



ZAKARIYAE ELMAHJOUBI

PHD RESEARCHER | GEOSPATIAL DEVELOPER
& GIS SPECIALIST

PhD candidate in Geography specializing in water erosion and spatial analysis. Passionate about bridging the gap between academic research and technical innovation. Evolving from a GIS analyst to a Geospatial Developer, with a strong portfolio of open-source WebGIS tools and Python applications for topographic analysis and spectral indexing. Proven expertise in ArcGIS Pro, Google Earth Engine, and automating complex geospatial workflows.

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GEOSPATIAL DEVELOPMENT & WEBGIS PORTFOLIO

Active development of open-source tools for remote sensing and topographic analysis. (See GitHub for source code).

1. Web-Based Spectral Indices Platform (`indice_web_Site`)

- Description: Developed a responsive web interface to calculate and visualize advanced spectral indices for remote sensing applications.
- Custom Indices Developed: Created and deployed code for specialized indices including MSI (Moisture Stress Index), NDVIre (Red Edge Normalized Difference Vegetation Index), PRI-RE (Photochemical Reflectance Index - Red Edge), and Composite-Index models.
- Tech Stack: HTML, CSS, JavaScript integration.

2. Topographic Analysis Suite (AASTopo & topoPro)

- Description: Built web-based toolkits designed to automate the analysis of topographic data.
- Key Features: Automated extraction of terrain features, slope analysis, and geomorphological data processing.
- Activity: High development activity with over 79 commits in December 2025, demonstrating continuous iteration and deployment.

3. Erosion Modeling & Analysis (`erosion-app` & `My-Geo-App`)

- Description: Python-based applications designed to support the calculation of soil loss and erosion risk modeling (aligned with PhD research).
- Functionality: Automates data inputs for erosion models (likely RUSLE) to streamline the assessment of water erosion in the Moulouya basin.
- Tech Stack: Python, Geoprocessing libraries.

EDUCATION

• PhD in Geography (In Progress) | 2023 – Present

1. Institution: Mohammed First University, Oujda.

2. Thesis Topic: Water Erosion (L'érosion hydrique).

• Master in Geomatics and Territory Management | 2021 – 2023

1. Institution: Mohammed First University, Oujda.

• Bachelor (Licence) in Geography | 2017 – 2020

1. Institution: Sidi Mohammed Ben Abdellah University, Fès.

SKILLS

Geospatial & Dev

- GIS: ArcGIS Pro, QGIS, MapInfo
- Remote Sensing: Google Earth Engine, ENVI
- Coding: Python, HTML/CSS
- WebGIS: GitHub Pages, Interactive Maps

Data & Research

- Analysis: SPSS, OriginPro, Excel
- Tools: Zotero, Mendeley
- Fieldwork: GPS, Topographic Surveying

QUALITIES

- **Leadership:** Team supervision & training
- **Adaptability:** Fast learner (GIS to Coding)
- **Analytical:** Strong problem-solving skills
- **Communication:** Public speaking & reporting
- **Organization:** Database structuring

LANGUAGES

- **Arabic:** Native.
- **French:** Advanced.
- **English:** Functional / Technical (Reading documentation and programming)

4. Climate Analysis Tools (Spi-code)

- Description: Scripting for the calculation of the Standardized Precipitation Index (SPI) to monitor drought and climatic variations over time.

TECHNICAL SKILLS

• GIS & Remote Sensing Software:

1. ArcGIS Pro, QGIS, MapInfo, ERDAS Imagine, ENVI.

• Geospatial Programming:

1. Python: Automation of geoprocessing tasks and tool development.
2. Google Earth Engine (GEE): Cloud-based geospatial analysis.
3. Web Mapping: HTML/CSS for deploying interactive map interfaces.

• Data Analysis & Statistics:

1. SPSS (Spatial Statistical Analysis), OriginPro, Excel (Advanced).
2. Research Tools: Zotero, Mendeley.

PROFESSIONAL EXPERIENCE

High Commission for Planning (HCP) | Morocco

• Controller (RGPH) | September 2024

- Supervised and evaluated field investigators during the General Census of Population and Housing.
- Verified data quality and reported digital anomalies in real-time.

• Investigator Trainer | August 2024

- Delivered intensive training to field staff on survey techniques, digital tools, and data rigor for the national census operation.

Mohammed First University | Oujda, Morocco

• Trainer & Academic Coordinator | 2023 – Present

- Spatial Statistics: Trained students on using SPSS for territorial data analysis.
- Hydrology & Mapping: Coordinated workshops on groundwater mapping using GIS and GPS probes.
- Research Tools: Conducted training on automated bibliography management (Zotero, Mendeley) and scientific identity building (Google Scholar, ResearchGate).
- Fieldwork: Led practical training on hydrological analysis and topographic map reading.

Moroccan Red Crescent | Fès, Morocco

• Team Leader & Trainer | 2019

- Developed evacuation plans and conducted natural risk awareness sessions.
- Trained personnel in over 20 schools on first aid procedures.