

# Orbit Lab

AGRI-TECH



# About us

Orbit Lab is a company with the main focus to deliver high-performance software solutions to every business, no matter the size. Our solutions combine high-resolution satellite images, GIS, and ML algorithms for on the fly processing and fast delivery of accurate data. We can provide our customer with geospatial data and we are always happy to support them to their geospatial adventure.

# Experience

We made several national and regional projects in the field of agriculture, forestry and climate change. We worked with local businesses and Governments in countries like:

- Sweden
  - Italy
  - Bulgaria
  - Greece
  - Serbia
  - Romania
  - Moldova
  - Iran
  - Nigeria
  - Turkey
  - Croatia
- and many more



## Vision

We believe that geospatial data has the power to transform the way we work. We know that satellite imagery can give intelligence that was never seen before and that can make bigger and economically friendly decisions every day. Our goal is to give and explain geospatial power to everybody in order to build more profitable business for their end customers.

## Mission

The mission of the company is to give access to satellite data to every business. The company's main focus is to make every activity, sustainable and profitable with the power of geospatial data and analyses and in the meantime to improve all business operations for the companies workflow.



# Use cases

Orbit Lab specializes in the development and delivery of geospatial products and services, with a primary focus on the agriculture and financial sectors.

Orbit Lab specializes in the development and delivery of geospatial products and services, with a primary focus on the agriculture and financial sectors.

# Sunflowers

## Problems:

- **Droughts** - An ideal sunflower growing temperature range is (21–26°C). If the plants are given enough water, they can endure much higher temperatures without heat stress.
- **Pest Infestation** - A small number of pathogens like **nematodes, viruses, bacteria, and fungi** cause the industry to lose millions of dollars each year. **Fungi** are the root cause of most problems in commercial sunflower growing.
- **High cost of fertilizers** - A nitrogen (N) deficit can limit crop yields. Still, finding the right N-rate for your area is critical, as too much nitrogen will diminish oil concentration in seeds, lowering crop quality. The potassium (K) needs of the growing plant are likewise rather high.



# Sunflowers

## Solution:

- **Droughts** - Precision irrigation through sprinklers or drip watering reduces these risks while maximizing seed and oil production.

- **Pest Infestation** - NDRE map is available to review if the crop is suffering from plant diseases. The NDRE (Normalized Difference Red Edge) indicator analyzes the photosynthetic activity of a vegetation cover to estimate nitrogen concentrations in plant leaves.

- **High cost of fertilizers** – With help of zoning calculation, farmers can identify which zone of the field need more fertilizer and which don't.



Day	Max / Min	Precipitation	Relative humidity	Clouds	Wind	Evapotranspiration	Global radiation
Wednesday September 20	32° / 17°	0 mm	49 %	5 %	3 m/s ⬆️	4.5 mm	5433 W/m²
Thursday September 21	30° / 18°	0 mm	20 %	0 %	4 m/s ⬆️	6 mm	5741.5 W/m²
Friday September 22	30° / 15°	0 mm	39 %	0 %	2 m/s ⬇️	4.1 mm	5587.1 W/m²
Saturday September 23	30° / 14°	0 mm	35 %	0 %	3 m/s ⬇️	5 mm	5579.5 W/m²
Sunday September 24	25° / 14°	0 mm	49 %	46 %	3 m/s ⬇️	2.7 mm	3176 W/m²
Monday September 25	23° / 17°	4.4 mm	68 %	44 %	4 m/s ⬇️	2.6 mm	2311.4 W/m²
Tuesday September 26	26° / 15°	0 mm	53 %	0 %	3 m/s ⬆️	4.4 mm	5230.4 W/m²
Wednesday September 27	29° / 15°	0 mm	32 %	0 %	3 m/s ⬆️	3.9 mm	5178.3 W/m²

# Corn

## Problems:

- **Droughts** - For most types of corn, daytime temperatures above (38° C) will cause poor pollination. Too rainy weather causes excessive anther wetness limiting pollen shed
- **Pest Infestation** - A small number of **Gray leaf spot, fungal inoculum, Common rust, Anthracnose and others**, cause the industry to lose millions of dollars each year. The main problems with pest management is that corn is growing on large areas and when it appear, can affect tons of grain production.
- **Scouting** – Most of the corn fields in Europe starts from 15ha to 100ha. This is a problem in order to track problematic zones of the field.





