adler, Lindsey Stinson, Bryan Stolzenburg,** Kristen Underwood, Donna, M. Rizzo, Hang Wen, Li Li, Adrian Harpold, Gary Sterle, James B. Shanley and **J. N. Perdrial,** (2020). Assessing the impact of acidification and recovery on dissolved organic carbon (DOC) mobilization from a snow dominated, forested headwater catchment. Ecological Society of America virtual meeting, August 3-6.
- **Bryn Stewart,** Hang Wen, James B. Shanley, **J. N. Perdrial, Thomas Adler,** Adrian Harpold, Donna M. Rizzo, *Gary Sterle,* Kristen Underwood and Li Li, (2020) Distinct solute export patterns shaped by shallow and deep water chemistry contrasts. Ecological Society of America virtual meeting, August 3-6.

Local meetings:

- *Juozelskis, Siga, Joanne Berger, Korbyn Gehlbach, J. N. Perdrial* (2020) Nitrogen Levels in Franklin County, Vermont Streams Through Agricultural and Forested Settings. UVM student research conference virtual meeting, April 2020.
- *Petty, Julia, E. Seybold, D. Kinkaid, C Adair, A. Schroth, J. N. Perdrial* (2020). Seasonal Nitrogen Cycling in Agricultural Riparian Groundwater. UVM student research conference virtual meeting, April 2020.
- **Adler, Thomas, Caitlin Bristol, Lindsey Stinson,** Kristen Underwood, Donna, M. Rizzo, Hang Wen, Li Li, Adrian Harpold, Gary Sterle, **J. N. Perdrial** (2020) Understanding the Biogeochemical Drivers of Dissolved Organic Carbon Dynamics: A Multiscalar Approach. UVM student research conference virtual meeting, April 2020.
- *Stinson, Lindsey, Adler, Thomas, Caitlin Bristol,* Kristen Underwood, Donna, M. Rizzo, Hang Wen, Li Li, Adrian Harpold, *Gary Sterle J. N. Perdrial* (2020) Testing the effect of solution pH and ionic strength on dissolved organic matter leaching from soils. UVM student research conference virtual meeting, April 2020.
- *Stolzenburg, Bryan, Adler, Thomas, Caitlin Bristol, Lindsey Stinson,* Kristen Underwood, Donna, M. Rizzo, Hang Wen, Li Li, Adrian Harpold, *Gary Sterle, J. N. Perdrial* (2020). Bioavailability of Leachable Dissolved Organic Carbon from Subnival Soils. UVM student research conference virtual meeting, April 2020.

2019:

National and international meetings:

- **Perdrial J, Landsman-Gerjoi M, Lancellotti B,** Seybold E, Kincaid D, Adair C, Schroth A & Wymore A. (2019). Dissolved Organic Matter Biodegradation: How Substrate, Microbial Activity and Environmental Conditions Converge. Goldschmidt Conference, Barcelona, August 18-23, poster.

- Bierman P, Schmidt A, Yvelice Sibello Hernández R, Campbell M, Alejandro Cartas AGUILA4 H, Bolaños Alvarez Y, Guillén Arruebarrena A, Dethier D, Dix M, Massey-Bierman M, García Moya A, **Perdrial J**, Racela J, Corbett L & Alonso-Hernández C (2019). First Chemical and Isotopic Denudation Rate Estimates for Central Cuban Drainage Basins. Goldschmidt Conference, Barcelona, August 18-23, poster.
- Dix, M., Hecht, Z., Bermudez, E. A., Schmidt, A. H., Bierman, P. R., Campbell, M. K., Dethier, D. P., Racela, J., **Perdrial, J.**, Massey-Bierman, M. E., Sibello Hernández, R. Y., Cartas Aguila, H. A., Guillén Arruebarrena, A., García Moya, A., and Alonso-Hernández, C. (2019) Quantifying the effects of organic agriculture in 26 central Cuban rivers using short-lived fallout radionuclides in detrital river sediment. *GSA Abstracts with Programs*, Annual Meeting, Phoenix, AZ. v. 51(5), Abstract 124-5. [doi:10.1130/abs/2019AM-340417](https://doi.org/10.1130/abs/2019AM-340417)
- Bierman, P., Schmidt, A H., Campbell, M. K., Dethier, D. P., Dix, M., Racela, J., **Perdrial, J.**, Massey-Bierman, M. E., Sibello Hernández, R. Y., Cartas Aguila, H. A., Guillén Arruebarrena, A., García Moya, A., and Alonso-Hernández, C. (2019) Central Cuban river waters indicate high rates of chemical weathering whereas low nutrient loads reflect sustainable agriculture practices. *GSA Abstracts with Programs*, Annual Meeting, Phoenix, AZ. v. 51(5), Abstract 124-2. [doi:10.1130/abs/2019AM-336512](https://doi.org/10.1130/abs/2019AM-336512)
- Dustin W Kincaid, Erin Cedar Seybol, Carol Adair, William B Bowden, **J.N.Perdrial**, Matthew Vaughan and Andrew W. Schroth. (2019). Event-scale riverine loading of nitrogen and phosphorus: Impacts of land use, seasonality, and antecedent conditions on N:P export ratios. AGU Fall Meeting, December 9-13, DC. poster
- Erin Cedar Seybold, Dustin W Kincaid, **B. Lancellotti**, Carol Adair, **J.N.Perdrial** and Andrew W. Schroth. Effects of rain on snow events on runoff generation and nutrient export from forested and agricultural catchments in northern Vermont. AGU Fall Meeting, December 9-13, DC. talk
- **B. Lancellotti**, Carol Adair, **J.N.Perdrial**, Erin Cedar Seybold, Dustin W Kincaid and Andrew W. Schroth. Spring Snowmelt: a 'Hot Moment' for Soil Denitrification in Riparian Areas? AGU Fall Meeting, December 9-13, DC, poster
- Underwood, K., Rizzo, D.M., **Perdrial, J.N.**, Li, L., Wen, H., **Adler, T.**, Harpold, A., *Sterle, G.*, Hanley, J., (2019, June). Application of machine-learning tools to extract patterns in long-term DOC monitoring data: an integrated, multi-scale approach. Poster presented at: Gordon Research Conference, Catchment Science: Interactions of Hydrology, Biology, and Geochemistry, Transcending the Uniqueness of Place in the Age of Big Data, Proctor Academy, Andover, NH.
- **Adler, T., Perdrial, J.N.**, Underwood, K., Rizzo, D., Li, L., Wen, H., Harpold, A., *Sterle, G.*, Shanley, J., **Ryan, K.** (2019, June). The Fate and Transport of DOC as a Response to Changes in Soil Solution Chemistry. Poster presented at: Gordon Research Conference, Catchment Science: Interactions of Hydrology, Biology, and Geochemistry, Transcending the Uniqueness of Place in the Age of Big Data, Proctor Academy, Andover, NH.
- Wen, H., **Perdrial, J.N.**, Bernal, S., Abbott, B., Dupas, R., Godsey, S., Harpold, A., Rizzo, D., Underwood, K., **Adler, T.**, Hale, R., *Sterle, G.*, Li, L. (2019, June). Temperature controls production but hydrology controls export of dissolved organic carbon at the catchment scale. Poster presented at: Gordon Research Conference, Catchment Science: Interactions of Hydrology, Biology, and Geochemistry, Transcending the Uniqueness of Place in the Age of Big Data, Proctor Academy, Andover, NH.
- Li, L., Wen, H., **Perdrial, J.N.**, Abbott, B., Harpold, A., Rizzo, D., Underwood, K., **Adler, T.**, *Sterle, G.* (2019, June). Catchments as complex systems, catchment as simple systems: harvesting the power of hydrobiogeochemical models integrating data, processes, and disciplines. Poster presented at: Gordon Research Conference, Catchment Science: Interactions of Hydrology, Biology, and Geochemistry, Transcending the Uniqueness of Place in the Age of Big Data, Proctor Academy, Andover, NH.
- Harpold, A., *Sterle, G.*, Li, L., Wen, H., **Adler, T.**, Underwood, K., Rizzo, D.M., **Perdrial, J.N.** (2019, June). When Does Changing Snow Lead To Changing Streamflow? A Multi-Observation Approach to Investigate Snow-Dominated Western U.S. Catchments. Poster presented at: Gordon Research Conference, Catchment Science: Interactions of Hydrology, Biology, and Geochemistry, Transcending the Uniqueness of Place in the Age of Big Data, Proctor Academy, Andover, NH.

