

Emmet Norris

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Education

Scripps Institution of Oceanography, Graduate Program
University of California San Diego

Fall 2020 - Present
La Jolla, California

Middlebury College, Geology B.A.
Highest Honors, Thesis
Deans List

February 2015 - March 2020
Middlebury, Vermont
Spring & Fall 2015, 2016, 2017

Programs attended during Middlebury degree:

• **La Universidad Autónoma Benito Juárez de Oaxaca, Mexico**
SOL Education Abroad

January-February 2020

• **University of Colorado, Boulder**
Continuing Education

August-December 2019

• **Utrecht Universiteit, The Netherlands**
Geoscience Exchange Program

August 2018-April 2019

• **University of California, Berkeley**
Summer Session, GIS

June-July 2017

Research Experience

Scripps Institution of Oceanography
Research Assistant

March-July 2020
La Jolla, California

- Furthered existing NSF funded project on San Jacinto Peak, CA, quantifying how climate and dust affect soil chemical erosion rates and soil nutrient content. Participated in field work, lab work and project development.
- Supported the establishment of Assistant Professor Sarah Aarons laboratory and research facilities. Tasks included taking inventory, cleaning and organization of Clean Room, building of group website and furthering research.
- Participated in new research concepts and proposals related to source apportionment of dust deposition in Southern California using isotope geochemistry.

National Institute of Environmental Studies
Visiting Researcher (Full Time)

June-August 2018
Tsukuba, Japan

- Served as visiting researcher with Dr. Fushimi Akihiro on project Source Apportionment of Various Toxicities by Atmospheric Organic Aerosols.
- Studied the contribution of biomass burning to ambient air quality. I focused on the direct measurement of aerosols sources via controlled experiments, and analysis of relative contribution in relation to automobile and industrial emissions. Research included the effect of aerosol toxicity to human health and photo-degradation in atmosphere.
- Compiled list of known chemical compounds in smoke, to study degradation products and the subset believed to be of greatest human health concern.
- Used DRI Thermal Optical Carbon Analyzer, Gas Chromatography Mass Spectrometry and experimental methods.

Middlebury College

June 2016-May 2018
Middlebury, VT

Assistant to Peter Ryan PhD (Part Time)

- Lab Assistant to Professor Peter Ryan, engaging in projects concerning naturally occurring uranium and arsenic in Vermont groundwater. Additional projects include arsenic-rich magnesite synthesis and geochemical tracing of groundwater in fractured bedrock aquifer. Learned XRD, XRF, SEM, and ICPMS methods for natural and synthetic sample analysis.
- Teaching Assistant for Environmental Geochemistry course. Taught students how to use lab methods such as LECO grain size analysis, centrifuge and sonic separation, soil profiling, and general sample processing.

University of Wisconsin

March 2017 & February 2018
Madison, WI

Strontium Isotope Research (Visiting researcher)

- Completed sample analysis in the ICP-Thermal Ionization Mass Spectrometry Laboratory. Worked alongside lab technicians to fingerprint Sr and Nd isotopes within soil, rock and dust samples to discover source region and nutrient contribution to soil.
- Learned clean lab procedures while working with cation exchange columns and sample prep for TIMS.

Vermont Geological Survey

June 2016-December 2016

*Intern (Full Time)**Montpelier, VT*

- Worked with Vermont state geologist Jon Kim to investigate groundwater contamination and transport in fractured bedrock aquifer. Tasks included: bedrock and structure mapping; water and rock sampling; literature review; synthesis and project reporting; and sample prep and analysis.
- Worked with local residents of Bennington, Vermont to learn social history of contamination issues and environmental health concerns. Tested private and public wells for CFC's and geochemical signature to support geospatial mapping project. Used ArcGIS for overlaying chemical, structural geology, geomorphic and social data layers.
- Drafted and circulated chemical review and findings of field work and subsequent spatial modeling. Worked with EPA and Vermont DEC to discuss the geological and social implications of chemical transport.

