

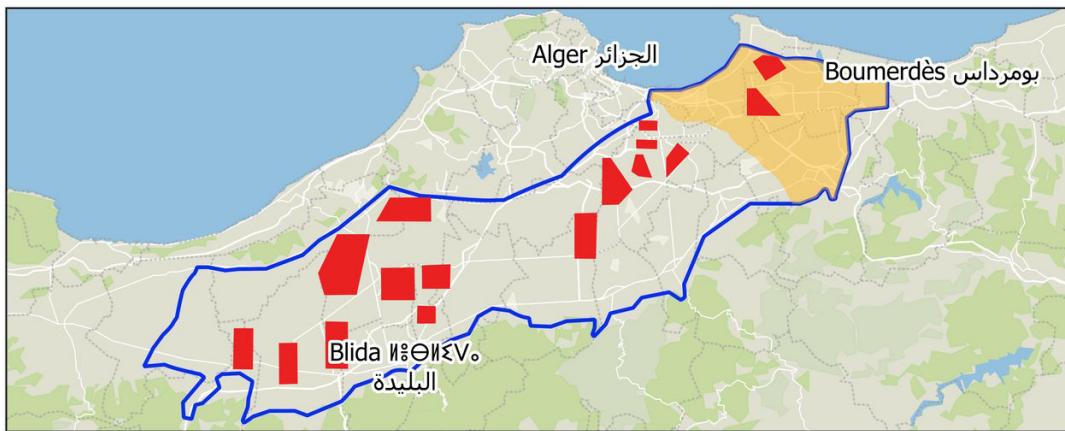


# Monitoring Crop Water Productivity in the Mitidja Plain, Algeria using FAO WaPOR Data and QGIS

The Mitidja plain is an important agricultural region in northern Algeria. We'll discuss the vital role groundwater plays in irrigation and how it impacts crop water productivity. Learn about FAO WaPOR data and how it's used to monitor crop water productivity.

***Zoubida NEMER, Hans Van Der Kwast, Marloes Mul, Fatma Khaldaoui.***





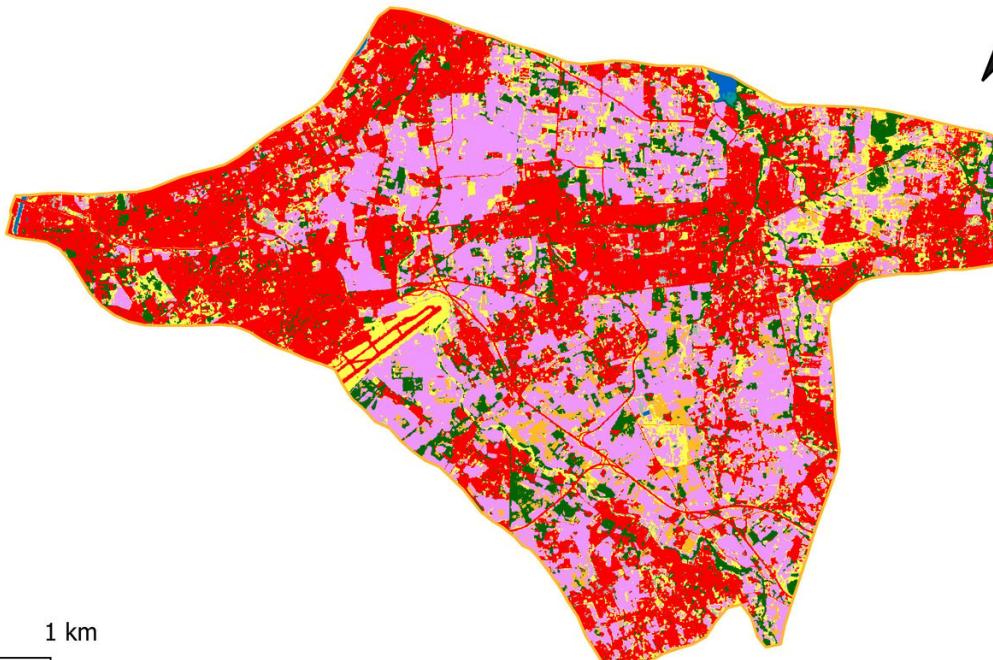
#### Legend

- Algeria
- Hydrogeological boundary
- Well\_fields
- Study\_Area

#### Land Cover

- Tree cover
- Shrubland
- Grassland
- Cropland
- Built-up
- Bare / sparse vegetation
- Permanent water bodies
- Herbaceous wetland
- Moss and lichen

0    0.5    1 km



Mitidja Plain is located in northern Algeria, extending from the Mediterranean coast to the Tell Atlas mountain range.



