

# MINING WASTE DISTRIBUTION IN TORRENTIAL WADIS: ANALYSIS WITH SENTINEL-2 OF CARTAGENA MINING DISTRICT

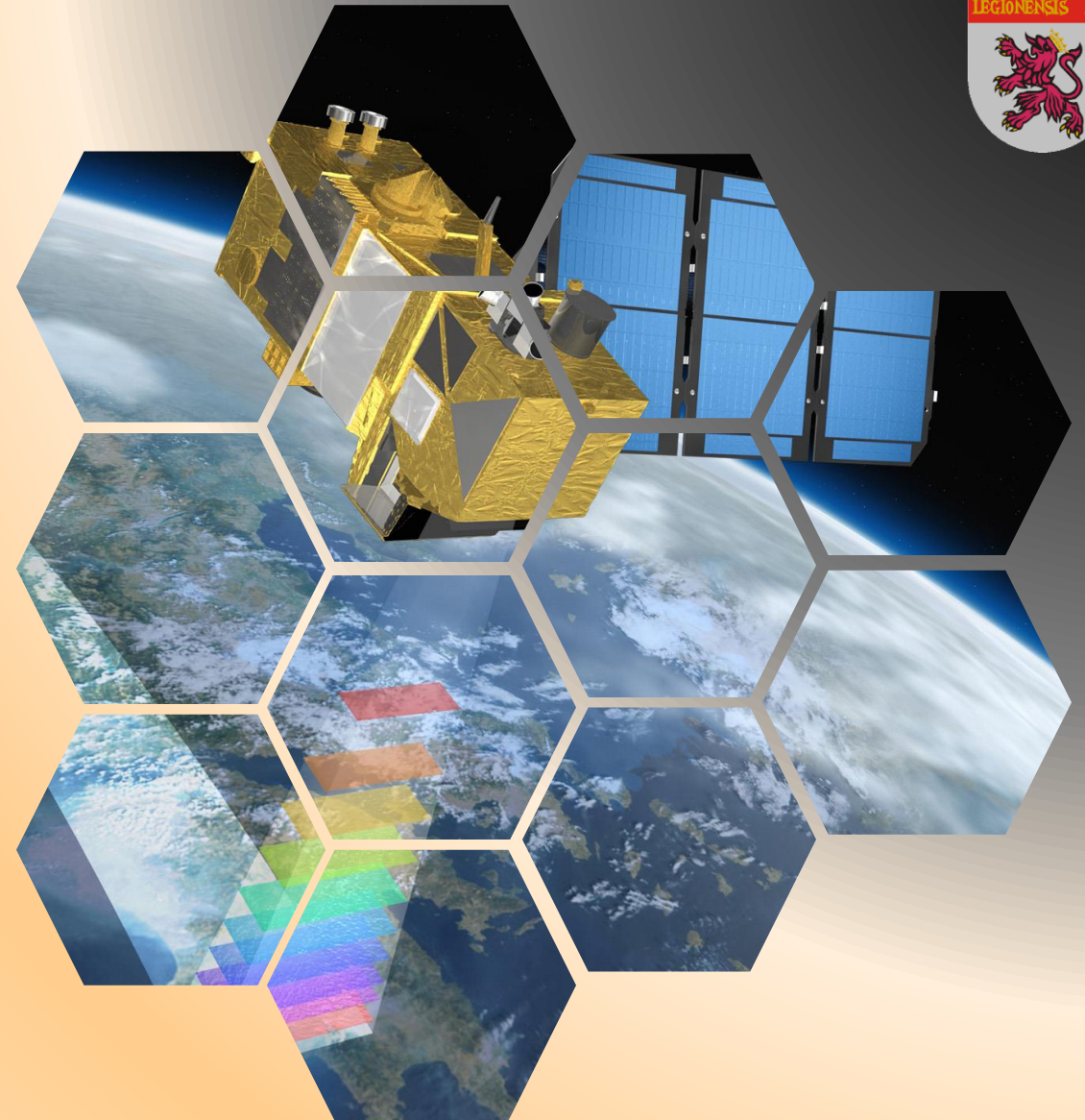