Dust Deposition in the Alpine Zone of the Uinta Mountains

July 2016, July 2017, August 2019

*Field Assistant**Vernal, UT*

- Field assistant to Professor Jeff Munroe, on NSF-funded research investigating dust deposition in the alpine zone of the Uinta Mountains through soil profile. Tasks included: backcountry fieldwork; sample instrument maintenance and operation assistance; and sample collecting. Worked with both passive and active dust collection methods.
- Over three field seasons, I worked on additional projects in the Uinta Mountains including: analysis of snowfield evolution; groundwater chemistry in nearby caves; soil profiling; periglacial pattern ground analysis; and geospatial dust deposition.
- Processed samples at Middlebury College using LOI, grain size analysis, bulk geochemistry ICP-MS and C:N ratio.

Professional Experience

Cooperative Institute for Research in Environmental Sciences

September-December 2019

*Intern, Inside the Greenhouse**Boulder, Colorado*

- Inside the Greenhouse works to deepen societal understanding of how issues associated with climate change are/can be communicated, by creating artifacts through interactive theatre, film, fine art, performance art, television programming, and appraising as well as extracting effective methods for multimodal climate communication.
- Primary tasks included the development of Open Educational Resources and curriculum for teachers in association with Project Drawdown climate solutions.
- Attended *Drawdown Learn* conference at the Omega Institute (Rhinebeck, NY) co-leading break-out sessions and youth performance.

Studio Roosegaarde

October 2018-August 2019

*Technical Design Researcher (Full Time)**Rotterdam, The Netherlands*

- Designer at social innovation laboratory, bringing together technology and art to create concepts for improvements in urban society relating to clean air, water and energy. Projects include the SMOG FREE tower—a 7 meter tall tower using patented positive ionization technology to create a bubble of clean air in public spaces.
- Tasks focused on the development of new projects, \ addressing climate adaptation and technology in society.
- Worked with clients, research partners, and suppliers to advance technological and environmental validity of projects.
- Created partnerships with researchers at institutions such as: Toegepast Natuurwetenschappelijk Onderzoek (TNO); Chalmers University; University of Eindhoven; Heriot Watt University and École Polytechnique Fédérale de Lausanne (EPFL) to bring novel research into public domain. Facilitated meetings, development of research proposals and gave lectures on design concepts to new partners and internal team.
- Brought the studio into an international carbon sequestration and utilization grant—Accelerating CCS Technologies
- (ACT) 2018 Fixed Call—as visual and artistic development partners. The project was funded and will commence in fall of 2019 with partners including Lawrence Livermore National Laboratory and EPFL.
- Used programs such as Photoshop, Illustrator, Premiere, SketchUp and Solidworks to create visual and technical design concepts and proposals.

Middlebury College Dance Theater

February 2016-May 2018

*Lighting Technician (Part Time)**Middlebury, VT*

- Technician at college dance theater. Worked as backstage manager, light and sound engineering assistant, and contributed to maintenance of the facility. Skills learned included light and sound equipment operation during the production of numerous theater and dance performances.

Nepalese Humanitarian Help Organization

Coordinator and Fundraiser (Part Time)

March 2014-February 2015

Gorkha, Nepal

- Participated in the creation of water tank and transport system to deliver water to towns in rural Gorkha District.
- Worked both on site and virtually to further projects relating to the access of clean water in rural Nepal. These tasks included developing public materials for domestic and international funding partners and updating organization website.
- After departing from Nepal, I continued in assistant role to locate funding sources for additional water projects and supported international outreach.

Global March Against Child Labour

Intern (Full Time)

February-April 2014

New Delhi, India

- Worked with Nobel Laureate Kailash Satyarthi on promoting Global March's work and public education surrounding children's rights and access to education. In global headquarters worked with staff on existing project campaigns.
- Developed internal documents and inventory for outreach and partnership with police and public officials nationwide.
- Further contacted state police officials to update protocols and requests for support in relation to child rescue operations.
- Worked with former child laborers at local ashram, as they were receiving physiological and vocational skill support.
- Developed concept for a peer-to-peer global youth partnership campaign, helping youth understand realities of child labour around the world.