Fertile lands



Important Groundwater  
reservoirs

# Groundwater and Irrigation in the Mitidja Plain



## The Importance of Groundwater

Most irrigation in Mitidja Plain is dependent on groundwater.

## Challenges with Groundwater

Limited supply and quality of groundwater poses challenges for irrigation and crop production.

## Impact on Crop Productivity

Explore how groundwater quality and quantity affects crop yields and productivity.

## Future Outlook

Long-term effects of agricultural dependence on groundwater in the region from socio-economic and environmental impacts on the region as a whole.



# Importance of Crop Water Productivity (CWP)

## 1 Increased Yield

High CWP leads to higher yields by efficiently using water to grow crops.

## 2 Economic Benefits

Improved CWP can lead to a more lucrative return on investment for farmers.

## 3 Sustainable Agriculture

By optimizing CWP, we can reduce water consumption and ensure the longevity of our agriculture practices.

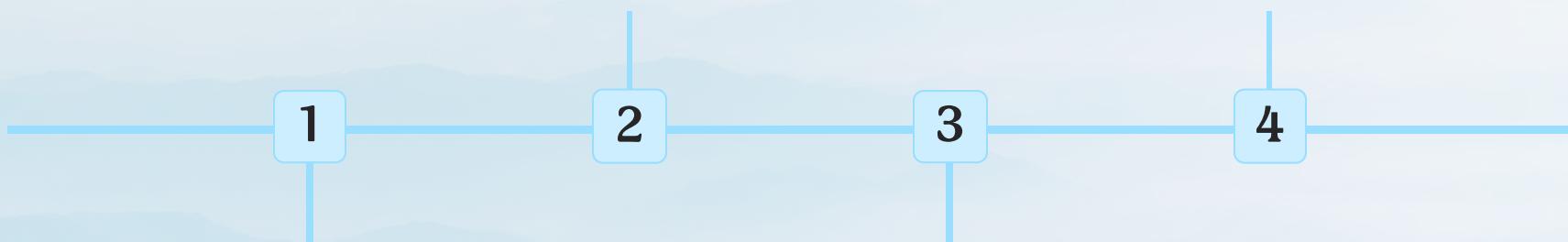
# Crop Water Productivity Analysis in Mitidja Plain: Methodology

## Hydrogeological Parameters

The hydrogeological parameters measured (i.e. water levels/quality, rainfall, etc.) and how they're important for the study

## Interpretation of Results

Provide a breakdown of the results and highlight the most meaningful elements of the study



