ZACHARY BROWN

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SUMMARY

Geospatial analyst with an M.S. in Geoinformatics and applied experience in remote sensing, GIS, wetland methane research, UAV imagery, and environmental data workflows. Skilled in Google Earth Engine, ArcGIS Pro, R, raster processing, field data collection, and multi-source environmental analysis. Experience translating geospatial products into decision-support outputs through NASA DEVELOP, graduate research, and applied ecological projects.

EDUCATION

Master of Science in Geoinformatics, Murray State University, KY

Bachelor of Science in Geography and GIS, Murray State University, KY

Minor in Unmanned Aerial Systems (UAS)

TECHNICAL SKILLS

Capacity Building Google Earth Engine ArcGIS Pro R Python (working knowledge) Raster Processing

Time Series Analysis GDB Management FAA Part 107 Certified Field-to-Data Workflows Data Visualization

PROFESSIONAL EXPERIENCE

Graduate Research and Teaching Assistant , Murray State University Aug 2024 – May 2026

- Conducted M.S. thesis research on methane flux variability in a forested wetland, integrating in-situ chamber measurements, eddy covariance observations, and satellite-derived environmental predictors.
- Designed and supported wetland field campaigns, including sensor deployment, LI-COR instrumentation, GPS data collection, field QA/QC, and environmental metadata management.
- Built R and Google Earth Engine workflows for raster time series extraction, vegetation/hydrologic indices, flux data processing, and statistical analysis.
- Facilitated GIS, remote sensing, and Earth systems labs for 175+ students, supporting instruction in ArcGIS Pro, ERDAS Imagine, spatial analysis, and applied geospatial workflows.

Geospatial Contractor , NASA DEVELOP, Goddard Space Flight Center Jun 2024 – Aug 2024

- Developed Earth observation workflows to assess canopy dynamics and forest-type suitability across Southern Indiana using multi-source geospatial datasets.
- Built reproducible processing pipelines for satellite imagery, terrain variables, and forest condition metrics.
- Delivered decision-support maps, technical documentation, and stakeholder-facing products for partners including the U.S. Forest Service, Indiana DNR, and conservation organizations.

APPLIED PROJECTS

Wetland Methane Flux Variability | M.S. Thesis Research

- Integrated chamber-based methane measurements, eddy covariance observations, HLS imagery, VIIRS LST, and wetland classification data to evaluate environmental drivers of methane flux across wetland systems.
- Built Google Earth Engine and R workflows to calculate vegetation and hydrologic indices, aggregate monthly flux observations, and model nonlinear methane-response patterns.

Post-Hurricane Helene Landslide Detection | Google Earth Engine

- Processed Sentinel-2 Surface Reflectance and cloud probability datasets to map post-hurricane land cover disturbance across Western North Carolina.
- Applied NDVI, NBR, slope classification, and terrain filtering to identify landslide-prone areas and support disaster mitigation planning.

Urban Heat Island Modeling – Louisville, KY | ArcGIS Pro, GWR

- Modeled relationships between Landsat-derived surface temperature and urban variables including impervious surface, building density, tree canopy, parks, water bodies, and transportation corridors.
- Used OLS, GWR, model diagnostics, local R^2, and spatial interpretation to identify localized drivers of urban heat exposure.