MERGUELLIL (Tunisia)

JECAM/GEOGLAM Science Meeting
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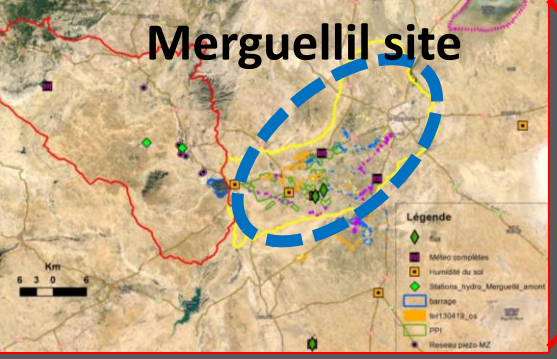
JECAM
Joint Experiment for Crop Assessment and Monitoring

GEO GROUP ON EARTH OBSERVATIONS

Project Objectives

The main objective is to estimate crop water consumption and irrigation requirements.

- **Crop identification and area estimation:** multitemporal NDVI data
- **Crop Condition**: monitoring of crop and irrigation with FAO-56 method + improved water budget + remote sensing
- **Crop Stress**: monitoring with thermal images
- **Soil Moisture and soil properties**: VIS-MIR, µwaves and thermal data
- **Yield Prediction**: empirical prediction with NDVI
- **Crop Residue, Tillage**: VIS, MIR remote sensing indices



2015-2016 data

- Continuous data: 5 meteo, 1 energy budget (1 flux tower, rainfed olive grove), 8 soil moisture stations,
- Land cover validation (Nov, Jan, May, Jul) with monthly SPOT6-7 data, Sentinel-2 first data
- Set of 23 fields visited every week: soil moisture and roughness, LAI - validation Sentinel-1, SPOT, Sentinel-2

Site Description

Central Tunisia

Landscape: alluvial plain

Climate: Semi-arid mediterranean

Texture: clayed to sandy soils

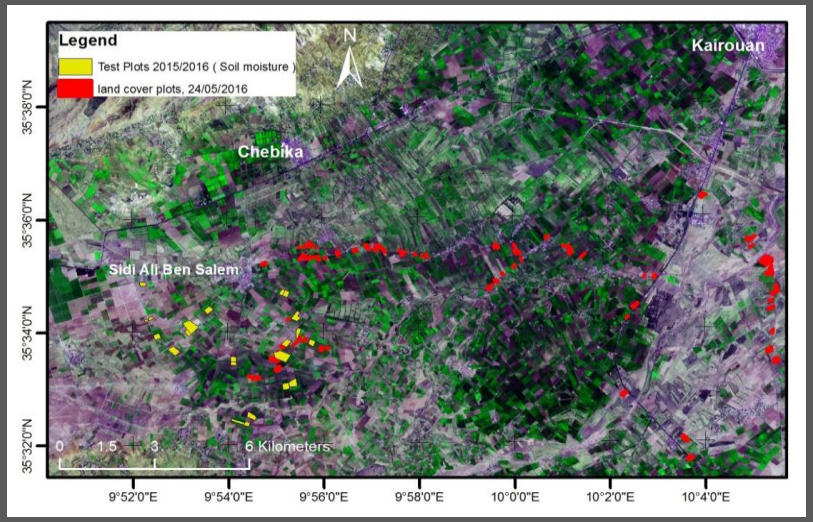
Drainage: Well to moderately well

irrigation: drilling

Land use (field size: typically 1 to 4ha)

Irrigated: cereals and market gardening, orchards

Rainfed: cereals, olive trees



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Main results

- Modeled EvapoTranspiration and estimation of irrigation at plot and perimeter scale (Saadi et al, 2015)
- Retrieval of physical soil parameters with VIS-MIR and µwaves satellite data (Gorrab et al, 2015a,b; Shabou 2015)
- Analysis of plant water stress levels using thermal infra red remote sensing data (Boulet et al, 2015)

Ongoing activities

- Improvements of land cover classification using OTB with Sentinel-2 data,
- Land cover changes due to increasing of irrigated orchard (very high resolution satellite data as PLEIADES)
- Integrated watershed modeling (WEAP) with users,
- Synergy Sentinel-2 (A, and B in 2017) and Sentinel-1 (A and B), assimilation of radar and thermal data to improve soil water budget control
- Links with JECAM sites Tensift (Morocco) and OSR (France)

⇨Poster Merguellil