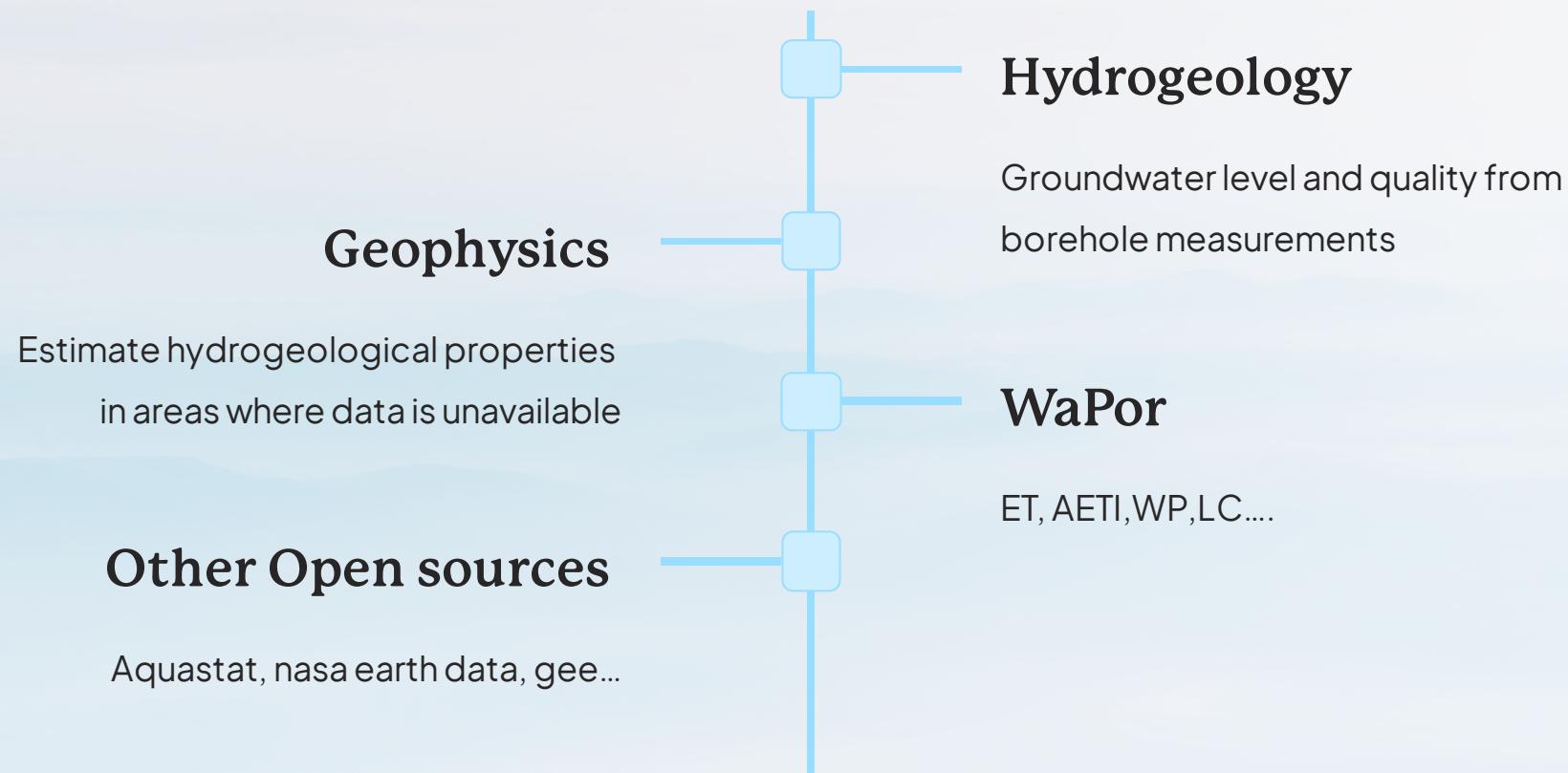
## Crop Selection and Land Use

Discuss the crops that were analyzed in the research and what categorization they fall into in terms of land use (i.e. staple crops, cash crops, etc.)

## Interpretation of WaPOR Data

Show the logic of how WaPOR usage can be examined in the context of the Mitidja Plain research and how different WaPOR indicators were analyzed

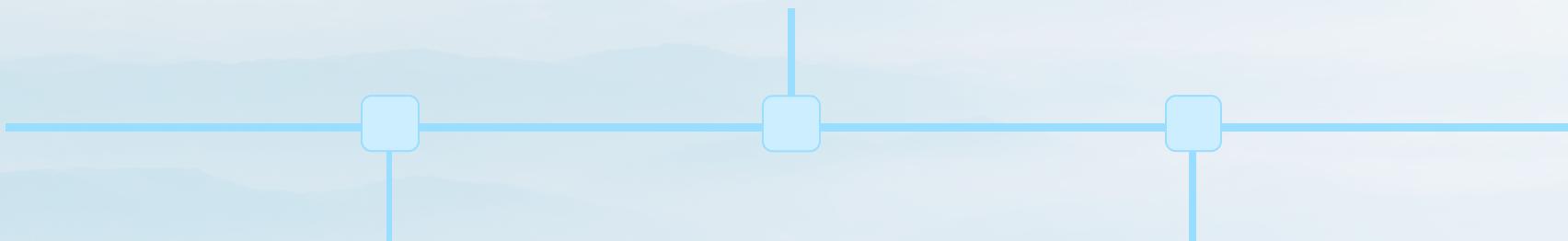
# Data availability and access



# Role of QGIS in CWP analysis

## Data Analysis

Using QGIS, we can analyze patterns and relationships between crops, irrigation, and water productivity to improve our understanding of CWP.



