

CURRICULUM VITAE

Natalie A. Jones

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EDUCATION

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- PhD (anticipated), Astronomy and Planetary Science** **Spring 2025**
 Dept of astronomy and Planetary Science, Northern Arizona University, Flagstaff, AZ
 Dissertation: *Do microbes shape landscapes? Investigating the abundance, distribution, and cohesive strength of EPS in Mars analog environments*
 Advisors: Alicia M. Rutledge and Christopher S. Edwards
- Master of Science (in passing), Astronomy and Planetary Science** **Spring 2023**
 Dept of astronomy and Planetary Science, Northern Arizona University, Flagstaff, AZ
 Dissertation: *Do microbes shape landscapes? Investigating the abundance, distribution, and cohesive strength of EPS in Mars analog environments*
 Advisors: Alicia M. Rutledge and Christopher S. Edwards
- Bachelor of Arts, Earth Science, Geology Concentration** **May 2016**
 Department of Earth and Environmental Science, University of Pennsylvania, Philadelphia, PA
 Honors Thesis: *Direct Observation of Grain Boundary Sliding in Experimentally Deformed Ice*
 Advisor: David L. Goldsby

GRANTS, FELLOWSHIPS, AND AWARDS

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- NASA Future Investigators in NASA Earth and Space Science grant **Sept 2021 – Aug 2024**
\$135,000 awarded over 3 years
- Student Water Symposium poster award winner: first place in graduate student division **May 2018**
Awarded at Northern Arizona University's First Annual Student Water Symposium
- Delaware Valley Geo-Institute 2014-2015 award winner **Spring 2015**
Regional award for excellent students in geology, and civil engineering
- Society for Women Engineers: Schlumberger's essay contest award winner **Fall 2014**
School-wide award for engineers and scientists pursuing unique avenues of study
- Dale and Robert Rosen Scholarship recipient **Fall 2012 – Fall 2015**
Financial award for scholarly students with need-based aid
- QuestBridge College Match Scholar award **Spring 2012**
Financial award for high-achieving students with need-based aid

RESEARCH EXPERIENCE

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- Northern Arizona University, Flagstaff, AZ** **Aug 2020 - Present**
Graduate research assistant, 40 hours per week
 Collected sediment samples from Mars Analog environments with numerous teams of collaborators.
 Extracted microbial biopolymers from sediment samples in wet-lab environment.
 Prepared and monitored biological soil crust experiments in a greenhouse.

Analyzed the mineralogy and chemistry of sediment samples.
Sieved sediments samples and prepared samples for particle size analysis.
Characterized mineralogy of Mars-analog environments using remote sensing techniques.
Compiled and compared sample data using graphing and statistical packages in Python 3.6.

Northern Arizona University, Flagstaff, AZ **Aug. 2017 – July 2020**

Hydrology Research Technician, 40 hours per week

Led teams of researchers on backcountry hydrology fieldwork trips, logging up to 150 hours of fieldwork per month to collect stream discharge data, water samples, and water quality measurements from streams in Grand Canyon National Park.

Coded statistical analysis of sinkhole geomorphology using Python 2.7 Programming Language and published the resulting automated sinkhole delineation and karst geomorphology (Jones et al., 2017. Jones et al. 2019).

Grand Canyon National Park, Grand Canyon, AZ **June 2016 – Aug. 2017**

Hydrology Intern—AmeriCorps, 40 hours per week

Designed ArcGIS model to automatically delineate sinkholes from LiDAR elevation data, and installed, repaired, operated, and maintained hydrologic equipment.

University of Pennsylvania Ice Physics Lab, Philadelphia, PA **Sept. 2015 – May 2016**

Undergraduate Researcher, 10 hours per week

Designed experiments to record ice crystal fluid mechanics using a laboratory pressure vessel and analyzed samples using an inverse microscope to measure crystal size and movement within the ice samples.

NASA Ames Research Center Astrobiology Department, Moffett Field, CA **June 2015 – Aug. 2015**

Laboratory Intern, 40 hours per week

Designed, monitored, and interpreted lab experiment to investigate hypersaline microbial response to sediment deposition.

University of Florida Physiological Science, Gainesville, FL **May–Aug. 2013 & May – July 2014**

Lab Assistant, 35 hours per week

Soldered electrical equipment and made electrodes, Prepared physiology experiments, and recorded results, and created scientific illustrations.

