

Case Study: Mapping Wadi Area to Analyze The Health of Plants Over a Period of Time

Executive Summary

We worked on a small project to help analyze and identify the effects of hot temperature and drought on the health of plants. The mapped area is in Al Ma'amour, a small village that separates Adam and Bahla. On both sides of the Wadi, plants and grass can be seen fighting their way through the high temperatures of the summer. The goal of this project is to monitor the health of plants throughout the year.

Project Numbers

The size of the mapped area is more than 15 Kilometers squared. We collected more than 700 images using our latest drones in less than 2 hours. The drone was flying at an altitude of 50 meters in a not-very-windy day (8 m/s). The resolution of the Orthomosaic map is 1.2 cm/pixel, even though we could've delivered a much better resolution, we settled on the 1.2 resolution to speed up the delivery of the Orthomosaic map and the insights from analyzing the health of the plants. It took us less than 24 hours to have the map and analytics delivered from the moment the drone took off the ground.

Results and Insights

After collecting the images and the data associated with each image, it's time to process and analyze the collected data. We first start by processing the images and develop a 2D Orthomosaic map of the area. The 2D map has a much higher resolution than any satellite image, which gives us the advantage to have a better aerial view of the mapped region. After the 2D map is processed, we moved on to running a couple of algorithms to turn the aerial view into actionable insights.



Figure 1: 2D Orthomosaic map of a section of the mapped area.

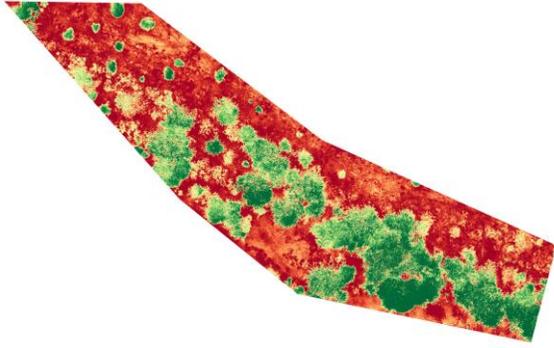


Figure 2: 2D Vegetation map that represents the health of the plants.

We ran a computer vision algorithm on the model that can identify healthy plants from unhealthy plants. As shown on figure 2, the greener the area, the healthier the plants are. The algorithm detects the health of plants by classifying the wavelengths of lights that are collected via the drone RGB sensor.

Throughout the year, we will conduct many mapping sessions on the same region to monitor the changes in the health of the plants. This is essential to understand hidden factors that play a vital role in how healthy the plants are.