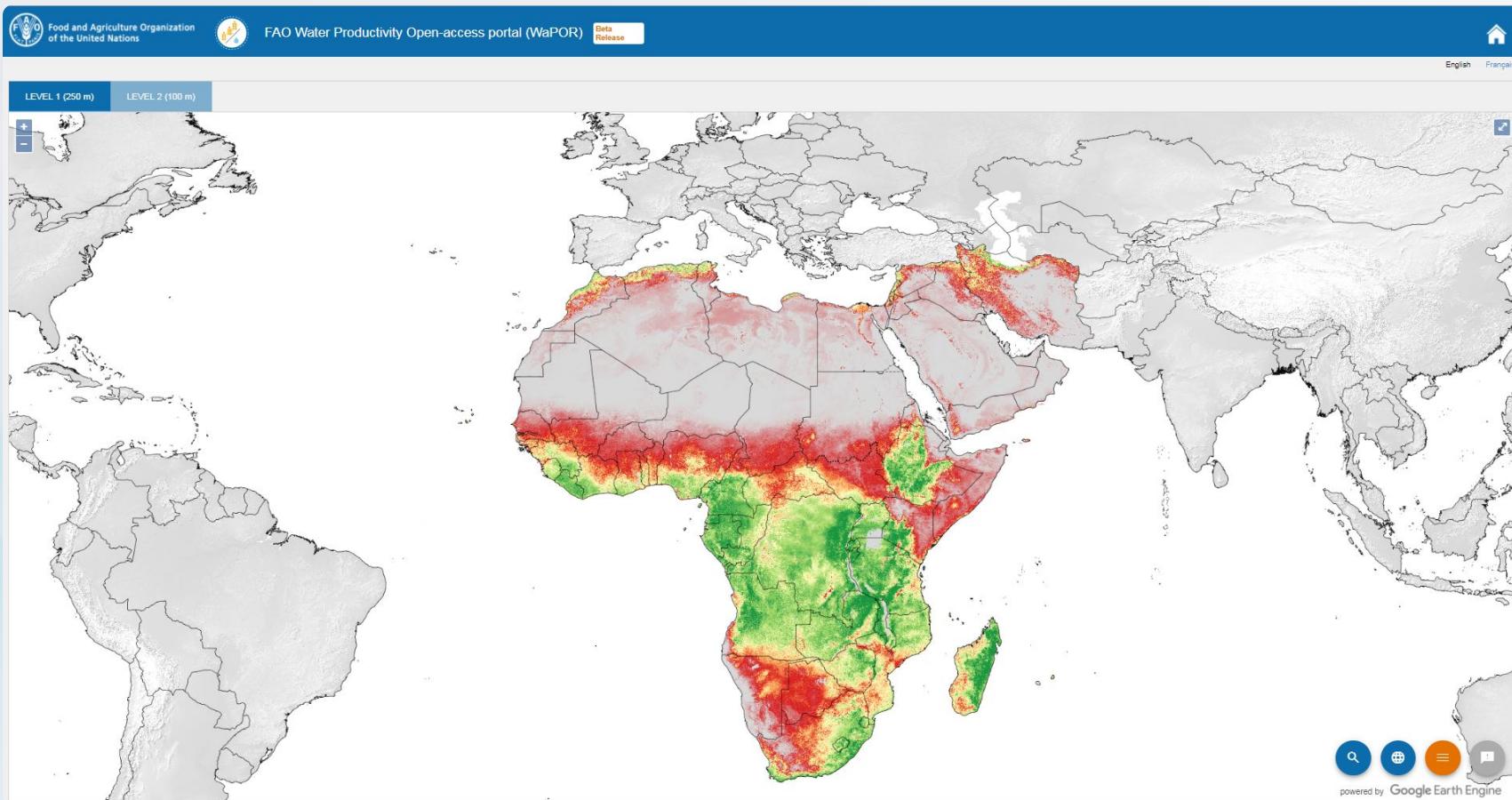
## Mapping

QGIS can help download and visualize FAO WaPOR data.

## Monitoring

QGIS can be used to monitor changes and improvements in CWP over time and help identify areas for improvement.

