

# Nicole Murray

## Curriculum Vitae

Department of Earth Science & Environmental Change  
University of Illinois, Urbana-Champaign  
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### Education

- 2020-Present **Ph.D. in Geology**, University of Illinois, Urbana-Champaign.  
**Thesis:** "Novel frameworks for stable oxygen isotopes in the hydrologic cycle"
- 2018-2020 **M.S. in Geology**, University of Illinois, Urbana-Champaign.  
**Thesis:** "Holocene relationships between climate, waterfowl, and lacustrine nutrient cycling at Kettle Lake, North Dakota, USA"
- 2015-2018 **B.S. in Animal Sciences**, University of Illinois, Urbana-Champaign.
- 2011-2015 **B.S. in Earth & Space Exploration (Geological Sciences)**, Arizona State University.  
Minor in Sustainability

### Publications

- Murray, N.K.**, Muñoz, A.R., Conroy, J.L. Machine learning solutions to regional surface ocean  $\delta^{18}\text{O}$  - salinity relationships for paleoclimatic reconstruction. (2023). *Paleoceanography and Paleoclimatology*. 38(9).  
<https://doi.org/10.1029/2023PA004612>
- Murray, N.K.**, Conroy, J.L., O'Brien, K., Grimm, E.C., Donovan, J.J. Holocene relationships between climate, waterfowl, and lacustrine nutrient cycling at Kettle Lake, North Dakota, USA (2023). *The Holocene* 33(9).  
<https://doi.org/10.1177/09596836231176490>
- Conroy, J.L., **Murray, N.K.**, Patterson, G.S., Schore, A.I.G., Ikuru, I., Cole, J.E., Chillagana, D., Echeverria, F. Equatorial Undercurrent influence on seawater  $\delta^{18}\text{O}$  values in the Galápagos (2023). *Geophysical Research Letters* 50(14). e2022GL102074. <https://doi.org/10.1029/2022GL102074>

### Research

- 2020-Present **Graduate Research Assistant**, UIUC, advisor: Jessica Conroy.  
*Studying modern tropical Pacific hydroclimate using stable isotopes in seawater, precipitation and groundwater. Emphasis on the  $\delta^{18}\text{O}$  - salinity relationship and the implications of its change in space and time.*
- 2018-2020 **Graduate Research Assistant**, UIUC, advisor: Jessica Conroy.  
*Using  $\delta^{15}\text{N}/\delta^{13}\text{C}$ , bulk C,N, pollen and charcoal measurements from lake sediments to understand paleo-environmental changes in the Prairie Pothole Region, Northern Great Plains, USA*
- 2016 **Animal Behavior Intern**, PDX WILDLIFE, advisor: Dr. Meghan Martin.  
Three months behavioral data collection for Bifengxia Giant Panda Reserve in Ya'an, Sichuan, People's Republic of China.
- 2016 **Undergraduate Researcher**, UIUC, advised by Dr. Rebecca Stumpf.  
Individual research focusing on oxytocin role in female dispersion of Eastern chimpanzee (*Pan troglodytes schweinfurthii*) communities.

### Presentations

- Fall 2023 **Murray, N.K.**, Meghani, N.A., Heerdink, B., Cooper, S.K., *STEMSEAS: Pathways and impacts on mentoring relationships in ocean science*. American Geophysical Union, Fall Meeting, San Francisco, California, USA.

- Summer 2023 **Murray, N.K., Conroy, J.L.,** *Water isotopologue insights into tropical Pacific hydroclimate: seawater and precipitation  $\delta^{18}O$  in the Indo-Pacific Warm Pool.* Goldschmidt Meeting, Lyon, France.
- Fall 2022 **Murray, N.K., Conroy, J.L.,**  *$^{17}O$  – excess of precipitation at Santa Cruz, Galápagos.* Island Systems Integration Consortium All-Hands Meeting, Cincinnati, Ohio, USA.
- Fall 2021 **Murray, N.K., Munoz, Alexander R., Conroy, J.L.,** *Surface ocean  $\delta^{18}O$  – salinity regions as revealed by machine learning.* American Geophysical Union, Fall Meeting, New Orleans, Louisiana, USA.
- Fall 2020 **Murray, N.K., Munoz, Alexander R., Conroy, J.L.,** *Applying neural network learning to deconvolve the  $\delta^{18}O$  – sea surface salinity relationship in the global ocean.* American Geophysical Union, Fall Meeting, Remote.
- Fall 2019 **Murray, N.K., Conroy, J.L., Punyasena, S.W., Grimm, E.C., Donovan, J.J.,** *Mid-Holocene guano influences on eutrophication and lacustrine ecology at Kettle Lake, North Dakota.* American Geophysical Union, Fall Meeting, San Francisco, California, USA.

## Service/Community

- Spring 2024 **Session Chair,** "TROPICAL PACIFIC ISLAND SYSTEMS: A LENS INTO GLOBAL CHANGE ", AGU Ocean Sciences Meeting.
- 2023-Ongoing **Chief Scientist,** STEMSEAS, Lamont Doherty Earth Observatory.  
*NSF funded program providing undergraduate experiences aboard ships*  
Details:
  - Facilitate student science and ship-based activities in cooperation with crew
  - Organize student travel and oversight of safety at sea
  - Discussions in ocean, atmospheric and climate science
- Fall 2023 **Early Career Workshop Chair,** ALL HANDS MEETING, Island Systems Integration Consortium.
- 2019-2022 **Graduate Mentor,** STEMSEAS, Lamont Doherty Earth Observatory.
- Fall 2021 **Session Convener,** "WATER ISOTOPE SYSTEMATICS", AGU Fall Meeting.
- Summer 2021 **Participant,** "ISOCAMP", University of New Mexico.
- 2019-Ongoing **Department Mentor,** DEPARTMENT OF GEOLOGY, University of Illinois, Urbana Champaign.  
*Individual mentoring of undergraduate student in geology*
- Fall 2020 **Virtual Mentoring Panel,** STEMSEAS, Lamont Doherty Earth Observatory.  
*Online panel provide graduate and career advice for STEMseas alumni and prospectives*

## Field Work

- November 2022 **Koror, Palau,** *Implementation of Picarro L2130i water isotope analyzer for continuous vapor measurement in the western Pacific.*
- November 2021 **Galápagos, Ecuador,** *Fog, precipitation, groundwater and seawater collection for isotope and salinity analyses.*
- June 2019 **Kiribati, Kiritimati,** *Lake core, microbial mat and water sample collection in 31 hypersaline lakes.*
- May 2019 **Western Ireland, County Clare,** *Characterizing soft-sediment deformation and mass flows in Cyclothem IV, Spanish Point.*

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## Professional

2016-2018 **Laboratory Manager**, *UNIVERSITY OF ILLINOIS, URBANA CHAMPAIGN*, Stumpf Primate Laboratory.

Management of Primate Evolutionary Biology & Microbiome group in the Department of Anthropology  
Details:

- Drafting and editing NIH and NSF grant proposals
- Organization and maintenance +3,000 non-human primate sample catalog
- Lab compliance to BSL-2 standards at the Institute for Genomic Biology
- Overseeing data entry and management of three distinct databases
- Assistance with graduate and undergraduate student projects