- **Perdrial, J.N., Adler, T.,** Underwood, K., Rizzo, D., Li, L., Wen, H., Harpold, A., *Sterle, G.* (2019, June). Collaborative research on stream dissolved organic carbon: a test case for integrative modelling across scales. Poster presented at: Gordon Research Conference, Catchment Science: Interactions of Hydrology, Biology, and Geochemistry, Transcending the Uniqueness of Place in the Age of Big Data, Proctor Academy, Andover, NH.
- *Sterle, G., Harpold, A., Perdrial, J.N.,* Li, L., Wen, H., **Adler, T.,** Underwood, K., Rizzo, D.M. (2019, June). CAMELS-CHEM: Developing a hydrochemistry dataset for large sample cross-catchment analyses. Poster presented at: Gordon Research Conference, Catchment Science: Interactions of Hydrology, Biology, and Geochemistry, Transcending the Uniqueness of Place in the Age of Big Data, Proctor Academy, Andover, NH.

2018:

National and international meetings:

- **Perdrial, J.N., Cincotta, M., Armfield, J.R., Adler, T.,** Shanley, J., Underwood, K.L., Rizzo, D.M., Wen, H., Li, L., Harpold, A., *Sterle, G.* (2018). Combining long-term observations with experiments to test hypotheses on stream water dissolved organic carbon dynamics at the Sleepers River Research Watershed. AGU Fall Meeting, December 10-15, DC, talk.
- **Adler, T., Perdrial, J.N.,** Underwood, K.L., Rizzo, D.M., Li, L., Wen, H., Harpold, A., *Sterle, G.* (2018). Understanding the importance of soil aggregate destabilization as mechanism of DOC release in two Northeastern headwater catchments. AGU Fall Meeting, December 10-15, DC, poster.
- Wen, H., Li, L., **Perdrial, J.N.,** Abbott, B., **Adler T.,** Bernal, S., Dupas, R., Godsey, S., Hale, R., Harpold, A., Rizzo, D.M., *Sterle, G.,* Underwood, K.L. (2018). Hydrologic Control of Catchment-Scale Dissolved Organic Carbon (DOC) Dynamics. AGU Fall Meeting, December 10-15, DC, poster.
- Underwood, K.L., Rizzo, D.M., **Perdrial, J.N,** Li, L., Wen, H., **Adler, T.,** Harpold, A., *Sterle, G.* (2018). Application of machine-learning tools to extract patterns in long-term DOC monitoring data: an integrated, multi-scale approach. AGU Fall Meeting, December 10-15, DC. talk
- Perdrial, N., **Armfield, J., Reeder, G., Gagnon, A.,** Rampe, E., **Perdrial, J.N.** (2018). The Martian Critical Zone: Concept and Experimental Example. Goldschmidt Conference, Boston, MA August 12-17. (peer reviewed).
- **Juice, S.M.,** Adair, C., Schaberg, P., Hawley, G., Kosiba, A., Waite, C., Wang, D., **Perdrial, J.N.** (2018). Interacting effects of climate change and soil characteristics on carbon and nitrogen loss from northern hardwood forests. Ecological Society of America Meeting, New Orleans, August 5-10 (peer reviewed talk).
- **MacNeille, R. B.,** Lohse, K., Godsey, S., Derryberry, D., McCorkle, E., Parson, S., Baxter, C., **Perdrial, J.N.** (2018). Stream structure at low flow: biogeochemical patterns of intermittent streams over space and time. Society of Freshwater Sciences Annual Meeting, Detroit, MI, May 20-25 (peer reviewed poster).
- **Cincotta, M., Perdrial, J.N., Shavitz, A., Landsman, M. Liebenson, A.,** Shanley, J. (2018). The soil aggregates play in the generation of dissolved organic carbon: a case study at Sleepers River watershed. GSA meeting Northeastern section, Burlington, March 18-20 (peer reviewed talk).
- *Shavitz, A., Perdrial, J.N., Cincotta, M., Armfield, J.,* Shanley, J. (2018). Influence of soil chemistry on carbon and nutrient liberation in the Sleepers River watershed. GSA meeting Northeastern section, Burlington, March 18-20 (peer reviewed poster).
- **Armfield, J., Gagnon, A., Perdrial, J., Ehrenkranz, J.,** Perdrial, N., **Cincotta, M.,** Ross, D., Shanley, J., Bailey, S., Ryan, P. (2018). Weathering dynamics in the acid impacted Sleepers River watershed: combining observations of stream and soil data. GSA meeting Northeastern section, Burlington, March 18-20 (peer reviewed poster).
- **Landsman-Gerjoi, M., Lancellotti, B., Beisel, C., Cincotta, M.,** Adair, C., Schroth, A., **Perdrial, J.N.** (2018). Incubations vs. fluorescence spectroscopy: a field and lab study on DOM bioavailability. GSA meeting Northeastern section, Burlington, March 18-20 (peer reviewed poster).
- **Ryan, K.,** Shanley, J., Stubbins, A., **Perdrial, J.,** Raymond, P., Hosen, J. (2018). In-situ optical sensors reveal hot moments of dissolved organic matter exports in Sleepers River Research