Awards

Award for Excellence in Student Research

Council of Undergraduate Research, Geosciences division (GeoCUR)

2018

Peer-Reviewed Publications

Munroe, J., **Norris, E.**, Carling, G, Beard, B., Satkoski, A., Liu, L., Isotope fingerprinting reveals western North American sources of modern dust in the Uinta Mountains, Utah, USA, *Aeolian Research* 38, 39-47, 2019

Munroe J., **Norris E.**, Olson P., Ryan P, Tappa M., Beard B., Quantifying the contribution of dust to alpine soils in the periglacial zone of the Uinta Mountains, Utah, USA, *Geoderma*, Volume 378, 2020

Conference Abstracts

Munroe, J., **Norris, E.**, Satkoski, A., Beard, B., April 2019, Nd and Sr Isotope Fingerprinting of Mineral Dust Accumulating in the Alpine Zone of the Uinta Mountains, Utah, USA, EGU General Assembly Vienna, Austria

Norris, E., Munroe, J., Ryan, P., April 2018. Geochemical Approach to Quantifying Atmospheric Dust Input to Alpine Soils in the Uinta Mountains, USA, Oral presentation, EGU General Assembly, Vienna, Austria

Munroe, J., **Norris, E.**, Satkoski, A., Beard, B., April 2018. Nd and Sr Isotope Fingerprinting of Mineral Dust Accumulating in the Alpine Zone of the Uinta Mountains, Utah, USA. EGU General Assembly, Vienna, Austria

Ryan, P., Kim, J., **Norris, E.**, Allen, D., January 2018, Tracing Groundwater Flow by Inorganic Hydrogeochemistry: A Tool to Understanding PFOA Migration in a Fractured Rock Aquifer, GSA Northeastern Section Meeting, Vermont

Ryan, P., Koenigsberger, S., **Norris, E.**, Kim, J., January 2016, Elevated Uranium in a Fractured Sedimentary Rock Aquifer Affected by Dissolution of U-bearing Fluoroapatite in Phosphorite, GSA Annual Meeting, Denver, Colorado

Social Entrepreneur Fellow, Spring 2016-Spring 2018

Participant in the Middlebury Center for Social Entrepreneurship Fellowship Program. This program connects students interested in social change to mentorship, training, and funding to help them achieve their social impact goals. My project involved the study of environmental contamination and public health, focusing on disproportionate negative health effects of industrial and agricultural run-off on rural and low-income communities. My study included interviewing community members and stake holders, environmental and public health researchers to understand the relevance and impact of contamination issues. I worked with interviews, social narratives and synthesis of environmental issues for public consumption to provide a cross-discipline website

Relevant Coursework

Environmental Geology, Environmental Geochemistry, Atmospheric Physics, Quaternary Geology, Paleoclimatology, Hydrogeology, Structural Geology, Mineralogy, Cosmochemistry, Bedrock Geology of Vermont (Field Geology), Introductory Chemistry, Surface & Groundwater Hydrology, Newtonian Physics, Calculus 1

Additional Skills

Knowledge and operation of: ICP-MS • FTIR • XRD • XRF • TIMS • SEM
Clean lab protocol • Sample collection and preparation • Water testing • Experimental sample collection
Outreach and Communication • Project Management • Grant writing • R • Adobe Suite • Office suite • ArcGIS

Languages

English (Native), Spanish (Intermediate proficiency), Japanese (Elementary proficiency), Dutch (Elementary proficiency)

References

Jeff Munroe PhD, Professor of Geology, Middlebury College
Email: jmunroe@middlebury.edu, Phone: (802) 443-3446
Peter Ryan PhD, Professor of Geology, Middlebury College
Email: pryan@middlebury.edu, Phone: (802) 443-2557
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