Young Soil Researchers Forum



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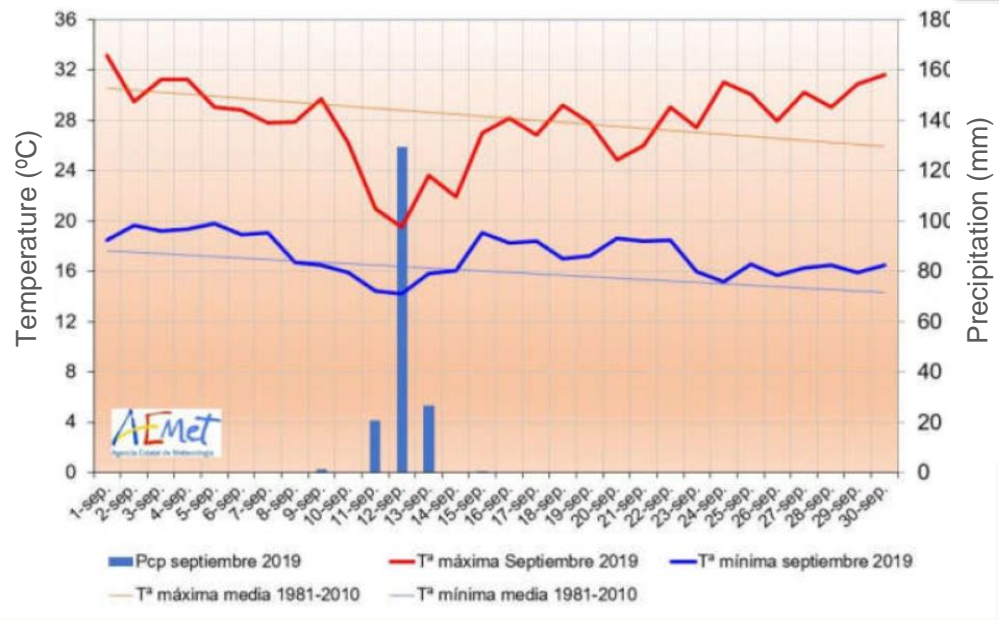
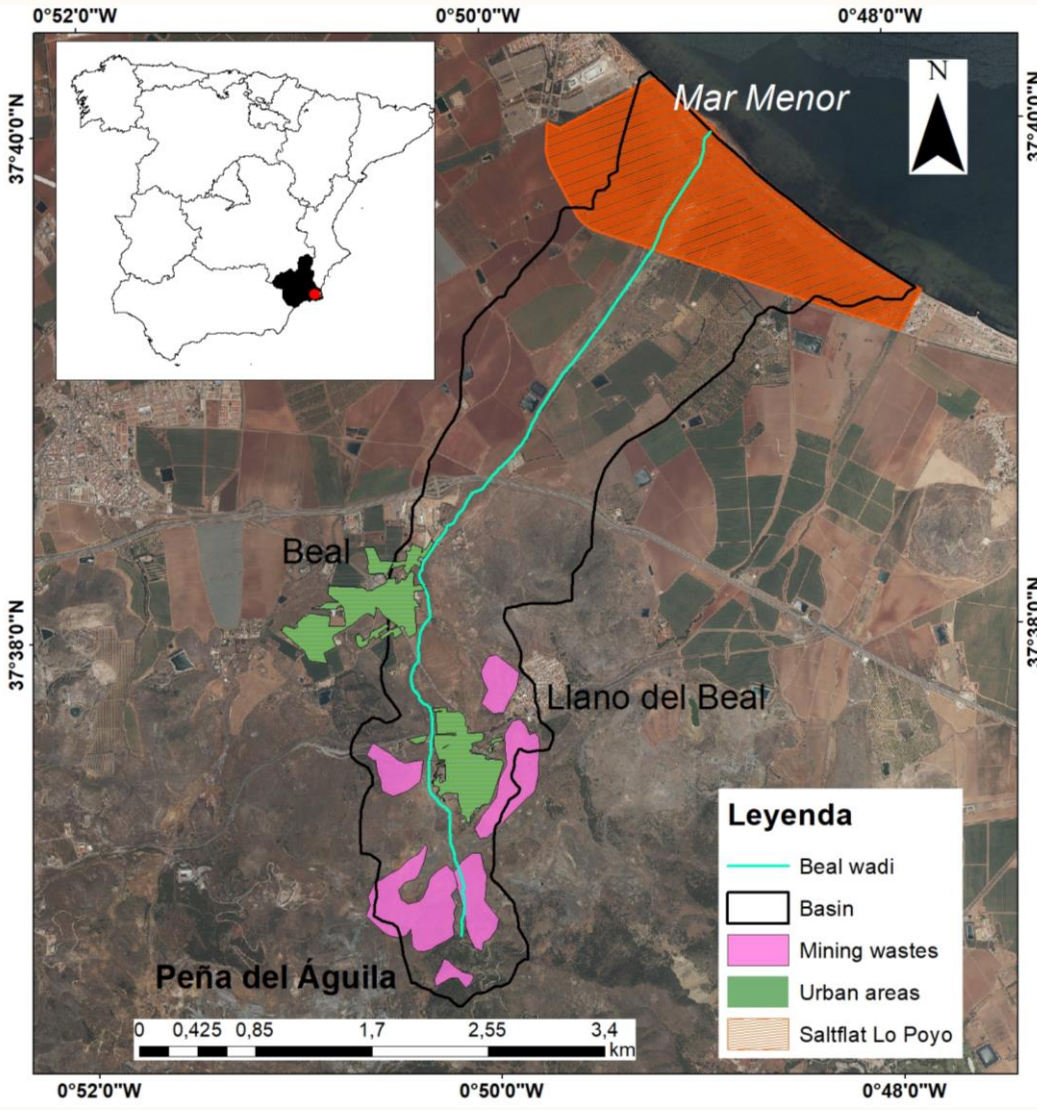




