

MADELEINE (MADS) O'BRIEN

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WORK EXPERIENCE

MethaneSAT, LLC

Remote / San Francisco, CA

Senior Geospatial Analyst

August 2021 – Present

- Search for, clean, and consolidate millions of geospatial oil and gas infrastructure records, from public and proprietary data sources, into one consistent schema
- Develop methods for quantifying the completeness and accuracy of our geospatial database

Stanford Geospatial Center and David Rumsey Map Center, Stanford University

Palo Alto, CA

GIS Assistant / Reference Assistant

October 2017 – June 2018

- Consulted 1-on-1 with Stanford affiliates from various departments, to resolve technical problems, find suitable data, or develop analysis workflows for geospatial projects
- Introduced patrons to historical and modern map exhibits and answered their cartography-related questions
- Authored 3-part workshop series teaching novices how to georeference maps from the Rumsey collection and incorporate the results in interactive ArcGIS Online webmaps

United States Geological Survey, Volcano Science Center

Menlo Park, CA

Field Assistant / Research Assistant

June 2016 – October 2017

- Quantified vegetation coverage in historic aerial photos using max. likelihood supervised image classification
- Wrote a Monte-Carlo-like workflow in Python for classifying photographs 1000x each, summarizing the quality of classification results, and calculating zonal statistics
- Synthesized GIS analyses, field-based flux measurements, and published literature to describe the relationship between volcanic gas flux, seismicity, and deforestation on Mammoth Mountain, CA, over 50 years
- Collected water and gas samples in Yellowstone NP, Lassen Volcanic NP, and Long Valley caldera

EDUCATION

Yale University, School of the Environment (formerly Sch. of Forestry & Environmental Studies)

New Haven, CT

Master of Environmental Science, 2020

- **Master's Thesis:** "UAV deployment for fine-scale CO₂ estimation in a mid-size city"

Wesleyan University

Middletown, CT

Bachelor of Arts, Earth and Environmental Science + Science in Society, 2016

- **Senior Capstone (E&ES):** "Comparing satellite imagery with nutrient geochemistry in a Hawaiian ohia forest"
- **Senior Essay (SiSP):** "A Comparative Cartographic History of the Southern Pole in the Twentieth Century"

PUBLICATIONS & PRESENTATIONS

[Preprint, in review] Omara, M., Gautam, R., **O'Brien, M.**, Himmelberger, A., Franco, A., Meisenhelder, K., Hauser, G., Lyon, D., Chulakadaba, A., Miller, C., Franklin, J., Wofsy, S., and Hamburg, S. (2023). "Developing a spatially explicit global oil and gas infrastructure database for characterizing methane emission sources at high resolution." *Earth Syst. Sci. Data Discuss.* doi.org/10.5194/essd-2022-452

McCann, B. T., Davis, J., Osborne, D., Durham, C., **O'Brien, M.**, and Raymond, N. A. (2021). "Quantifying climate change relevant humanitarian programming and spending across five highly disaster vulnerable countries." *Disasters.* doi.org/10.1111/disa.12453

SKILLS

Software: ArcGIS 10.x + Spatial Analyst + Network Analyst | ArcGIS Online | ENVI 5.4 | Python (geopandas, arcpy) | R | Minitab 18 | Novice in: Google Earth Engine and QGIS

Geospatial: Image interpretation & classification (supervised & unsupervised) | Navigation & field data collection with GPS (Trimble, Garmin), ArcGIS Collector, Avenza, & paper maps | Data management & analysis

Previous Certifications: Remote Pilot Certificate, small UAS (FAA) | Wilderness First Aid | Lifeguarding