# WaPor



# FAO Downloader

FAO Downloader

Download Data    Settings

Select Extent

Select Layer: Study\_Area

Clip to Cutline

**WAPOR\_2**

- WAPOR\_2
  - Level 1 (250m)
  - Level 2 (100m)
    - Actual EvapoTranspiration and Interception (Annual)
    - Actual EvapoTranspiration and Interception (Dekadal)
    - Actual EvapoTranspiration and Interception (Monthly)
    - Evaporation (Annual)
    - Evaporation (Dekadal)
    - Gross Biomass Water Productivity (Seasonal)
    - Interception (Annual)
    - Interception (Dekadal)
    - Land Cover Classification
    - Net Primary Production (Dekadal)
    - Net Primary Production (Monthly)
    - Phenology (Seasonal)

Double Click Items for Additional Information

Set Download Options

1/1/2009 to 1/1/2010

Dekadal Data    Cumulative

Workspace: WAPOR\_2

Download Directory: presentation/wapor data/WAPOR\_2 2023-04-05-08-27-12 ...

Status: Downloading

Retrieve Data

# WAPlugin

WAPlugin

X

Sign in   WaPOR Catalog   Indicators Calculator

Raster Download [Help?](#)

Workspace: WAPOR\_2

Level Filter: [Help?](#) None

Time Filter: None Country Filter: None

Raster Type: Gross Biomass Water Productivity

Measure: Water Productivity

Time Interval: Year

Time Frame: 2009

Output path:  ... Name:

Coordinate Selection

Use Canvas Extent

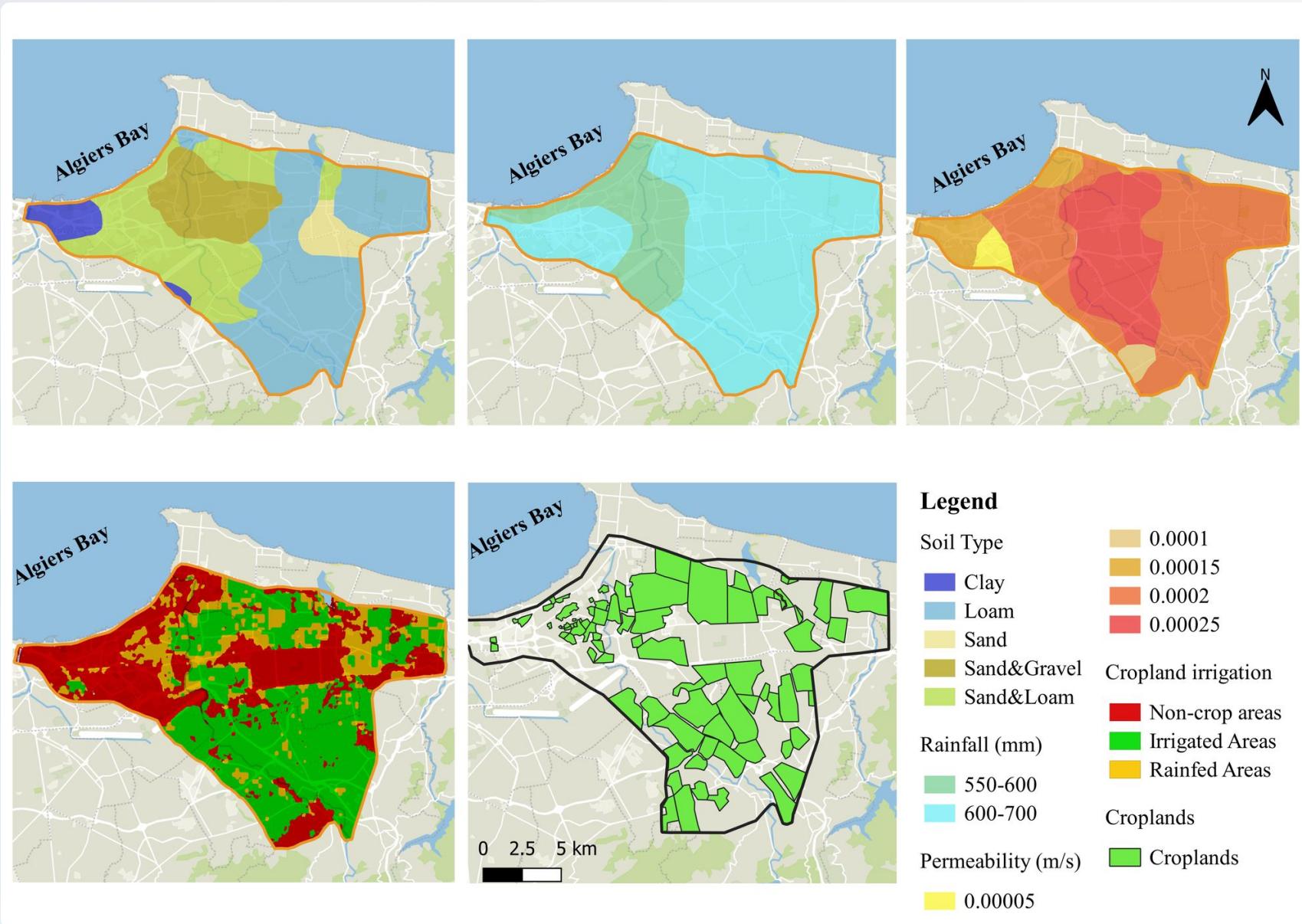
Waiting . . .