Mining district of *Cartagena*

September 2019 climatic data

2



- 4**
- MINING DISTRICT
  - VEGETATION SURFACE COVER
  - PHYSIOGRAPHY

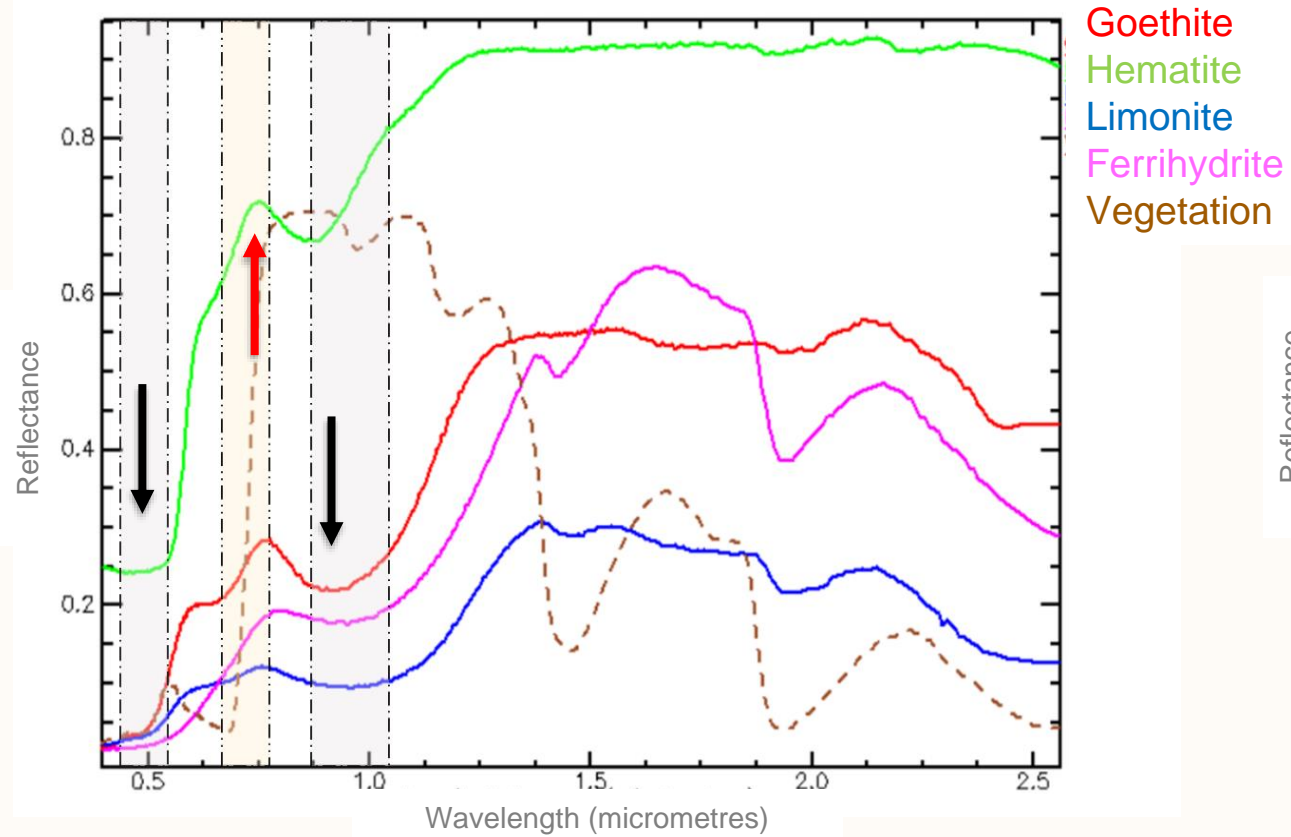
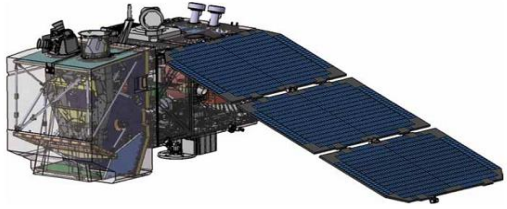
# 1 Introduction

