

Emily Cook

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SUMMARY:

My research advances the characterization of geothermal and hydrological systems through the integration of near-surface geophysics, geospatial data, and remote sensing. I specialize in managing large-scale datasets and utilizing UAV-based thermal infrared (TIR) and electrical methods (ERT, GPR) to quantify fluid-rock interactions. My work aims to bridge the gap between geophysical acquisition and sustainable natural resource management, with specific experience in Arctic energy systems and dam infrastructure. Seeking to join a Geophysics graduate program starting Fall 2027.

EDUCATION:

Binghamton University, SUNY | May 2026 | B.S. in Geophysics | GPA: 3.92 | Dean's List (all semesters)

PUBLICATIONS:

1. **Cook, E.; de Witt, M.** Assessing the Feasibility of Geothermal-to-X for Sustainable Maritime Refueling in Alaska. *Clean Technol.* **2025**, 7, 115. <https://doi.org/10.3390/cleantechol7040115>

CONFERENCE PRESENTATIONS:

1. **Cook, E.** 2026. Assessing the Feasibility of Geothermal-to-X for Sustainable Maritime Refueling in Alaska. *Arctic Frontiers*, Tromsø, Norway. (**Outstanding Poster Award**)
2. **Cook, E.** 2025. Feasibility of Geothermal-to-X in Alaskan Arctic Shipping: Power a Green Arctic Future. *GEODE*, Reno, NV.
3. **Cook, E.** 2024. Subsurface Lithological Modeling for Direct-Use Geothermal Applications in the Appalachian Basin. *SSAP*, Binghamton, NY.

TECHNICAL SKILLS:

1. **Geophysical Methods:** ERT, GPR, UAV-TIR, LiDAR, Seismic Refraction, Magnetometry, Well Logs
2. **Computational:** Python, ArcGIS Pro, QGIS, Pix4D, ResIPy, GPRPy, Leaflet, Excel, Tensorflow
3. **Field Operations:** FAA Part 107 Pilot, Trimble GPS, Sensor Troubleshooting, Remote Field Work
4. **Other:** Technical Writing, Project Design, Presentations, Photoshop

RESEARCH & EXPERIENCE:

Incoming Geophysics Intern

May 2026

U.S. Bureau of Reclamation

Denver, CO

- Will manage geospatial databases for seismic hazard assessment across the Western United States.
- Execute near-surface geophysical fieldwork to characterize engineering site conditions for dam safety.

Geothermal Energy Intern

May 2025 – August 2025

Alaska Center of Energy and Power (ACEP)

Fairbanks, AK

- Performed a MCDA to assess technical and economic feasibility of e-fuel production using geothermal energy for maritime decarbonization at five strategic Alaskan ports.
- Developed a comprehensive market outlook and policy report for Alaska's energy grid stakeholders.
- Presented at GEODE and Arctic Frontiers conferences, winning the Outstanding Poster Award.

Geothermal Energy Researcher

May 2024 – May 2025

Summer Scholars Program

Vestal, NY

- Standardized and interpolated lithological, temperature data, and borehole geophysical logs from 1000+ oil and gas wells in New York State.
- Constructed geospatial subsurface models using IDW to identify direct-use geothermal potential.

Geology Research Assistant

January 2024 – September 2024

SUNY RF funded Basin Research Team

Vestal, NY

- Mapped depth-to-bedrock using seismic and ERT to characterize sedimentary basin structures.
- Deployed UAS and canoe-based survey with temperature and depth sensors

Geospatial Sensing Student Researcher

August 2022 – May 2023

First-Year Immersion Program (FRI)

Vestal, NY

- Investigated SGD's critical role in sustainable water resource management for island communities using UAV-TIR to assess seasonality of seep.
- Conducted remote sensing fieldwork and cartography exercises using multiple geophysical sensors.
- Co-authored research paper and presented findings at annual FRI poster sessions.

FIELD EXPERIENCE & SERVICE:

1. **GEOL 451 and 453:** Two semester long projects in electrical geophysical methods applied to environmental causes. Including monitoring the soil conductivity changes after applying wood ash using ERT, locating unmarked graves using GPR, and locating abandoned oil and gas wells using smartphone magnetometers vs UAV magnetometers (Fall 2024 and Fall 2025).
2. **Geophysics Summer School (Texas A&M):** Intensive seismic field methods; modelled 2018 Kilauea Volcano waveform and seismicity using MatLab and QGIS (2025).
3. **Ecology Field Courses:** Immersive geological and ecological field study in the Everglades and Western National Parks over five weeks (Capitol Reef, Bryce, Yellowstone) (2023).
4. **Team Captain (Binghamton Ultimate Frisbee):** Led 30+ person roster through two intercollegiate National Championship appearances; managed travel logistics and strategic planning (2024–2026).
5. **Geology Lead (Binghamton Rover Team):** Evaluated geophysical sensor suites for autonomous life-detection missions (2023-2024).