Watershed, Vermont. GSA meeting Northeastern section, Burlington, March 18-20 (peer reviewed talk).

Local meetings:

- *Follansbee, B., Pinder, G., **Perdrial, J.N.*** (2018). A Geochemical Analysis on Lake Iroquois Groundwater Seepage: Is There a Relationship between Cations and Phosphorus? UVM Student Research Conference, Burlington VT, April 17th (not peer reviewed).
- *Beisel, C., **Landsman, M., Perdrial, J.N.*** (2018). The Impact of Clay Structure on Carbon Bioavailability. UVM Student Research Conference, Burlington VT, April 17th (not peer reviewed).
- *Mecca, S., **Perdrial, J.N., Cincotta, M.,** Seybold, E., **Lancellotti, B.,** Schroth, A., Adair, C. (2018). Effect of ionic strength on soil water extracts from BREE wetlands. EPSCoR CWDD symposium, Burlington, VT, March 20th (not peer reviewed).*
- *Adler, T., **Perdrial, J.N.,** Schroth, A., Adair, C. (2018). Optimizing Fluorescence Spectroscopy Methods in DOC Analysis. EPSCoR CWDD symposium, Burlington, VT, March 20th (not peer reviewed).*
- ***Perdrial, J.N., Lancellotti, B.,** Seybold, E., **Landsman-Gerjoi M.,** Anderson, B., *Beisel, Blum, E., C., Collins, A., Couderc, A., Czyzyk, K., Libenson, A., May, N., McCarthy, K., Quesnell, T., Quock, M., Reilly, M., Ryan, S., **Cincotta, M.,** Adair, C., Schroth, A. (2018). EPSCoR soil monitoring network as classroom: preliminary data on the biogeochemistry of soils and streams. Lake Champlain Research Conference, January 8-9, Burlington VT (not peer reviewed).**

2017:

National and international meetings:

- ***Lancellotti, B.,** Ross, D., Adair, C., Schroth, A., **Perdrial, J.N.*** (2017). Quantifying Phosphorus Retention in Soils of Riparian Buffers Influenced by Different Land Use Practices, AGU Fall meeting, San Francisco, December 11-15 (peer reviewed poster).
- ***Perdrial, J.N., Landsmann, M., Cincotta, M.,** Adair, C., (2017). Do clay minerals affect dissolved organic matter bioavailability in batch experiments? Goldschmidt Conference, Paris, France, August 13 – 19 (peer reviewed talk).*
- ***Perdrial, J.N.*** (2017). Carbon dynamics from a Critical Zone perspective: interfaces at the catchment and molecular scale. 1st Geobiology Society Conference, Banff, Canada, June 11-14 (invited talk).

Local meetings:

- *Ehrenkranz, J., **Armfield, J., Cincotta, M., Perdrial, J.N.*** (2017). Mapping changes in soil composition due to the recovery from acidification: a combined lab and field study. Student Research Conference, Burlington, VT, April 27 (not peer reviewed).
- ***Landsmann-Gerjoi, M., Cincotta, M., Perdrial, J.N., C. Adair*** (2017). Mapping changes in soil composition due to the recovery from acidification: a combined lab and field study. Student Research Conference, Burlington, VT, April 27 (not peer reviewed).
- *Clark, K., Shanley, J., Stallard, R., Scholl, M., Plante, A., **Perdrial, J.N.,** Murphy, S., Perdrial, N., Gonzalez, G., McDowell, B. (2017). Impacts of extreme climate events - drought and hurricane - on carbon and nitrogen in streams draining the Luquillo Mountains. AGU Chapman Conference, Puerto Rico, January 22-27 (peer reviewed poster).*

2016:

National and international meetings:

- *Clark K., Shanley J., **Perdrial J.N.,** Plante A.F., McDowell W., (2016). Tropical river suspended load and solute dynamics in storms within an extreme drought, Luquillo Critical Zone Observatory, Puerto Rico. AGU Fall Meeting, December 11-16 (peer reviewed talk).*
- ***Perdrial, J.N., Hampsch, A.,** Adair, C., (2016). Bioavailability of Carbon of a Vermont River Corridor is a Function of Land cover. Goldschmidt Conference, June 26 – July 1, Yokohama, Japan (peer reviewed talk).*

Local meetings:

- ***Landsmann-Gerjoi, M., Perdrial, J.N.*** (2016). Does Dissolved Organic Matter Interaction with Clay Minerals affect C Bioavailability? UVM Student Research Conference, April 28, Burlington, VT (not peer reviewed).

- *Evans, I., Hampsch, A., Cincotta, M., Perdrial, J.N.* (2016). Does sample preparation impact carbon absorbance and fluorescence properties of soil leachate? Vermont Geological Survey Student Conference, April 30, Middlebury, VT (not peer reviewed).

2015:

National and international meetings:

- Gabor, R., Brooks, P. **Perdrial, J.** (2015). From Soil to Surface Water: a Meta-Analysis of Catchment-Scale Organic Matter Production and Transport. AGU Fall Meeting, December 14-18 (invited talk).
- **Perdrial, J.N.**, S. Hernandez-Ruiz, *T. Lau, A. Hampsch, J. Chorover* (2015). How important are the lower fluorescence excitation wavelengths for understanding the dynamics of Critical Zone soil solution and stream water carbon? Gordon Conference on Catchment Science, June 13-19, Andover NH (peer reviewed poster).
- **Hampsch, A., J.N. Perdrial, L. Jones, D. Jaeger, A. Wetz** (2015). Using parallel factor (PARAFAC) analysis to assess carbon heterogeneity in Vermont's floodplains: Fingerprinting dissolved organic matter by land cover. Gordon Conference on Catchment Science, June 13-19, Andover NH (peer reviewed poster).