## 2 Objectives

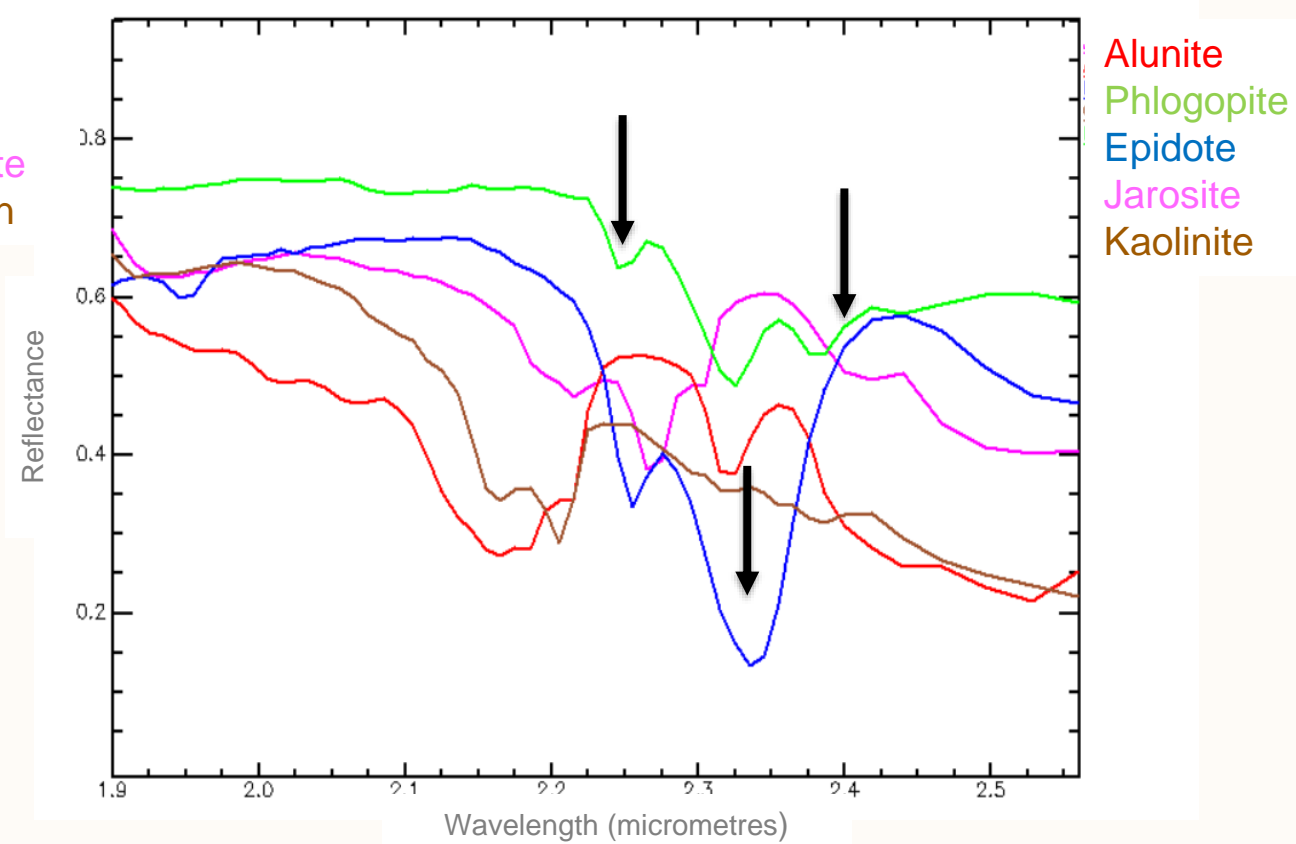
## 3 Material and Methods

## 4 Results and Discussion

## 5 Conclusions



Electronic processes →  
Iron oxides



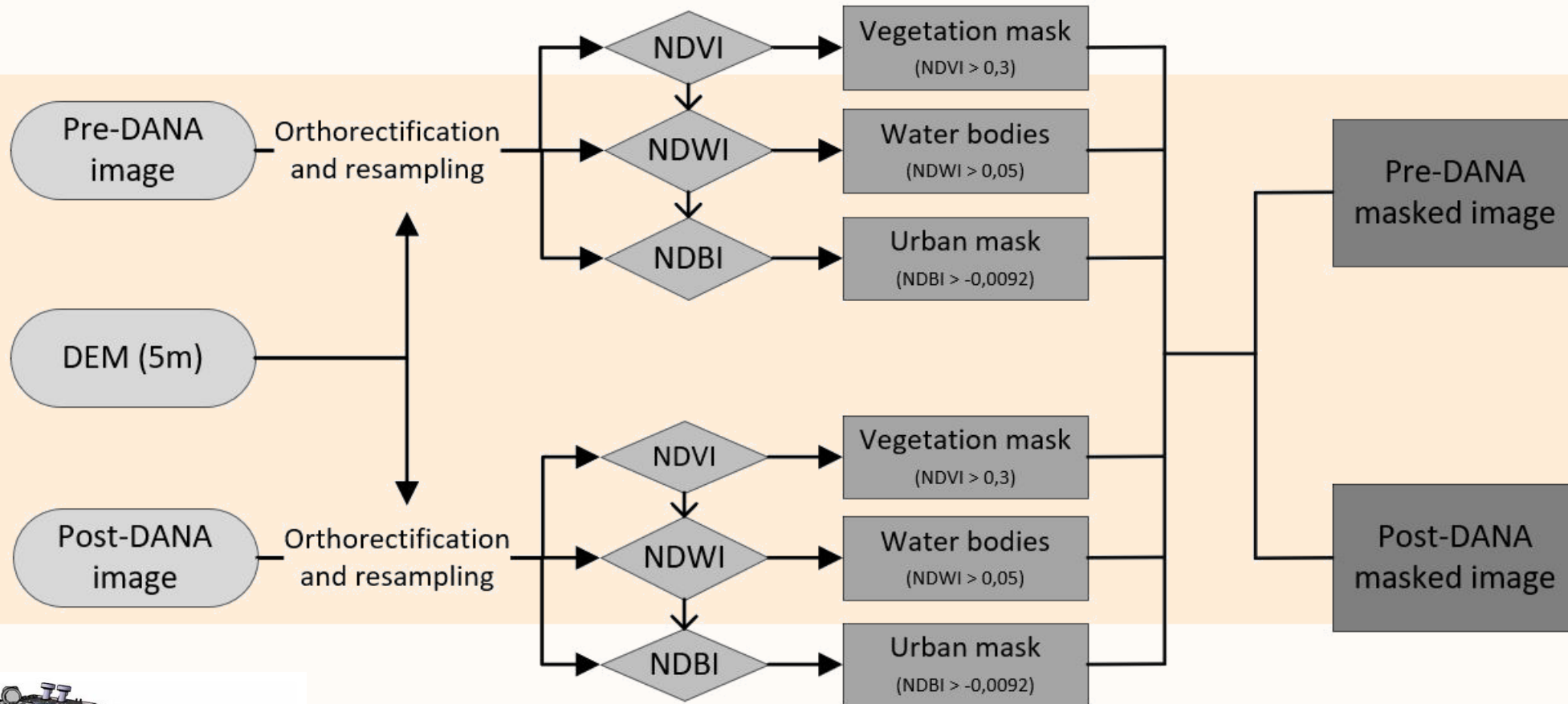
Vibrational processes →  
Hydroxyl group(OH-)

