1 2 3 4 5

Mona Morsy[1,2,3], Silas Michaelides[4,5], Thomas Scholten[3], and Peter Dietrich[1,3].

Monitoring and integrating the increase/decrease of vegetated areas with the rate of groundwater use in dry regions

Study site & Problem

El-Tor city in Sinai Peninsula:

- Arid region
- Groundwater
- Scarce rainfall
- High pumping rate
- Limited database

Innovation

- Tracking the increase/decrease of vegetated areas
- Integrate it with Crop consumption rate

Materials

- **Landsat 7&8**
- **Sentinel 2A**

→ vegetation indices

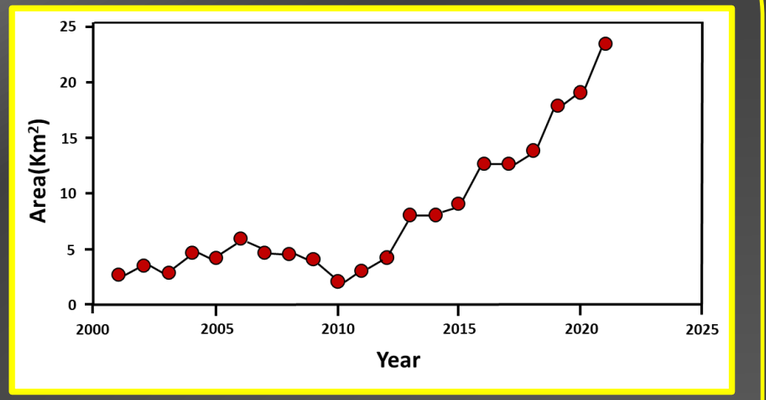
Methods

- **Site measurements**
- **CropWat8**

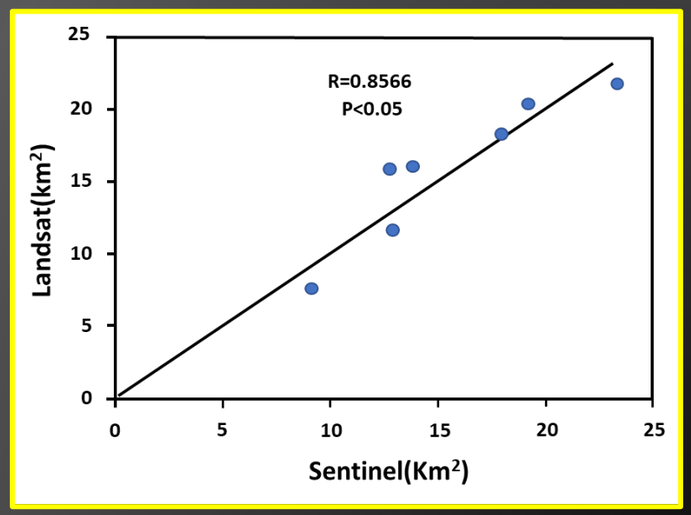
→ Consumption Scenarios

Results

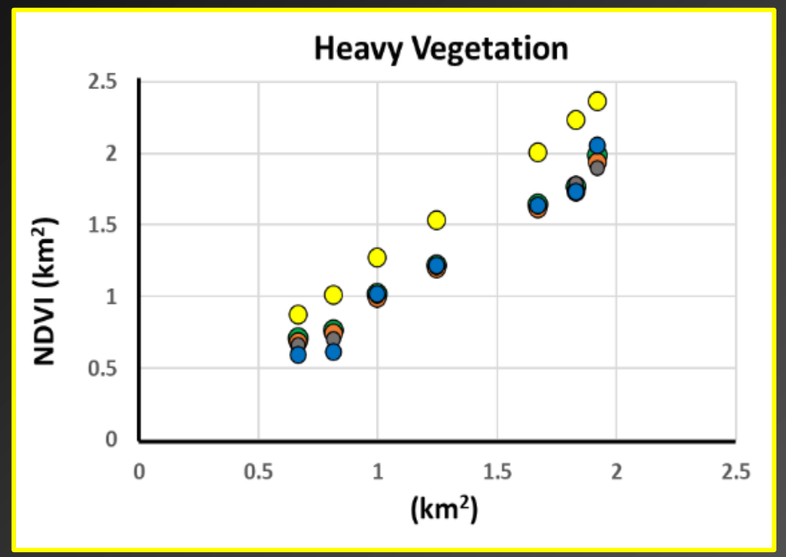
Landsat 7 & 8 + NDVI index

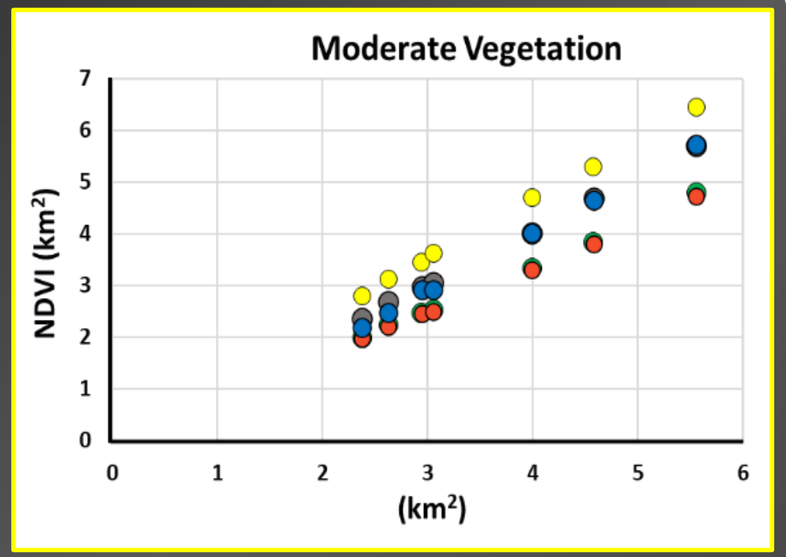


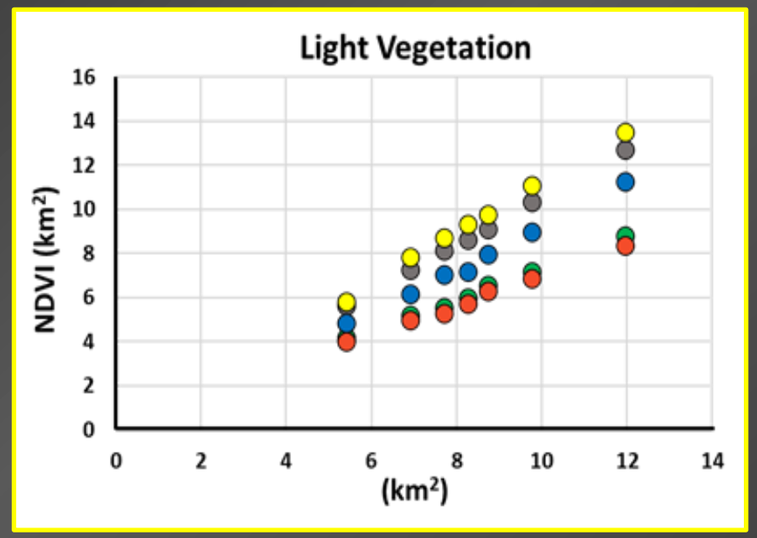
The correlation between Landsat8 & Sentinel 2A(30m) (2015:2021)



