

Tyler Eshelman

Address and Phone Number Redacted :)

teshelman@unm.edu

RESEARCH INTERESTS

- GIScience / Remote Sensing
- Spatial Database Design / Management
- Spatial Analysis and Modeling
- Geospatial Big Data

EDUCATION

Master of Science in Geography **In-Progress**

University of New Mexico, Albuquerque, NM

Bachelor of Science in Geography (Minor in Computer Science) **March 2021**

University of New Mexico, Albuquerque, NM

Relevant Coursework: Programming for GIS, Database Management, Remote Sensing Fundamentals, Applications of Remote Sensing, Internet Mapping.

Associate of Applied Science in Integrated Studies with Honors **April 2020**

Central New Mexico Community College, Albuquerque, NM

Relevant Coursework: Programming for GIS, Database Management, Remote Sensing Fundamentals, Applications of Remote Sensing, Internet Mapping.

PROFESSIONAL EXPERIENCE

Programmer Analyst 2 **May 2024 – Present**

Earth Data Analysis Center (EDAC), University of New Mexico, Albuquerque, NM

- Lead and manage multiple concurrent geospatial development projects for federal, state, and local government agencies and various university departments, overseeing technical architecture and deliverables.
- Design and implement full-stack solutions integrating PostgreSQL/PostGIS databases, Python-based processing pipelines, and JavaScript web interfaces for complex spatial analysis applications.
- Develop computationally intensive workflows processing terabytes of remote sensing data (Planet, Landsat, MODIS, Sentinel), creating custom algorithms to extract spatial metrics and patterns from large-scale raster datasets.

- Architect and optimize automated data processing systems that handle big data sources, improving efficiency and enabling analyses not feasible through manual methods.
- Serve as primary technical liaison between interdisciplinary research teams and agency stakeholders, translating scientific requirements into deployable applications.
- Mentor junior developers and student interns, establishing coding standards and best practices across team projects.
- Function as a primary graphic designer for EDAC, creating visual materials for publications, presentations, and client deliverables that translate complex geospatial data into clear visual narratives.

Programmer Analyst 1 February 2020 – May 2024
EDAC, University of New Mexico, Albuquerque, NM

- Led development and maintenance of geospatial web applications and APIs serving federal, state, and local government agencies and various university departments
- Designed and implemented PostgreSQL/PostGIS database architectures for large-scale environmental and climate datasets, optimizing query performance for spatial analysis workflows.
- Developed custom Python scripts and tools for automated processing of remote sensing imagery supporting habitat assessment and environmental monitoring projects.
- Built interactive web mapping interfaces using JavaScript frameworks (Leaflet, OpenLayers) enabling real-time visualization of health, vegetation, and crash mapping data.
- Collaborated with interdisciplinary research teams to translate scientific requirements into technical specifications and deliverable applications.
- Mentored junior developers and student interns on GIS programming best practices, application development, version control (Git), and spatial database design.
- Authored technical documentation and user guides for web applications and APIs, improving accessibility for non-technical stakeholders.

Computer Support Technician II September 2019 – January 2020
EDAC, University of New Mexico, Albuquerque, NM

- Provided development and technical support for EPSCoR reporting platform used by 14 states.
- Provided technical support for GIS software (ArcGIS, QGIS) and hardware infrastructure supporting research operations across multiple concurrent projects.
- Managed data storage systems, virtual machines, and backup protocols for critical geospatial datasets.
- Troubleshoot and resolved software compatibility issues for researchers working with Python, R, and remote sensing applications.

- Assisted in training staff on new GIS tools and workflows, creating documentation for common technical procedures.

Data Services Assistant **August 2019 – September 2019**
EDAC, University of New Mexico, Albuquerque, NM

- Processed, georeferenced, and cataloged historical aerial imagery, ensuring metadata compliance with FGDC standards.
- Performed quality control on spatial data products prior to distribution to external clients.
- Assisted senior analysts with photo requisition and data preprocessing for client requests and ongoing research projects.

Teaching Assistant **January 2016 – January 2017**
Department of Computer Science, University of New Mexico, Albuquerque, NM

- Assisted with instruction for CS 152: Computer Programming Fundamentals with approximately 20-30 students per semester.
- Held weekly office hours providing one-on-one tutoring on programming concepts, debugging techniques, and problem-solving strategies.
- Graded assignments and exams, providing detailed feedback to help students improve their coding skills.
- Led lab sections demonstrating practical application of Java programming concepts.