SCIENTIFIC TEACHING EXPERIENCE

University of Pennsylvania, Philadelphia, PA **Aug. 2015- Dec. 2015**

Teaching Assistant: GEOL100 Introduction to Earth Science, 10 hours per week

Taught material on various introductory earth science topics during weekly 1-hour per week lectures and 1-hour-per week office hours, and graded assigned homework and tests

PEER-REVIEWED PUBLICATIONS

3. Chambless, H. E., A. E. Springer, M. Evans, N. Jones (2023) Deep-karst aquifer spring flow trends in a water limited system, Grand Canyon National Park. *Hydrogeology Journal*. DOI: <https://link.springer.com/article/10.1007/s10040-023-02702-w>
2. Jones, N. A., J. Hansen, C. Valle, A. E. Springer, B. W. Tobin (2019), Modeling intrinsic vulnerability of complex karst aquifers: modifying the COP method to account for sinkhole density

and fault location. *Hydrogeology Journal*, 27(8), 2857-2868. DOI: <https://doi.org/10.1007/s10040-019-02056-2>

1. Jones, C. J. R., A. E. Springer, B. W. Tobin, S. J. Zappitello, and **N. A. Jones** (2017), Characterization and hydraulic behavior of the complex karst of the complex karst of the Kaibab Plateau and Grand Canyon National Park, USA., in *Advances in Karst Research: Theory, Fieldwork and Applications*, edited by M. Parise, F. Gabrovsek, G. Kaufmann, and N. Ravbar, pp. 466, *Geological Society of London*. DOI: <http://dx.doi.org/10.1144/SP466.5>

CONFERENCE ABSTRACTS

5. **Jones, N. A.**, A. M. Rutledge, C. E. Edwards, B. A. Sikes, E. B. Rampe, H. A. Eifert, L. A. Edgar, A. Y. Li, M. J. Henderson, K. A. Bennett, A. H. D. Koepfel, M. A. Bowker, M. G. A. Lapôtre, R. C. Ewing (2023) Do microbes shape landscapes? Investigating the abundance and distribution of EPS in Mars analog environments *American Geophysical Union*, San Francisco, CA.
5. **Jones, N. A.**, A. M. Rutledge, M. R. Salvatore, and B. H. Horgan, (2022) Detecting Glacial Alteration in a Mars Analog Environment: Compositional Remote Sensing of Mount Kilimanjaro, Tanzania. *Lunar and Planetary Science Conference*, The Woodlands, TX.
4. **Jones, N. A.**, J. Hansen, A. E. Springer, C. Valle, B. W. Tobin, (2018) Modifying the COP Method to Model Vulnerability of Semi-Arid Karst Aquifers, Developed on the Kaibab Plateau, Grand Canyon National Park. *American Geophysical Union*, Washington, DC.
3. **Jones, N. A.**, and B. W. Tobin, (2017) Sinkhole Geomorphology and Distribution on the Kaibab Plateau, Grand Canyon National Park. *15th Biennial Conference of Science & Management on the Colorado Plateau & Southwest Region*, Flagstaff, AZ.
2. **Jones, N. A.**, and B. W. Tobin, (2017) Sinkhole Geomorphology and Distribution on the Kaibab Plateau, Grand Canyon National Park. *Annual Geologic Society of America Meeting*, Seattle, WA.
1. **Jones, N. A.**, B. W. Tobin, and S. J. Zappitello, (2016) Geospatial Analysis of Sinkholes to Delineate Karst Catchment, Kaibab Plateau, Grand Canyon National Park. *Annual Geologic Society of America Meeting*, Denver, CO.

MEDIA, BOOKS, AND INVITED PRESENTATIONS

15. **N. A. Jones**, (2023) Do microorganisms shape landscapes? Investigating the abundance, distribution, and cohesive strength of EPS in Mars analog environments, *AZ AstroBio Symposium*, Tempe, AZ
14. Nebel, M., J. Hansen, **N. A. Jones**, and B. W. Tobin (2020), Mapping Groundwater Vulnerability to Protect Grand Canyon National Park's Groundwater and Drinking Water Resources. *ESRI/NPS Map Book: Mapping America's National Parks: Preserving Our Natural and Cultural Treasures*. https://www.amazon.com/gp/product/1589485467/ref=ppx_yo_dt_b_asin_title_o09_s00?ie=UTF8&psc=1
13. PRESS RELEASE: Toth, Heidi, (2020) NAU grad student looking for clues in the mystery of the Grand Canyon's water supply. *The NAU Review*, <https://news.nau.edu/natalie-jones-roaring-springs/>