The main objective is the characterization of those mining materials from the source areas that eroded and sedimented in the basin of Beal wadi during the DANA of September 2019.

Establishing an analysis method using Remote Sensing techniques for the study problem







**Sentinel 2**

1 Introduction

2 Objectives

3 Material and Methods

4 Results and Discussion

5 Conclusions

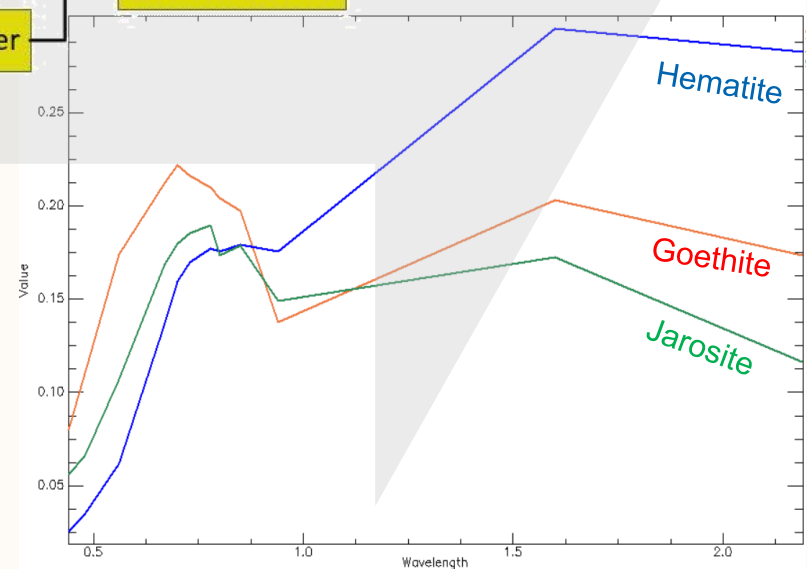
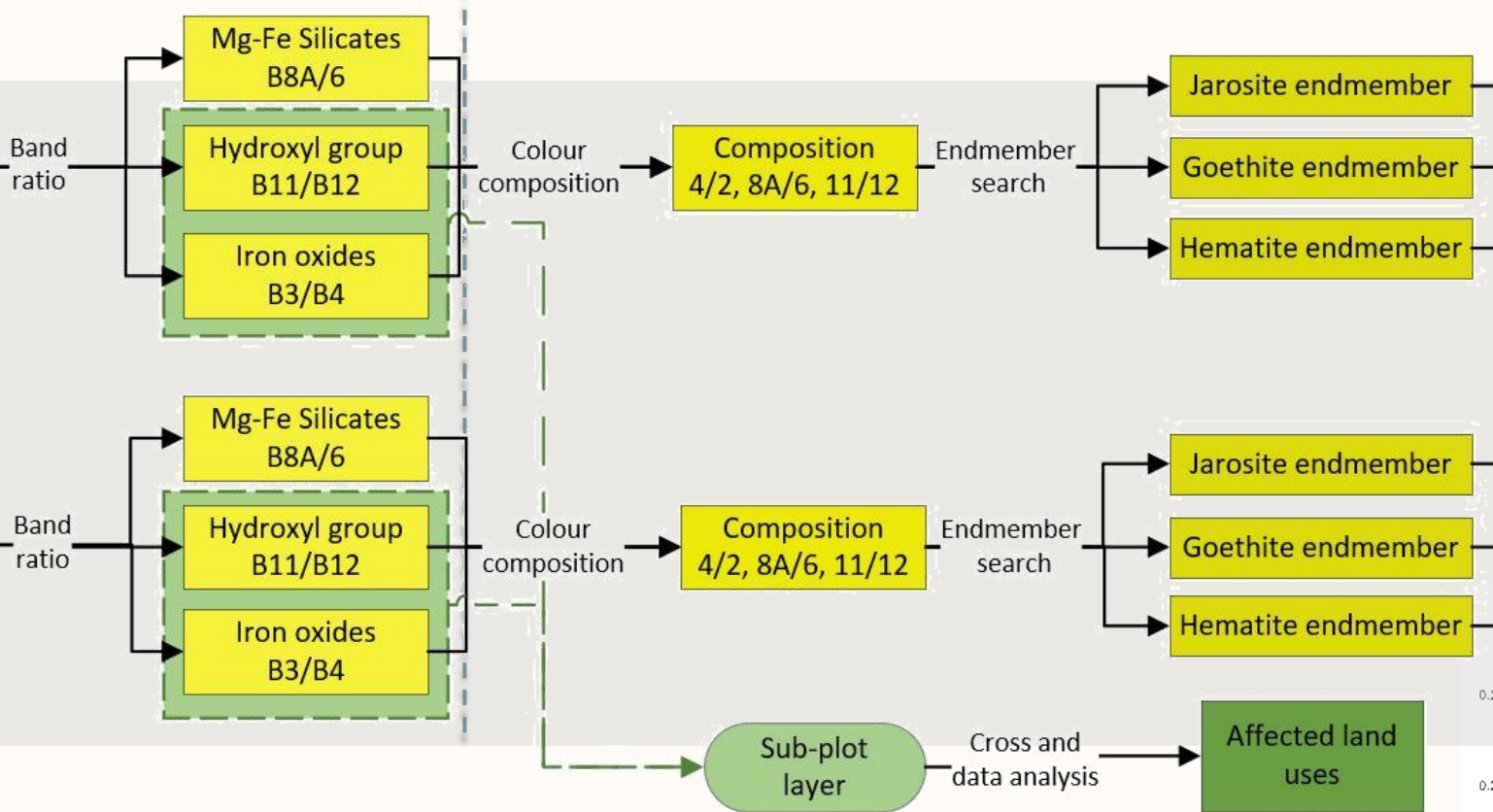
First face