RESEARCH PROJECTS

- NIH Community Health Allied Network for Geospatial and Environmental Science (CHANGES) Center (**September 2024 - August 2027**)
- Traffic Crash Visualization and Mapping (**June 2023 - May 2025**)
- NASA JPL RATES HEC-HMS Model (**August 2025 - September 2025**)
- New Mexico Statewide Terrestrial Habitat Mapping Project (**July 2022 - June 2030**)
- Drone for Bridge Inspection Program (**October 2023 - June 2026**)
- NSF Low-Cost Efficient Wireless Intelligent Sensors (LEWIS) for Greater Preparedness and Resilience to Post-Wildfire Flooding in Native American Communities (**October 2021 - December 2024**)
- Web-based CNN Access and Gamification for Duck Identification (**January 2022 - December 2022**)
- UNM CONverging on Volcanic ERuption Science with Equity (CONVERSE) Center (**September 2022 - August 2025**)

PUBLICATIONS

Referred Peer Reviewed Journal Articles – Published

- Mukerji, R., Lin, Y. C., Zhang, S., Stone, M., Hushman, C., Moreu, F., Vigil, L., Eshelman, T., Rotche, L., Baca, A., Nodine, M., Faulkner, M., & Johnson, C. (2024).

Co-design as participation: Creating meaningful pathways for collaboration in flood risk adaptation in Ohkay Owingeh Pueblo. International Journal of Disaster Risk Reduction, 113, 104843. <https://doi.org/10.1016/j.ijdrr.2024.104843>.

- Zhang, S., Bogus, S. M., Baros, S. V., Neville, P. R. H., Barrett, H. A., & **Eshelman, T.** (2023). *Bridge deck surface distress evaluation using S-UAS acquired high-spatial resolution aerial imagery*. Annals of GIS, 29(2), 261–272. <https://doi.org/10.1080/19475683.2023.2166112>.

Referred Peer Reviewed Journal Articles – Under Review

- Wu, Q., Huang, Y., Sinclair, L. L., Kang, H., **Eshelman, T.**, Picchi, M. A., Childs, M., Cerrato, J. M., Zhu, Y., Zhang, S., Belinsky, S. A., Campen, M. J., Gong, X., & Leng, S. (2025). *Associations between Wildfire Smoke Exposure and Health-Related Quality of Life: Findings from the Lovelace Smokers Cohort*. Springer Science and Business Media LLC. <https://doi.org/10.21203/rs.3.rs-7069099/v1>.

Referred Peer Reviewed Journal Articles – In preparation

- Zhang, S., Sinclair, L. L., **Eshelman, T.**, and Lippitt, C. D., Horizontal accuracy assessment of PlanetScope Imagery. Target Journal: Remote Sensing Letters.
- Zhang, S., Barrett, H. A., **Eshelman, T.**, and Lippitt, C. D. Development of empirical models for deriving daily full ground coverage phenological data of an AOI using hyper-temporal resolution PlanetScope imagery. Target Journal: Remote Sensing.
- Zhang, S., Giralmo, C., **Eshelman, T.**, Sinclair, L. L., Gong, X. From Desktop to Web: Advancing Crash Analysis through Customized Online Tools. Target Journal: Journal of Geovisualization and Spatial Analysis.

Reports

- Zhang, S., **Eshelman, T. A.**, Sinclair, L. L., Giralmo, C., Crozier, E., Ferenchak, N. N. (2025). *Elevating Traffic Safety in Native American Communities: A Comprehensive Approach with Online Mapping and Crowdsourcing Solutions*.
- Zhang, S., **Eshelman, T. A.**, Sinclair, L. L., & Ferenchak, N. N. (2024, October 1). *Source code for CPBS report 23UNM03 - enhancing collaboration through web-based visualization and analysis of traffic crash data [supporting dataset]*. TRID. <https://trid.trb.org/View/2448792>
- Zhang, S., **Eshelman, T. A.**, Sinclair, L. L., Ferenchak, N. N., University of New Mexico, & Center for Pedestrian and Bicyclist Safety (CPBS) Tier-1 University Transportation Center (UTC). (2024). *Enhancing Collaboration Through Web-Based Visualization and Analysis of Traffic Crash Data (Version Final Report – June 2023 to May 2024)*. Center

for Pedestrian and Bicyclist Safety (CPBS) Tier-1 University Transportation Center (UTC). <https://doi.org/10.21949/QZ45-3057>

CONFERENCES / MEETINGS

FOSS4G – North America (Reston, VA) **November 2025**

FOSS4G – North America (St. Louis, MO) **September 2024**

FOSS4G – North America (Baltimore, MD) **October 2023**

ESRI Developer Summit (Palm Springs, CA) **March 2023**

ESRI Developer Summit (Palm Springs, CA) **March 2022**

SYNERGISTIC ACTIVITIES

Student Mentoring **January 2025 – December 2025**

Mentored undergraduate student in developing a web-based platform for hosting and visualizing Interferometric Synthetic Aperture Radar (InSAR) data.

* Helped with UNM's Carnegie Community Engagement Reclassification creating a web application to track community engagement at the University