Sentinel2A(10m) + 6 indices correlation



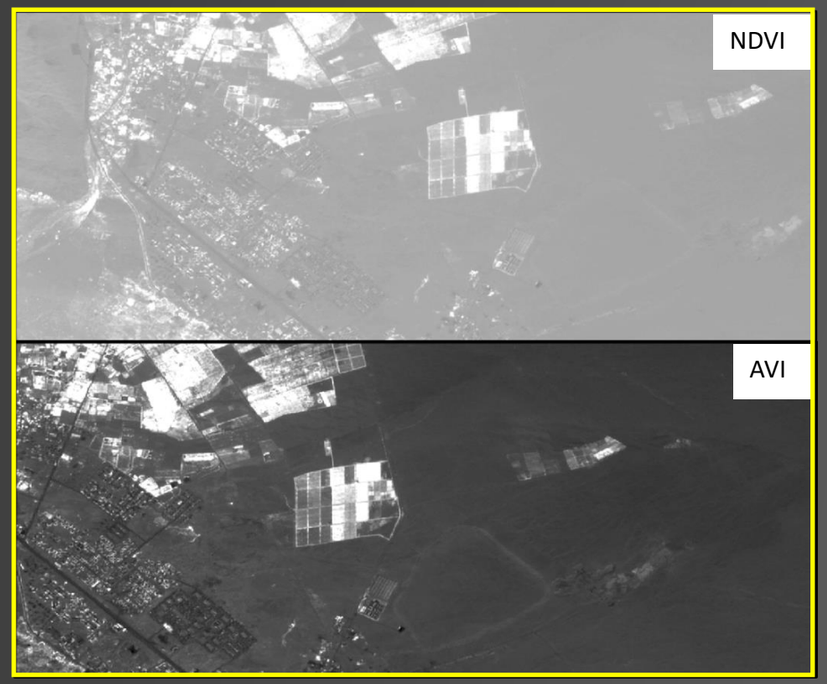


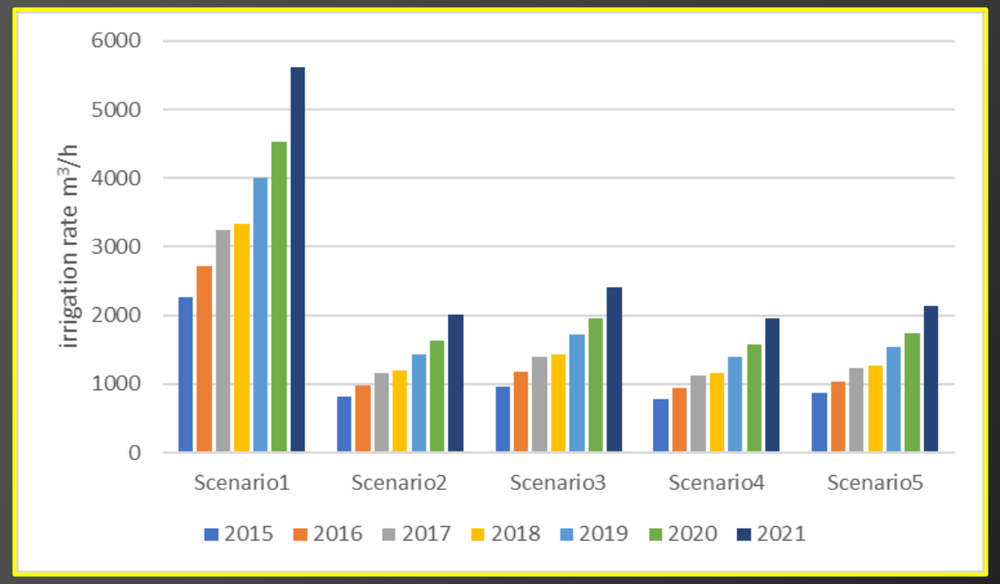


TVI RDVI SAVI EVI AVI

Results

- AVI showed the highest performance at the test site
- Water consumption for irrigation fluctuated between 785m3/h and 2256m3/h in 2015 & from 1954m3/h to 5618m3/h in 2021.





Conclusion:

Even without enough field or weather data, we roughly estimated agriculture's increase in water consumption.