Zeinab M. Abu Romman

I'm a Climate Impact Hydro-Modeler, Integrated Water-Resource Analyst and Automation Expert who loves turning complex water-data challenges into clear, actionable insights. Using advanced spatio-statistical methods, I design and fine-tune models that link surface water and groundwater systems. I build Python and GIS automation workflows to streamline data ingestion, QA/QC, model runs and interactive dashboard creation—so teams can focus on evidence-based decisions. With a passion for climate-impact forecasting and resilience planning, I help organizations run rapid scenario analyses that guide policy and operations. I thrive on collaborating with multidisciplinary teams to deliver real-time water-allocation, drought and quality forecasts that support sustainable resource management.

Skills

- Strong background in temporal, geospatial, and statistical analysis
- Extensive experience in big data management for water and environmental modeling
- Proficient in GIS and remote sensing technologies
- Hydrologic / hydraulic modeling
- Reclamation modelling
- GHG emission quantification
- Project management and leadership skills
- Excellent written and verbal communication abilities
- Proficient in Microsoft Office applications

Software

GIS Software: ArcGIS Pro Suite 3.2, ArcGIS Desktop Suite 10x, ArcGIS Online, ArcGIS, Enterprise/ ArcGIS Server 11.2, FME 2023.2.3.0, Global Mapper 22.1, QGIS 3.24.1, Pix4DMapper, ENVI 5.6
Relational database management systems (RDBMS): SQL Server 2019, PostgreSQL 15.6.
Engineering & Science Software: WMS, GMS, HEC-RAS, MODFLOW, WaterGEMS, SewerGEMS, AutoCAD2020,
Statistical packages: SPSS, Minitab
Programming & Automation: Python, R, ArcPy, C++, Excel VBA, API & ETL toolkits.
Tools & Platforms: Git, APIs/REST, FTP automation
Microsoft Office 2019: Power BI, Word, Excel, Access, Power Point, Project.

Education

BGIS Geographic Information Systems – Southern Alberta Institute of Technology (SAIT), 2025.
Ph.D. Land, Water, and Environment – The University of Jordan, 2019 *(WES Credential: 52715931MM).*
MEng Water and Environmental Engineering – The University of Jordan (*WES Credential: 6987852*).
BEng Chemical Engineering – Al-Balqa' Applied University. (*WES Credential: 6987852*).

Websites

You can learn more about my work and professional background through the following links:

Portfolio: My Portfolio

LinkedIn: My LinkedIn

ORCID: Zeinab Abu Romman (0000-0001-6078-6525) - ORCID

Google Scholar: View my citations

Work Experience

- ***Water Modeling Technologist,*** Environment & Protected Areas at the Government of Alberta: 2024 – 2025.

As a Water Modeling Technologist with the Government of Alberta, I designed and automated end-to-end hydrologic workflows that integrate real-time licensing and water-use data to produce scalable, policy-ready models. Leveraging Python, R, GIS and Excel, I built dynamic dashboards and forecasting tools that translate complex datasets into clear insights, enabling rapid "what-if" analyses and evidence-based decision-making.

- Reduced drought-forecast runtimes by 90% through modular Python/R scripting
- Engineered a live Excel model for basin-scale allocations and scenario analysis
- Developed a one-click data-ingestion pipeline harmonizing APIs, FTP and web sources
- Created one-click GUI applications that automate data ingestion, model runs, QA/QC, and dashboard generation, eliminating manual steps and cutting processing time by 90 %.

- ***Capstone Project Manager, Student project at SAIT:*** 2023–2024***.***

Led a multidisciplinary student team in a GIS-driven reclamation study for a major resource company - mining site. I directed the development of spatial prediction models to assess mining-expansion impacts and proposed mitigation strategies, coordinated field data collection and facilitated stakeholder workshops to validate analytical results.

- Predicted post-mining landscape outcomes with advanced GIS modeling
- Managed data collection and quality assurance for spatial analyses
- Presented strategic recommendations to resource-sector stakeholders

- ***Team lead of Geospatial Operations and Environmental Impact Assessment (EIA),*** Canada Chinook for Trading and Construction, 2022–2024.

Established GIS and Environmental Impact Assessment functions for Canada Chinook, spearheading land-reclamation, carbon-capture and water-policy programs. I applied advanced GIS, remote sensing, spatial statistics and hydrologic modeling to guide reclamation designs, assess CCUS feasibility and quantify policy impacts, while automating ArcPy/FME workflows to accelerate geoprocessing.

- Automated data-prep workflows, cutting GIS processing time by 75%

- Integrated subsurface geology and hydrology for CCUS site evaluations
- Utilized spatial statistics to recommend regulatory enhancements
- Developed one-button, GUI-driven automation tools that ingest multi-source data, execute the full modeling workflow, and instantly generate interactive dashboards.

- ***Environmental Lead, Al-Mayameen for Investment Company,*** 2019–2022.