Local meetings:

- **Caulk, R., Perdrial, J.**, Perdrial, N., Ghazanfari, E. (2015). Experimental method for the evaluation of permeability change within Enhanced Geothermal System fractures. NASA VSGC, September 16, University of Vermont, VT (not peer reviewed).

2014:

National and international meetings:

- **Perdrial, J.N.**, Dolan, A., *Kempsley, M.* (2014). Do Vermont's floodplains constitute an important source of labile carbon? AGU Fall meeting, San Francisco, December 15-19 (peer reviewed poster).

Local meetings:

- *Christie, S., Bonner, E., Caulk, R., Dolan, A. Duggan, S. Soderstrom, E., Perdrial, J.* (2014). Assessing Carbon and Metal Characteristics of Connecticut River Floodplain Sediments. UVM Student Research Conference, April 16th (not peer reviewed).
- *Loughlin, C., Perdrial, J.N.* (2014). Wetlands in the Connecticut River Floodplain: an important carbon source? UVM Student Research Conference, April 16th (not peer reviewed).

2013:

National and international meetings:

- **Perdrial, J.N.**, Brooks, P.D., **Swetnam, T.**, Lohse, K.A., Rasmussen, C. Harpold, A.A., Litvak, M.E., **Broxton, P.A.**, Mitra, B. **Condon, K., Huckel, D., Vazquez-Ortega, A., Lybrand, R.A., Holleran, M. Orem,** C.A., Meixner, T, Chorover, J. (2013). Do fire disturbances account for missing C in snow dominated headwater catchments in NM? AGU Fall Meeting, San Francisco, December 9-13 (peer reviewed poster).
- Brooks, P.D., **Biederman, J.A., Condon, K.**, Chorover, J., McIntosh, J.C., Meixner, T, **Perdrial, J.N.** (2013). A cross-site comparison of factors controlling streamwater carbon flux in western North American catchments (Invited). AGU Fall Meeting, San Francisco, December 9-13 (invited poster).
- Chorover, J., **Perdrial, J.N.**, Field, J., Pelletier, J., **Pohlmann, M.**, Losleben, M., *Lasharr, K., Amistadi, MK., Brooks, P.D., McIntosh, J., Meixner, T., Gallery, R., Rich, V., Rasmussen, C., Schaap, M., Breshears, D.* (2013). Fluid Chemistry Dynamics Before and After Fire in the Jemez River Basin Critical Zone Observatory. AGU Fall Meeting, San Francisco, December 9-13 (peer reviewed talk).
- Chorover, J., P. Brooks, A. Harpold, M. Litvak, J. McIntosh, J. Pelletier, **J.N. Perdrial**, P. Troch, C. Rasmussen. (2013). Critical zone evolution by jerks. Goldschmidt Conference, Florence, Italy, August 24-30 (invited keynote)
- **Perdrial, J.N., Stielstra, C., Lybrand, R. Swetnam, T.,** Mitra, B., **Huckel, D.**, Harpold, A., J. McIntosh, T. Meixner A. **Vasquez-Ortega, K. Condon,** P. Brooks, J. Chorover. (2013). Closing

the Carbon balance for snow dominated headwater catchments in the US SW. Gordon Conference for Catchment Science, Andover NH, June 16-21 (peer reviewed poster).

Prior to my appointment at UVM:

National and international meetings:

- Harpold, A., P. Brooks, J. **Perdrial, J.N.**, McIntosh, T. Meixner, **X. Zapata**, and J. Chorover (2012). Quantifying variation in solute sources and nutrient cycling in montane headwater catchments. AGU, Fall Meeting 2012, December 3-7 (peer reviewed talk).
- *Prescott-Smith, J.*, **Perdrial, J.N.**, *Pohlmann, M.*, Perdrial, N., Chorover, J. (2012). Characterizing particulate and dissolved matter in a small forested headwater stream during a monsoon storm. AGU, Fall Meeting 2012, December 3-7 (peer reviewed poster).
- **Pohlmann, M.**, **Perdrial, J.N.**, *Prescott-Smith, J.*, Amistadi, MK., Troch, P., Chorover, J. (2012). Resolving dissolved vs. colloidal and particulate weathering product forms across the storm hydrograph. AGU, Fall Meeting 2012, December 3-7 (peer reviewed poster).
- **C.M. Porter**, J.C. McIntosh, L.A. Derry, T. Meixner, J. Chorover, P.D. Brooks, C. Rasmussen, **J.N. Perdrial** (2012). Determining Solute inputs to soil and stream waters in a seasonally snow-covered mountain catchment in northern New Mexico using Ge/Si 87Sr/86Sr and ion chemistry. AGU Fall Meeting 2011, December 3-7 (peer reviewed poster).
- **A. Vazquez-Ortega, J.N. Perdrial**, A.A. Harpold, **X. Zapata-Rios**, C. Rasmussen, J.C. McIntosh, M. Schaap, J.D. Pelletier, MK. Amistadi, J. Chorover. (2012). Rare Earth Elements as reactive tracers of biogeochemical weathering in the Jemez River Basin Critical Zone Observatory. AGU Fall Meeting 2011, December 3-7 (peer reviewed poster).
- D.G. Zaharescu; K. Dontsova, C.I. Burghilea, J. Chorover, R. Maier, **J. N. Perdrial** (2012). Life on rock. Scaling down biological weathering in a new experimental design at Biosphere-2. AGU Fall Meeting 2011, December 3-7 (peer reviewed poster).
- **J.N. Perdrial**, C. Rasmussen, J.C. McIntosh, **X. Zapata-Rios**, A.A. Harpold, **A. Vazquez-Ortega, C. Porter**, P.D. Brooks, T. Meixner, B. Mitra, P.A. Troch, J. Chorover (2012) Carbon and Water: the Energy for weathering and chemical denudation. American Geophysical Union, Fall Meeting 2012, December 3-7 (peer reviewed talk).
- **Perdrial, J. N.**, P. Brooks, J. Chorover, **K. Condon**, A. Harpold, **M. Holleran, D. Huckle, R. Lybrand**, P. Troch, J. McIntosh, T. Meixner, B. Mitra, **M. Pohlmann**, C. Rasmussen, **T. Swetnam, A. Vazquez-Ortega, X. Zapata-Rios** (2012). Do water and carbon fluxes control chemical denudation? Goldschmidt, Montreal. June 24-29 (peer reviewed talk).
- **Perdrial, J.N.**, **Vasquez-Ortega, A.**, McIntosh, J., Harpold, A., **Porter, C.**, **Zapata-Rios, X.**, Guthridge, L., Brooks, P.D., Chorover, J. (2012). Stream water organic matter characteristics after the Las Conchas wildfire: perspective from the critical zone. GSA meeting Rocky Mountain section, ABQ, May 15-17 (peer reviewed talk).
- **J.N. Perdrial**, N. Perdrial, A. Harpold, A. Peterson, **A. Vasquez**, J. Chorover (2011). Probing dissolved organic matter in the critical zone: a comparison between in situ sampling and aqueous soil extracts. AGU Fall Meeting 2011, December 5-9 (peer reviewed poster).
- **J.N. Perdrial**, P. Brooks, J. Chorover, A. Harpold, **I. Heidebuechel**, J. McIntosh, **J. Ray, X. Zapata-Rios** (2011). Impact of water sources & flow paths on carbon in streams of seasonally snow-covered catchments Goldschmidt Conference, Prague, August 14-19 (peer reviewed talk).
- Zaharescu, D., Dontsova, K. Chorover, J., Huxman, T. Maier, R., **Perdrial, J.N.** (2011). Effect of Plant-Microbial Associations on Weathering of Basalt, Granite, Schist, and Rhyolite. Goldschmidt Conference, Prague, August 14-19 (peer reviewed poster).
- **J.N. Perdrial**, J. McIntosh, P. Brooks, J. Chorover (2010). DOM as a potential tracer for in-stream processes in small mountain catchments (JRB-SCM Critical Zone Observatory). AGU Fall Meeting 2010, San Francisco, December 13-17 (peer reviewed talk).
- **E. Dolan, J.N. Perdrial, A. Vázquez-Ortega, S. Hernández-Ruiz**, J. Chorover (2010). Testing the application of Teflon/quartz soil solution samplers for DOM sampling in the Critical Zone: Field and laboratory approaches. AGU Fall Meeting 2010, San Francisco, December 13-17 (peer reviewed poster).
- **J. Ray**; J.C. McIntosh; **J.N. Perdrial**; P.D. Brooks; J. Chorover; C. Rasmussen; T. Meixner (2010) Sources and Cycling of Carbon in Two Semi-Arid Catchments, Valles Caldera Preserve, NM:

Insights From Carbon Isotopes. AGU Fall Meeting 2010, San Francisco, December 13-17 (peer reviewed poster).

- **J.N. Berger**, L.N. Warr, M-C. Lett and N. Perdrial (2007). Monitoring smectite hydration in the presence of bacteria. 44rd Annual Meeting of the Clay Mineral Society, Santa Fe, New Mexico, USA. June 2-6 (peer reviewed talk).
- **J.N. Berger**, L.N. Warr, M-C. Lett and N. Perdrial (2007). Effect of bacteria on the water storage and retention capacity of swelling clays. EGU General Assembly, Vienna, April 15-20 (peer reviewed talk).
- L.N. Warr, **J.N. Berger**, M-C. Lett, M. Khodja (2007). An experimental study of clay bacterial interaction in Prestige oil. . EGU General Assembly, Vienna, April 15-20 (peer reviewed poster).
- **J.N. Berger**, L.N.Warr, M-C.Lett, N.Perdrial. Smectite hydration, solution chemistry and bacterial activity: interactions in a confined volume system (2006). Bridging Clays, 43rd Annual Meeting of the CMS-4ème Colloque du GFA, Ile d'Oleron. (peer reviewed talk).
- **J.N. Berger**, L.N.Warr, M-C.Lett N.Perdrial (2006). Monitoring the effect of swelling clay on metal reducing bacteria. EGU General Assembly, Vienna, April 2-7 (peer reviewed poster).
- **J.N. Berger**, L.N. Warr, M-C. Lett, J. Duplay (2005). The Influence of *Shewanella Putrefaciens* on the Swelling Behavior of Nontronite in Solution. Annual Meeting of the Clay Mineral Society, Burlington, VT, June 11-15 (peer reviewed poster).

GRANTS:

2020:

- **NSF- EAR, \$3,199,116** (total intended award), \$622,456 (obligated amount for 2020). *“Collaborative Research: Network Cluster: Using Big Data approaches to assess ecohydrological resilience across scales”* **Lead-PI.**

2019:

- **Vermont Water Center, \$62,562.** *“Identifying drivers of change in denitrification capacity of riparian soils during the spring snowmelt/runoff period”.* **Co-PI.** This research proposes to investigate the role of microorganisms in liberating algal bloom-causing nutrients from soils.
- **NSF-SAVI** (Science Across Virtual Institutes) \$10,000. *“Big data exploration of water quality and Critical Zone (CZ) science: A one-day international workshop to develop strategies for US and European CZ studies”*, **Lead-PI.**
- **NSF-EAR, \$29,727** Supplement to *“Collaborative Research: Combining Complex Systems Tools, Process-Based Modelling and Experiments to Bridge Scales in Low Temperature Geochemistry”*, **Lead-PI.**

2018:

- **CAS-FRSA** (The College of Arts and Sciences Faculty Research Support Awards, FY 2018-2019), **\$4954.** *“Will you become a greenhouse gas? Testing fluorescence spectroscopy as tool to predict the fate of carbon in natural waters”*, **lead-PI.**

2017:

- **NSF-GG:** 2018-2021. **\$300,204.** *“Collaborative Research: Combining Complex Systems Tools, Process-Based Modelling and Experiments to Bridge Scales in Low Temperature Geochemistry”*, **lead-PI.**
- **VT-NASA EPSCoR** Faculty Research Awards: 2017/2018. **\$13,249.** *“Expanding the concept of the Critical Zone from Terrestrial to Planetary Systems: What can we learn about weathering on Mars?”*, **lead-PI.**
- **VTSGC** Graduate Research Fellowship Competition: 2017/2018. **\$26,500.** *“Soil Aggregates: What role do they play in the generation of dissolved organic carbon?”*, **lead-PI.**
- **NSF-EPSCoR:** 2016-2021, VT EPSCoR Research Infrastructure Improvement (RII). **\$20,000,000.** *“Basin Resilience to Extreme Events (BREE)”*, **co-I.** Note: for this specific program the designation “co-PI” does not exist but my contribution for this project is equivalent.
- **CAS-FRSA** (The College of Arts and Sciences Faculty Research Support Awards, FY 2017-2018), **\$3987.** *“Do soil organo-mineral aggregates drive stream water carbon fluxes?”*, **lead-PI.**

2015:

- **NSF-SAVI**, (Science Across Virtual Institutes) workshop of the CZO National Office: 2015. **\$10,350**. “Critical Zone Resiliency and Disturbance: A One Day Early Career Workshop To Develop Testable Hypotheses Using Common X-CZO Measurements”, **co-PI**.

2014:

- **CAS-FRSA** (The College of Arts and Sciences Faculty Research Support Awards, FY 2014-2015), **\$4998.16**. “Carbon, nutrient and contaminant metal release from old vs. young near-stream sediments during flooding”, **lead-PI**.

2013:

- **NSF**: 2013-2018, EAR-1331408, **\$4,900,000**, “Transformative Behavior of Water, Energy and Carbon in the Critical Zone: II. Quantifying the Interactions between Long and Short Term Processes that Control Critical Zone Services”, **co-author**.

2012:

- **SAHRA** 2012-2013 (Sustainability of semi-arid hydrology and riparian areas), **10,000\$**, “Influence of water availability on carbon cycling in seasonally-snow covered catchments” **co-author**.

2010:

- **NSF-GG**: 2010-2013, **\$424,000**, “Plant-microbe-mineral interaction as a driver for rock weathering and chemical denudation”, **co-author**.

WORKSHOP PARTICIPATION AND ORGANIZATION

I was invited to participate in several national and international disciplinary workshops where I built new collaborations. Towards the same goal I also (co-)organized several workshops and early career events.

- **2019:**
 - Science communication workshop, Alan Alda Center for Communicating Science, Burlington VT (04/04/2018), **participant** (invited).
 - **NSF-SAVI** (Science Across Virtual Institutes). “Big data exploration of water quality and Critical Zone (CZ) science: A one-day international workshop to develop strategies for US and European CZ studies”, (**organizer**).
- **2018:** Science communication workshop, Alan Alda Center for Communicating Science, Burlington VT (04/04/2018), **participant** (invited).
- **2017:** Science communication workshop, Alan Alda Center for Communicating Science, Burlington VT (02/06-02/07/2017), **participant** (invited).
- **2016:**
 - NSF Science Across Virtual Institute (SAVI) sponsored early career networking meeting “Towards a Global Critical Zone Network: International Early Career Meeting in Yokohama”, Goldschmidt Conference, Yokohama (06/29/2016), **co-organizer**.
 - NSF Critical Zone Observatory Network Reverse Site Visit “Symposium on CZ research: the next generation” Arlington, VA, **presenter** (invited).
 - Luquillo CZO All hands meeting Luquillo, PR “Investigating controls on stream water carbon dynamics in varied climates: Luquillo as endmember of a CZO climosequence?” (06/06-06/08/2016), **presenter** (invited).
- **2015:**
 - NSF workshop: “Sino-U.S. Critical Zone Workshop on collaborations”, Guiyang (10/05-10/11/2015), **participant** (invited).
 - NSF Science Across Virtual Institute (SAVI) funded Early Career Scientist Workshop “Critical Zone Resiliency and Disturbance: A One Day Early Career Workshop To Develop Testable Hypotheses Using Common X-CZO Measurements”, University of New Hampshire (06/13-06/14/2015), **co-organizer**.
- **2014:** NSF workshop “The Role of Reactive Transport Models in Biogeochemical Sciences”, Washington DC (04/13-04/15 2014), **participant** (invited).

- **2013:** NSF workshop "Engaging the Critical Zone community to bridge long tail science with big data", University of Delaware (01/22-01/23 2013), **participant** (invited).

NON-SCHOLARLY CONTRIBUTIONS AND OUTREACH:

2020:

- **Cyber seminar** (30 minutes): presenter for the CZRCN "Expanding Critical Zone Science by integrating new researchers": <https://www.youtube.com/watch?v=rMIX9G06V6I&feature=youtu.be>.
- **News articles** on the new Critical Zone collaborative network cluster:
 - <https://vtcynic.com/uncategorized/critical-zone-team-awarded-3-2-million/>
 - <https://www.uvm.edu/cas/news/professor-uvms-geology-department-leads-new-32m-study-earths-critical-zone>

2019:

- **Radio interview** (30 minutes) with Scott Campitelli on WBTV, a local radio station where we showcased the importance of interdisciplinary work. <https://epscor.w3.uvm.edu/2/node/4680>

2018:

- **Radio interview** (30 minutes) with Keith Pannell from Science Studio, a radio show featuring the "ever progressing world of science", on how soils and water interact to influence stream water chemistry (available here: <http://ktep.org/programs/science-studio>, aired 02/18/2018).
- **Community outreach** to the Sustainability Academy at Lawrence Barnes, a minority serving elementary school in Burlington, VT to the module on "Land and Water". Activities included data collection and data recording, viewing part of the documentary saving our waters" and discussing how water changes while moving through our landscape (01/11/2018).

2017:

- **Documentary** in collaboration with Vermont PBS and EPSCoR entitled "Saving our Waters". I showed a newly installed soil sensor network and explained the effect of soils on stream and lake water quality (available here: <https://www.vermontpbs.org/water/>).

Prior to my appointment at UVM in 2013:

- **Newspaper article** from the Arizona Daily Star on the Arizona Critical Zone Observatory entitled "Catalina's rock: Life's foundation" (available here: https://tucson.com/news/science/catalinas-rock-life-s-foundation/article_7b8c3009-5d7f-53d0-9f0b-724de5200eb8.html, 10/28/2012).
- **Newspaper article** from the Arizona Daily Star on the Arizona Critical Zone Observatory entitled "Living in, discovering the Critical Zone" (available here: https://tucson.com/special-section/living-in-discovering-the-critical-zone/article_01876a29-8c56-5263-8f84-755be8f04866.html, 11/14/2010).