12. Brodie, M. (2020) Searching for Grand Canyon National Park's Water Source. *KJZZ Radio* <https://kjzz.org/content/1447246/searching-grand-canyon-national-parks-water-source>
11. Morton, M. C. (2020) Tracking the Grand Canyon’s Mysterious Springs. *EOS Magazine* <https://eos.org/articles/tracking-the-grand-canyons-mysterious-springs>
10. Buffon, S. (2020) NAU researchers develop new way to protect Grand Canyon water. *Arizona Daily Sun*. https://azdailysun.com/news/nau-researchers-develop-new-way-to-protect-grand-canyon-water/article_8013e389-24d2-5a76-9d13-86c12ce9c9b4.html
9. **Jones, N. A.** (2019) Grand Canyon research: the next 100 years (panelist). *Flagstaff Festival of Science*, September 22, 2019. United States Geological Survey, 225 N Gemini Rd, Flagstaff, AZ
8. **Jones, N. A.** (2019) Grand Canyon Karst Hydrology. *Evening Program: Summer Resources and Project Updates*, 2019. July 11, 2019. McKee Amphitheater, Grand Canyon Village, AZ.
7. **Jones, N. A.** (2019) Grand Canyon research: the next 100 years of hydrology (invited speaker). *Grand Canyon Research: Next 100 Years Community Forum*. May 1, 2019. Flagstaff, AZ
6. **Jones, N. A.** and C. D. Christie (2019) Grand Canyon Karst Hydrology. *River Guide Training Seminar- Land Session*, March 31, 2019. Cliff Dwellers, AZ
5. **Jones, N. A.** and C. D. Christie (2019) Grand Canyon Karst: Wonders below our feet. *Hiking Guide Training Seminar 2019*, February 15, 2019. Grand Canyon Village, AZ
4. **Jones, N. A.** and B. W. Tobin (2018) The Karst of Grand Canyon: What is it? Why do we study it? And why do we care?. *Hiking guide Training Seminar 2018*, February 16, 2018. Grand Canyon Village, AZ
3. **Jones, N. A.,** and D. L. Goldsby, (2016) Direct Observation of Grain Boundary Sliding in Experimentally Deformed Ice. *2016 Senior Thesis Symposium*, University of Pennsylvania, Philadelphia, PA.
2. **Jones, N. A.,** and D. L. Goldsby, (2016) Direct Observation of Grain Boundary Sliding in Experimentally Deformed Ice. *2016 Senior Thesis Symposium*, University of Pennsylvania, Philadelphia, PA.
1. **Jones, N. A.,** and L. E. Prufert-Bebout, (2015) Macrostructural Effects of Microbial Communities in a Depositional Environment. *NASA Ames Research Center Summer Intern Symposium*. Moffett Field, CA.

MENTORSHIP AND OUTREACH

Department of Astronomy and Planetary Science , Flagstaff, AZ <i>Secretary / Treasurer</i>	Jan 2022 – Jan 2023
Northern Arizona University , Flagstaff, AZ Mentor: Undergraduate research mentor through the Louis Stokes Alliance for Minority Participation	June 2021 - Present
Canyon Dance Academy , Flagstaff, AZ <i>Teacher and Substitute</i>	Aug. 2018 – March 2020
Canyon Movement Company , Flagstaff, AZ <i>Board member and performing member/ choreographer:</i>	Aug. 2017- Present

Flagstaff Music Theater, Flagstaff AZ
Performer and choreographer

June 2018- Aug. 2018

Parkway West High School and Lea Elementary School, Philadelphia, PA
After school program choir teacher

Aug. 2012 – Feb. 2015

SKILLS AND CERTIFICATIONS

Wilderness First Responder Certification

Python Programming Language

ArcGIS

Microsoft Office Suite

Adobe Illustrator Suite

MATLAB

MODFLOW

Foreign Language- Spanish- speaking level: Novice (S1); Listening level: intermediate (L2); reading level: advanced (R3); evaluated at: <http://www.govtilr.org>

PROFESSIONAL AFFILIATIONS

American Geophysical Union (since 2018)

Geological Society of America (since 2016)

Association for Women Geologists (since 2014)

Society of Women Engineers (since 2014)