Second face

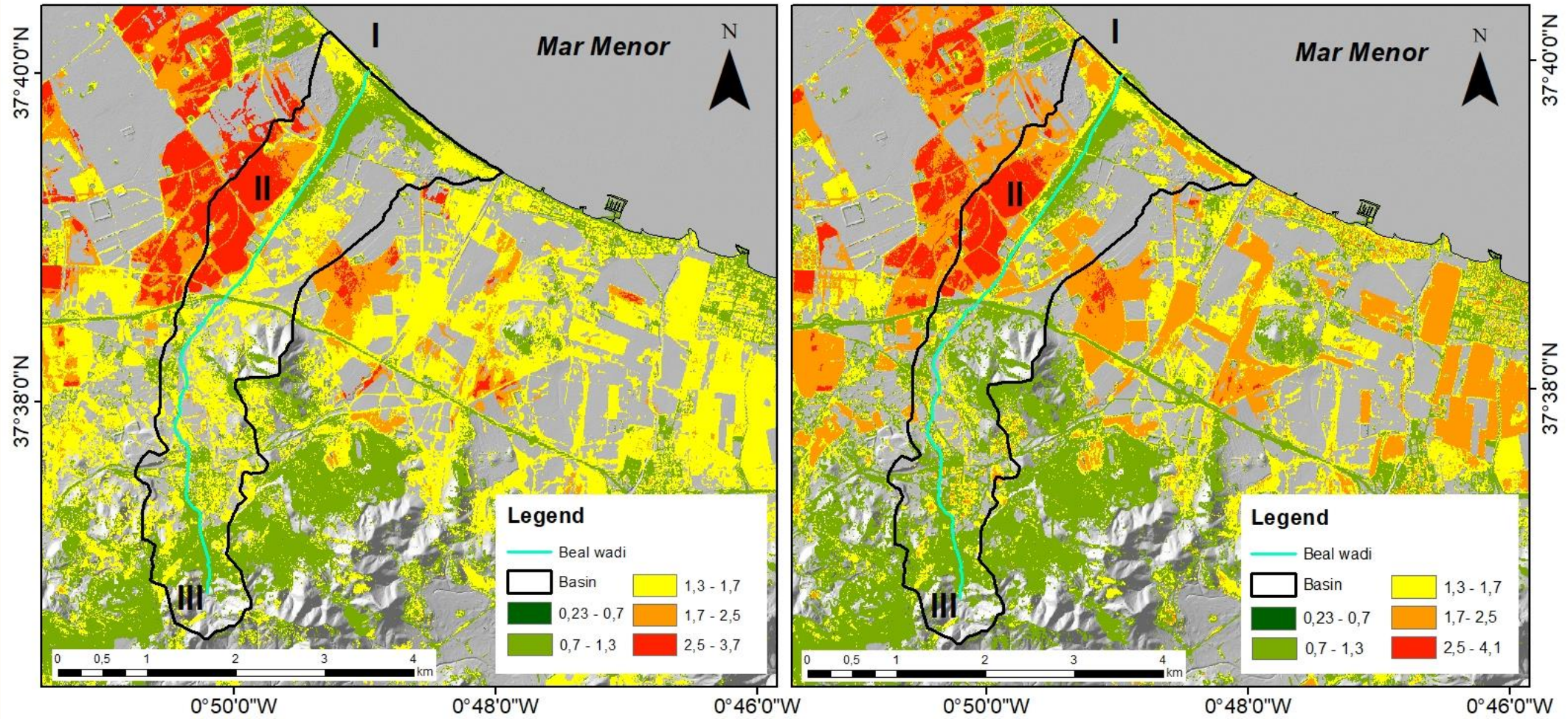
Third face

Pre-DANA masked image

Post-DANA masked image







PRE-DANA

BAND RATIO  
B4/B3

POST-DANA

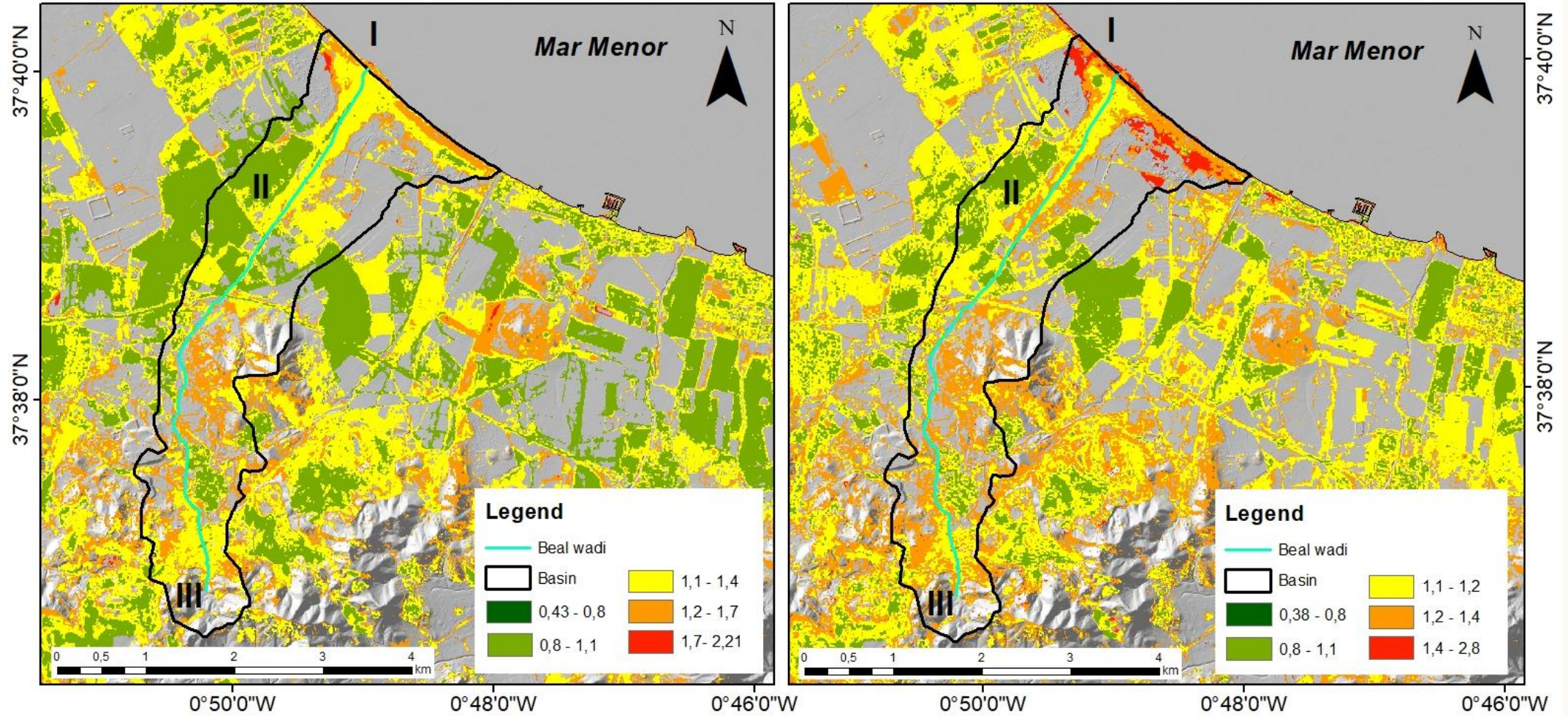
Mean: 2.32



Mean: 2.38

Iron oxides





PRE-DANA

**BAND RATIO  
B11/B12**

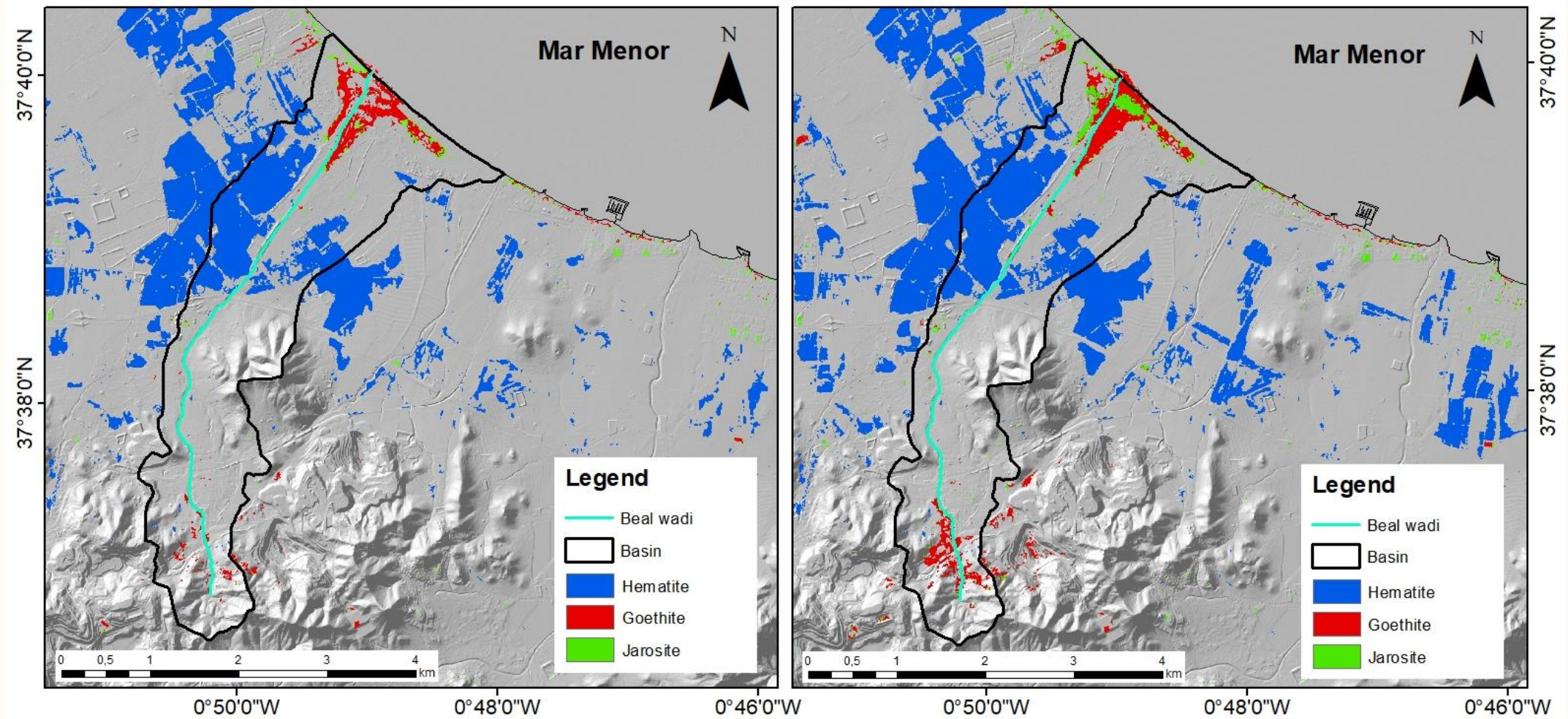
POST-DANA

Mean: 1.15

Mean: 1.21

Minerals with hydroxyl group





PRE-DANA

SAM  
CLASSIFICATION

POST-DANA

**LAND USES**

**Iron oxides**

- **NON-IRRIGATED AGRICULTURE**
- **IRRIGATED AGRICULTURE**
- **IRRIGATED CITRIC ORCHARDS**



Areas with  
sedimentation

**Minerals with hydroxyl group**

- **SCRUBLAND**
- **WADI BED**
- **GRASSLAND**



Areas with  
water accumulation



Metals and large amounts of sediments are being mobilized to the *Mar Menor*

Some authors estimate up to 67700 ppm of bioavailable iron in agricultural areas

Acid Mining Drainage



1

The three selected analysis methods provide complementary information: band ratios provide information about the quantity of the mineral, colour compositions allows the selection of endmembers for the SAM classification, which enables differentiating minerals with similar spectral signatures.

2

The iron oxides and hydroxides found after torrential rains events correspond to hematite, goethite and jarosite.

3

Iron oxides mainly sediment in agriculture lands.

4

Minerals with the hydroxyl group are found in areas with natural vegetation and the wadi's bed.



A satellite is shown in orbit around the Earth. The satellite is a small, rectangular object with solar panels, positioned at the top of the frame. A thin white line represents the satellite's orbit, curving around the Earth. A thick, multi-colored band (yellow, green, blue) follows the orbit, representing a data visualization or signal path. The Earth is shown in a curved, perspective view, with blue oceans, brown and green landmasses, and white clouds. The background is a dark, starry space.

**THANK YOU!!**