DIVERSITY, EQUITY AND INCLUSION WORK:

- Member of the diversity committee of the GUND institute (since 12/2020).
- Facilitator of book club "White Fragility-why it's so hard for White people to talk about racism" for graduate students in Geology (2020 - ongoing).
- Facilitator of book club "White Fragility-why it's so hard for White people to talk about racism" for faculty in Geology (2020 - ongoing).
- Lead of The education and outreach program of CZCN "Partners for the co-development of education programming in Earth and Data Science", a growing collaboration between JSU and UVM faculty in research and teaching (2020 - ongoing).
- CTL workshop participant and discussion facilitator for "Cuts: Responding to Student Climate Concern", a Theater Performance and Discussion by the University of Michigan Center for Research on Learning and Teaching Players (2019).
- Workshop participant "intercultural competencies" led by Leeva Chung, UVM (2019).
- Participant in EPSCoR undergraduate mentoring workshop with the Center for Workforce Development and Diversity (2016-2019)

INVITED LECTURES AND PRESENTATIONS:

- **2020:**
 - Cyber symposium for the Critical Zone Research Coordination Network and introduced project of stream water DOC across scales (2020). Find the recording [here](#).
- **2018:**
 - Department of Geosciences, University of Massachusetts Amherst, "The acidified Critical Zone recovers: observations from long-term stream data, soils and experiments" (10/12/2018).
 - GUND Institute, University of Vermont, "Biosphere meets Hydrosphere meets Geosphere: A Closer Look at Carbon Dynamics" (02/02/2018).
 - NASA Johnson Space Center project meeting Houston TX. "Expanding the concept of the Critical Zone from Terrestrial to Planetary Systems: What can we learn about weathering on Mars?" (03/30/2018).
- **2017:** Department of Geology, Colby College: "Carbon Dynamics from a Critical Zone Perspective" (10/27/2017).
- **2014:** Department of Geology, Middlebury College: "How does Critical Zone carbon respond to global change: examples from the northeastern and southwestern U.S." (11/14/2014).

TEACHING INTERESTS:

I am interested in teaching Earth surface processes in an interdisciplinary setting (e.g., including geology, hydrology, soil science, ecology, mineralogy and biology) at all levels from first year to graduate students. My teaching philosophy is rooted in "Universal Design for Learning" (UDL) which aims to provide equal opportunity for all students to succeed. I continue to improve my teaching skills through peer feedback, student feedback and through professional development. Since beginning teaching at UVM I received one award in excellence in teaching and was nominated for two more.

Courses:

GEOL095: Climate Change and Sustainability, intro-level undergraduate (FWIL)
GEOL110: Earth Materials with lab, mid-level undergraduate (SU)
GEOL135: Environmental Geochemistry with lab, mid-level undergraduate
GEOL235: Geochemistry of Natural Waters, upper-level undergraduate
GEOL371: Advanced Biogeochemistry, graduate-level
GEOL197/198: Research in Geology (see undergraduate research under "Mentoring")
ENSC160: Pollutant Movement in Air, Land & Water (Sabbatical replacement, 2020).

Teaching-relevant professional development and awards:

- Teaching online summer boot camp (remote, 2020).
- CTL book club and guided discussions "Why they can't write", on the challenges of current instruction on writing (2019).
- Workshop on SoTeL (Introduction to the Science of Teaching and Learning, 2019).
- "Designing for Learning Program", Center for Teaching and Learning, UVM (2018).
- "Building resilience in our students", Faculty development day, (10/10/2016).
- "First Year Writing Institute" for instructors of teacher advisor program courses (2014).
- "UVM Climate Symposium" to elevate climate change literacy through service learning (2014).
- "Pedagogical Program for Newly hired TT faculty" Center for Teaching and Learning (2013)
- Sustainability Fellowship Program (2013).
- "Early Career in Geosciences: Teaching, research and Managing your Career" NSF Workshop (2013).

2018: Nomination for the Kroepsch-Maurice Excellence in Teaching Award (pending).

2017: Nomination for the Kroepsch-Maurice Excellence in Teaching Award.

2014: Graduate Student Senate Award for Excellence in Teaching.

MENTORING:

I advise many undergraduate and MS students (occasionally PhD students) in my laboratory. All students conduct original research, receive training in geochemical lab and field methods, analytical techniques, data analysis and present their results at local, national and international meetings. Offering opportunities for minoritized groups and supporting women in STEM is very important to me and I was successful in attracting students from these groups (indicated with an asterisk).

PhD student advising:

2017-2021: Brittany Lancellotti (co-advised)*
2009-2013: Angelica Vazquez-Ortega (co-advised, University of Arizona) *

MS student advising in the Geology Department:

2020-2022: Manya Ruckhaus*
2019-2021: Caitlin Bristol*
2018-2020: Thomas Adler
2017-2019: Max Landsman*
2016-2018: Malayika Cincotta*
2016-2018: Jesse Armfield
2014-2016: Alyson Hampsch*

Undergraduate research advising:**2020:**

- Lindsey Stinson, Chemistry, University of Vermont*
- Bryan Stolzenburg, ENSC, University of Vermont.

2019:

- Lindsey Stinson, Chemistry, University of Vermont*
- Sarah Powers, Geology, University of Vermont*.
- Pamela Garcia, University of Puerto Rico, Puerto Rico, EPSCoR Intern*.
- Jack Goldman, University of Vermont, EPSCoR Intern.

2018:

- Carli Beisel, Environmental Science, University of Vermont. *
- Brandon Follansbee, Geology, University of Vermont (co-advised with G. Pinder).
- Alex Gagnon, Environmental Science Major, University of Vermont.
- Herreld Rosado Loubriel, University of Turabo, Puerto Rico, EPSCoR Intern. *
- Pamela Garcia, University of Puerto Rico, Puerto Rico, EPSCoR Intern. *
- Aaron Shavitz, Environmental Science Major, University of Vermont (Honors Thesis)

2017:

- Thomas Adler, Environmental Engineering, University of Vermont, EPSCoR Intern.
- Sarah Mecca, Community College of Vermont, EPSCoR Intern. *
- Morgan Schwartz, Geology, University of Vermont. *
- Alex Gagnon, Environmental Science Major, University of Vermont.
- Ari Libenson, Environmental Science Major, University of Vermont. *

2016:

- Ingrid Evans, Environmental Science Major, University of Vermont. *
- Max Landsman-Gerjoi, Environmental Science Major, University of Vermont. *
- Jack Ehrenkranz, Geology Major, University of Vermont.
- Ben Wilkes, Geology Major, University of Vermont.
- Tyler Davis, Environmental Science Major, University of Vermont.