Directed Environmental Impact Assessments and integrated water-resources modeling for development projects in Amman, Jordan, focusing on air-quality, carbon-emissions mitigation and climate-impact analysis. I led baseline data collection, designed mitigation strategies aligned with regulatory standards, and collaborated with agencies and communities to embed sustainable solutions.

- Led EIAs for medical-waste projects, reducing carbon and noise footprints
- Modeled water-resource scenarios under future climate conditions
- Coordinated interdisciplinary teams and stakeholder engagement

- ***Water and Environmental Consultant, Rekaaz Aleamar Est Company,*** 2016–2019**.**

Provided climate-impact assessments and water-resource analyses for oil & gas and infrastructure projects in Saudi Arabia's Eastern Province. Using spatiostatistical methods and environmental modeling, I evaluated hydraulic-fracturing impacts, conducted flood-risk and drought forecasting, and delivered data-driven recommendations to optimize sustainable resource management.

- Assessed groundwater risks from hydraulic-fracturing operations
- Forecasted drought and flood scenarios with integrated hydrologic models

Professional Licensure & Certifications

- The Association of Science and Engineering Technology Professionals of Alberta (ASET ID: 139936)
- The Association of Professional Engineers and Geoscientists of Alberta (APEGA ID 318051, Process Initiated)
- The GIS Certification Institute (GISCI) FOR Geographic Information Systems Professional (GISP ID: 31217, Process Initiated)
- Alberta Society of Surveying and Mapping Technologies (ASSMT) ST1076

Award

- Facilities Management Award in Sustainability for 2024.
- The Alberta Geomatics Group Award for 2024.
- Nominated for the "Best Researcher Award" based on its exceptional quality. 2023.

Certificates

- FME (Feature Manipulation Engine): FME Desktop Advanced Certification – 2024
- FME (Feature Manipulation Engine): FME Desktop Basic Certification – 2024
- Python Essential Training, LinkedIn, 2024

- Suitability Modeling: Introduction, Esri. 2024
- Classifying Objects Using Deep Learning in ArcGIS Pro, Esri. 2024
- Introduction to Image Classification, Esri. 2024
- Managing Lidar Data Using Mosaic Datasets, Esri. 2024
- Distance Analysis: Creating Optimal Paths, Esri. 2024
- Managing Lidar Data Using LAS Datasets, Esri. 2024
- Introduction to Regression Analysis Using ArcGIS Pro, Esri. 2023
- Mapping Clusters: Optimized Hot Spot and Optimized Outlier Analysis, Esri. 2023
- Project Management Professional (PMP), Project Management Training School, New Zealand, 2022
- Design of WaterGEMS system, Infrastructure Network Diploma in Water and Wastewater Network Analysis and Design, Egypt, 2020.
- Design of SewerGEMS system, Infrastructure Network Diploma in Water and Wastewater Network Analysis and Design, Egypt, 2020.
- Design of LEED System, Leadership in Energy and Environmental Design LEED, Egypt, 2020.
- Groundwater Potential Zones GIS using ArcGIS, online, 2019.

Volunteering

- Peer Reviewer for Refereed Journals | 2022 – Present (details available upon request)
- Volunteered with the Jaber Al-Athrat Center for Special Needs (2018 – 2023), applying GIS expertise to design accessible, climate-resilient facility layouts and develop inclusive community-mapping solutions.

Publications Samples

Abu Romman, Z., Weshah, A (2025). Spatiostatistical Assessment of Environmental Water Stress in Alberta: Integrating Climate Change Impacts with Policy Evaluation. Under review.

Abu Romman, Z., Al-Bakri, J., & Al Kuisi, M. (2025). Assessing the Vulnerability of Arid Regions to Climate Change: A Case Study of Water Resources Depletion. Under review.

Abu Romman, Z., Al Smadi, B. Weshah, A. (2024). A statistical analysis of the Effectiveness of groundwater related policies in mitigating over-extraction in arid regions: Challenges and impacts, DOI: https://doi.org/10.1016/j.gsd.2024.101203.

Abu Romman, Z., Al Kuisi, M. (2023). The Impact of Water Legislation on Groundwater Sustainability in an arid region: Spatial Statistical Approach. Environmental Development, DOI: 10.1016/j.envdev.2023.100852.

Abu Romman, Z., Al-Bakri, J., & Al Kuisi, M. (2021). Comparison of methods for filling in gaps in monthly rainfall series in arid regions. International Journal of Climatology, 1– 16. DOI: Https://doi.org/10.1002/joc.7219

Abu Romman, Z., Al-Bakri, J., & Al Kuisi, M. (2019). Estimation of Rainfall Missing Data in an Arid Area using Spatial and EM Methods. Journal of Software Engineering and Applications. DOI: 10.9790/9622-0903027680.

Referee Contact Information

- (details available upon request)