Raster Load

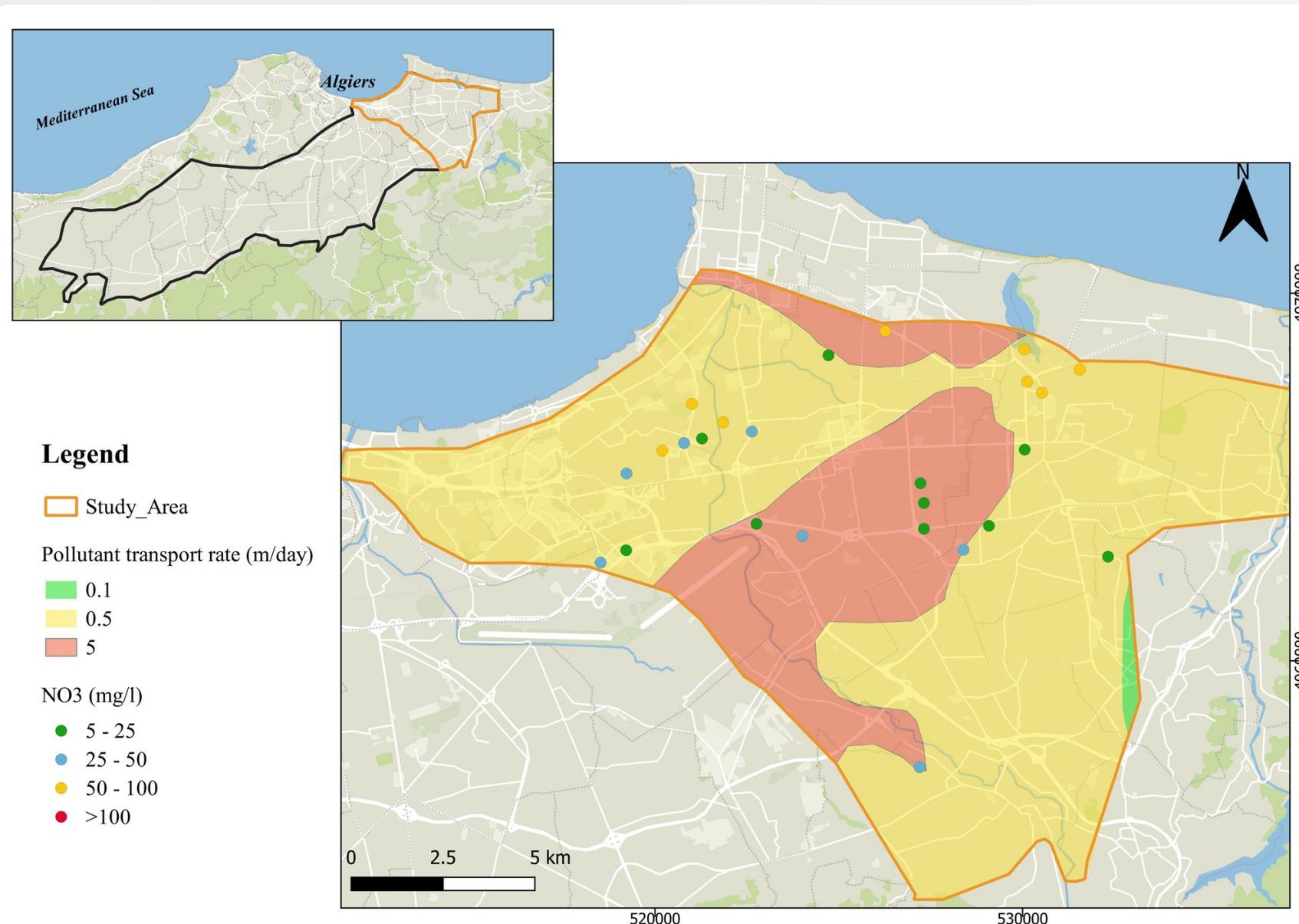
... L2\_AETI\_2009\_L2\_AETI\_A.tif