2015:

- David Jaeger, Environmental Science Major, University of Vermont.
- Ashley Weltz, Geology Major, University of Vermont. *
- Malayika Cincotta, Geology Major, University of Vermont. *
- Elise Schumacher, High school student at Essex High School. *

2014:

- Christine Loughlin, Chemistry major, University of Vermont. *
- Lauren Jones, Environmental Science Major, University of Vermont. *
- Ashley Weltz, Geology Major, University of Vermont. *
- David Jaeger, Environmental Science Major, University of Vermont.
- Mae Kemsley, Wooster University. *
- Aundrea Dolan, Coastal Carolina University. *

Thesis committees:

- Jenny Bower, PhD. Department of Plant and Soil Science (2019-2023).
- Jillian Sarazen, MS. Department of Plant and Soil Science (2019-2020).
- Frank Piasecki (undergraduate honors thesis), Department of Geography (2019).
- Sophie Ryan (undergraduate honors thesis), Department of Geography (2018).
- Emma Cronin (undergraduate honors thesis), Department of Biology (2017).
- Brendan (Guangyu) Zhu, Phd, Department of Engineering, (2016-2020).
- Keegan Griffith, MS, Department of Plant and Soil Science (2016-2017).
- Meg Legrand, MS, Department of Geology (2016-2018).
- Austin Wilkes, MS, Department of Geology (2016-2018).
- Alison Denn, MS, Department of Geology, (2014-2016).
- Braden Rosenberg, MS, Department of Geology (2013-2015).
- Robert Caulk, MS, Department of Environmental and Civil Engineering (2013-2015).
- Adam Noel, PhD, Rubenstein School of Environment and Natural Resources (2012-2019).
- Kristen Underwood, PhD, Department of Environmental and Civil Engineering (2012-2018).
- Stephanie Juice, PhD, Rubenstein School of Environment and Natural Resources (2012-2019).

SERVICE:

Over my time at UVM, I expanded my service activities from mostly departmental to the college and university level.

University college and department level service:

- Director of Graduate Studies in Geology (2019- current).
- Co-Director of the Environmental Science Program in CAS, University of Vermont (2017-2019).
- Elected member of the Sustainability Curriculum and Review Committee (SCRC, 2016-2019).
- Member of the GUND fellows committee (2019-current).
- Member of the UVM undergraduate research award (APLE and Roland Suiter) committee, 2015-2019.
- External member of the faculty search committee (Chemistry, 2019).
- Faculty Marshal for the commencement ceremony 2016-current.
- Representative for the Geology Department at Academic Fair (student visitation days, 2015 - current).
- Representative of the Geology Department at the Open House in 2014- current.
- Organizer of the Geology Department Seminar Series every semester 2014-2019.
- Invited faculty panelist at the invited student day (2015).
- Representative of the Geology Department at the CAS Homecoming event in 2013-current.
- Guided tours for prospective students and their families 4-8 times per year 2013-current.

Professional Service:

Journal Lead-guest Editor

- Frontiers in Earth Science: Biogeosciences, Research Topic: "Critical Zone (CZ) Export to Streams as Indicator for CZ Structure and Function" (2018-2020).

Reviews of professional journals articles and book chapters

- Frontiers (2019, 2020)
- AGU Books: 2018

- Biogeochemistry: 2013, 2014 (3), 2015 (2), 2017, 2018 (2), 2019, 2020
- Science of the Total Environment: 2018
- Vadose Zone Journal: 2018
- Water: 2017, 2019, 2020
- Journal of Hydrology: 2017
- Water Resources Research Journal: 2014 (2), 2015, 2016 (2), 2017 (2)
- Rhizosphere: 2017
- Journal of Geophysical Research: 2016
- Chemical Geology: 2010, 2015 (2), 2016
- Journal of Soils and Sediments: 2015
- Soil Science Society of America Journal: 2013, 2014
- Hydrological Processes: 2012, 2013
- Water Resources: 2013
- Geoderma: 2008, 2009, 2010 (4), 2012, 2020
- International Biodegradation & Biodeterioration: 2012
- Soil and Sediment Contamination an International Journal: 2012
- Clay and Clay Minerals: 2011

Reviews of proposals and review panels

- DOE Biological & Environmental Research (BER), **Review Panel**, 2020
- NSF Innovations in Graduate Education, **Review Panel**, 2018
- NSF Hydrology ad-hoc reviewer, 2018, 2019
- Vermont Water Resources and Lake Studies Center, 2017
- NSF Geobiology and Low Temperature Geochemistry, **Review Panel**, 2017, 2019
- NSF Earth Science postdoctoral fellowship (NSF EAR-PF), 2016
- National Environment Research Council (NERC) Research Grant Application, 2016
- ACS Petroleum Research Fund, 2015
- Vermont Water Resources and Lake Studies Center, 2014

Conference session chair

- **2018:** *“Critical Zone Processes, Function and Resiliency: Challenges and Opportunities”*. **GSA meeting Northeastern Section**, Burlington VT.
- **2017:** *“Critical Zone (CZ) export to streams and ground water as indicator for CZ functions in the Anthropocene: challenges and opportunities”*. **Goldschmid Conference**, Paris, France.
- **2016:** *“Towards International Critical Zone Research in the Anthropocene: The Biogeochemistry of Ecosystems and Services”*, **Goldschmidt Conference**, Yokohama, Japan.
- **2014:** *“Critical Zone science as incubator for interdisciplinary, process oriented science”* chair and Outstanding Student Poster liaison, **American Geophysical Union Conference**, San Francisco, CA.
- **2013:** *“Thresholds in Soil response to Global Change”*, convener, chair and student presentation liaison, **American Geophysical Union Conference**, San Francisco, CA.