Jaydee Edwards, PhD

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Professional Summary

Scientist and quantitative analyst with experience supporting clean energy–adjacent and infrastructure-relevant initiatives through data-driven analysis, systems thinking, and decision support. Skilled in evaluating complex datasets, documenting uncertainty and tradeoffs, and collaborating cross-functionally to inform strategic investments and long-term energy outcomes.

EDUCATION

University of Pennsylvania, School of Arts and Sciences — Philadelphia, PA

Doctor of Philosophy – Earth and Environmental Science. — May 2025

Benjamin Franklin Fellow | Dr. Andy Binns Impact Award | Certification in University Teaching

John Brown University — Siloam Springs, AR

Bachelor of Science – Chemistry — May 2020

Cum Laude | Chemistry Honors | Chancellor's Scholar

WORK EXPERIENCE

Doctoral Researcher — Philadelphia, PA

University of Pennsylvania | Department of Earth and Environmental Science — July 2020 – May 2025

Built and applied Python-based quantitative analyses to evaluate system behavior, uncertainty, and tradeoffs across large, complex environmental datasets.
Integrated field measurements, laboratory data, and analytical workflows to generate reliable inputs for system-level assessment and decision support.
Led multi-phase projects end-to-end, managing data pipelines, timelines, and iterative analysis across multi-year research efforts.
Synthesized technical results into clear, decision-ready insights to support interpretation and comparison across large-scale, infrastructure-adjacent systems.

Data Science & Sustainability Consultant — Remote

The Headwater Group | theheadwatergroup.net — Dec 2025 - Present

Conduct quantitative and geospatial analysis to support evaluation of large-scale land-use and infrastructure-adjacent initiatives.
Develop analytical workflows to assess system performance, uncertainty, and tradeoffs across heterogeneous datasets.
Translate analytical outputs into decision-ready insights for cross-functional and external stakeholders.

Research Intern — NSF Research Experience for Undergraduates (REU) — Fayetteville, AR

University of Arkansas | Robert Coridan Research Group — Summer 2018

Conducted experimental research on photoelectrochemical systems to evaluate performance for solar-to-chemical energy conversion.
Tested and compared chemical solutions to improve water-oxidation catalysis, contributing to system efficiency assessment.
Collaborated within a research team to analyze results, troubleshoot experimental design, and communicate findings.

Academic and Intellectual Programming Fellow — Philadelphia, PA

University of Pennsylvania | Graduate Student Center — July 2024 – May 2025

Coordinated and executed large-scale programs requiring cross-functional collaboration, scheduling, and operational delivery.
Supported initiatives involving multiple stakeholders, timelines, and deliverables within a complex organization.

SKILLS

Quantitative Modeling & Analysis, Systems Thinking & Tradeoff Evaluation, Uncertainty & Sensitivity Analysis, Data-Driven Decision Support, Python (analytics, modeling), Geospatial & Spatial Analysis (ArcGIS)

GRANTS & FUNDING

Graduate Student Grant Recipient – Geological Society of America (multiple), International Association of GeoChemistry (Elsevier), Water Center at Penn.

SELECTED PUBLICATIONS

Vehicle Tire Particles in the Environment, United Nations Environment Programme (2024).

Morphology and mineral encrustations of density-separated tire- and road-wear particles collected in Charleston, SC., Polymer Bulletin (2025).