0% Waiting for WaPOR Connection

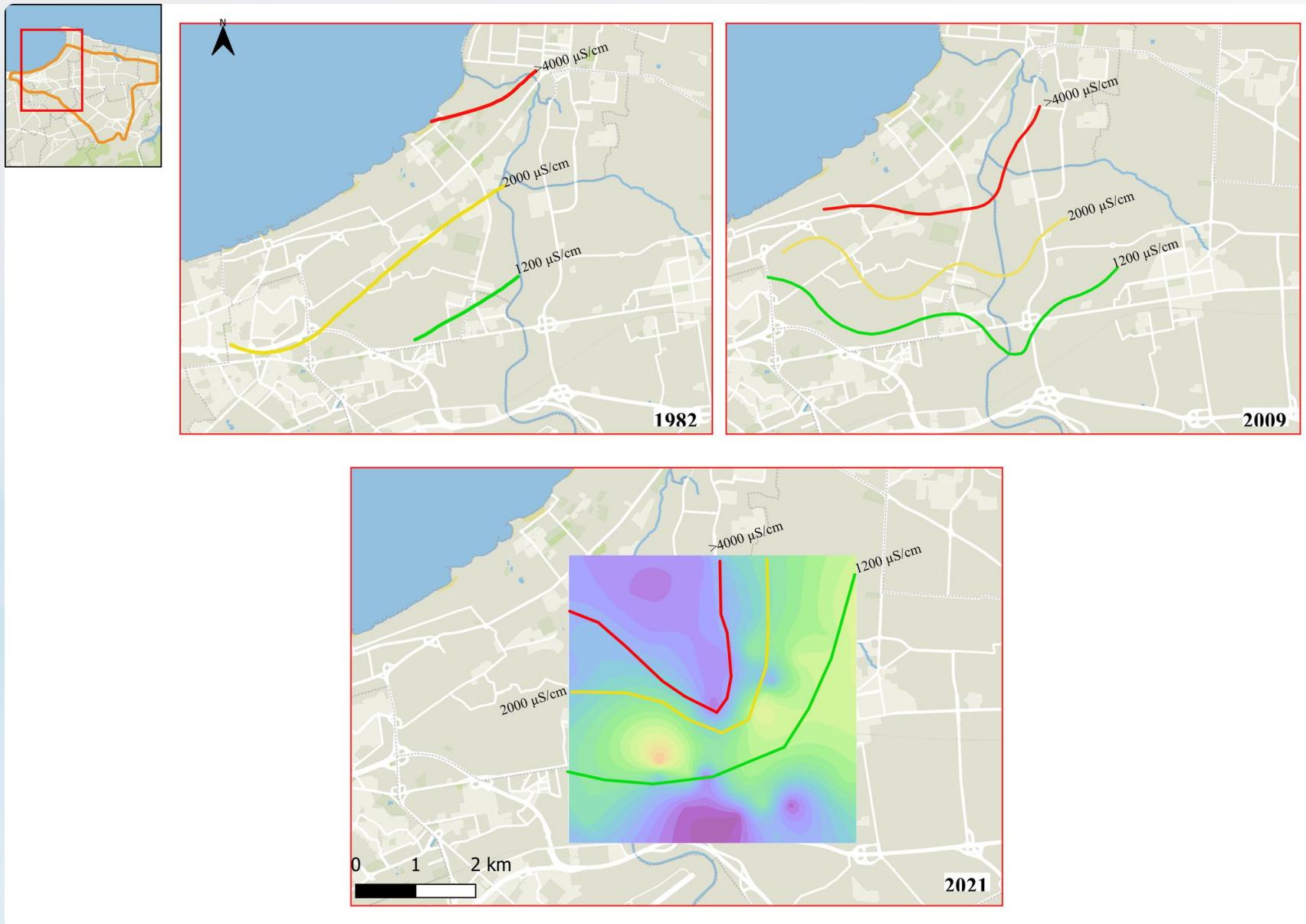
# Towards understanding the study area...



# Vulnerability assessment



# Marine Intrusion





### Legend

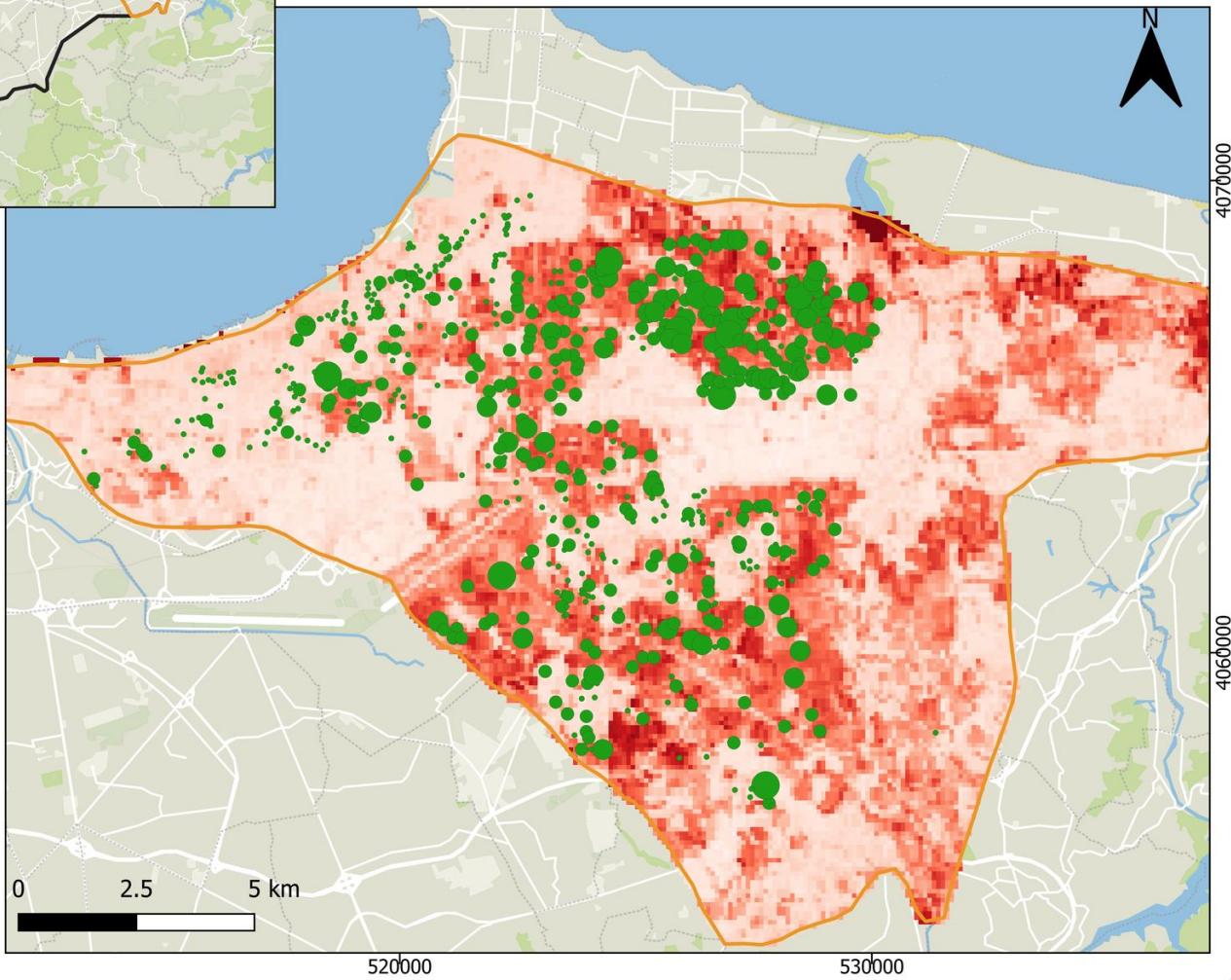
Study\_Area

Groundwater rates (m<sup>3</sup>/year)

- 100 - 30000
- 30000 - 100000
- 100000 - 200000
- 200000 - 800000

AETI (mm)

126  
9





# Conclusion and Recommendations

This presentation provides a preliminary overview of our ongoing work. To accurately identify the complex interactions between groundwater and agricultural productivity in the study area, further analysis and assessment are required. This will enable us to develop a better understanding of crop water productivity and to promote sustainable management of both groundwater and crops.