# Corn

## Solution:

- **Droughts** - **NDMI map** of the required field and seeing how moisture in crops has been changing in dynamics. Being able to access historical data on this issue, farmers can evaluate the water-storing capacity of their soil.
- **Pest Infestation** - **NDRE map** is available to review if the crop is suffering from plant diseases. The NDRE (Normalized Difference Red Edge) indicator analyzes the photosynthetic activity of a vegetation cover to estimate nitrogen concentrations in plant leaves.
- **High cost of fertilizers/scouting** - With help of zoning calculation, farmers can identify which zone of the field need more fertilizer and which don't. The functions allow to measure the exact area.



# Vineyard

## Problems:

- **Temperature** – Low temperatures in the winter season can be a huge problem for a wine producers. The temperatures can go so low that the grapevine can freeze.
- **Pest Infestation** - A small number of pathogens like bacteria and fungi cause the industry to lose millions of dollars each year. Fungi are the root cause of most problems in commercial sunflower growing.
- **Scouting** - Most of the vineyards in Europe starts from 10 ha and can be more than 1000 ha per field. This is a problem in order to track problematic fields and identify active pathogens.

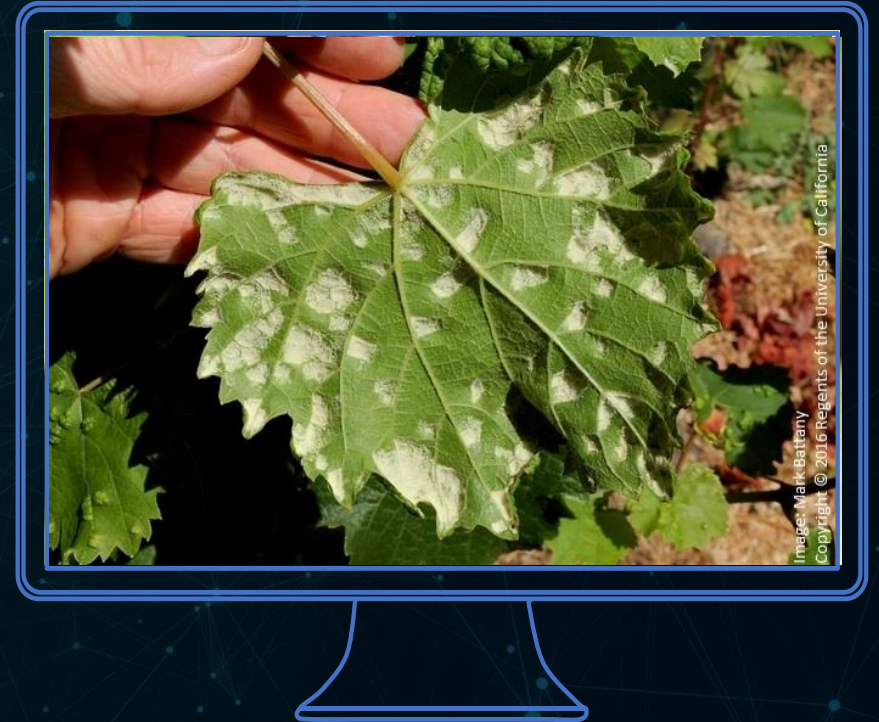


Image: Mark Bateman  
Copyright © 2016 Regents of the University of California

# Vineyard

## Solution:

- **Temperature** - Weather forecasts provided by Orbit Lab allow the company's team to determine the risks of frost damage and take necessary precautions against it, like potassium silicate spraying or hot air irradiation.
- **Pest Infestation** - **NDVI**, or **Normalized Difference Vegetation Index**, measures photosynthetically active biomass in plants and thus is the most suitable index to track crop development dynamics. It can be used throughout the crop production season, though its values will be most accurate at the active growth stage.



# Use case: Wine producer in Italy

Orbit Lab help wine makers to fight all sorts of pest infestation, climate change problems, soil degradation, irrigation and fertilization management and more.

We build this use case in order to show that every wine maker can benefit from geospatial data and can cut costs by more than 25% of production.

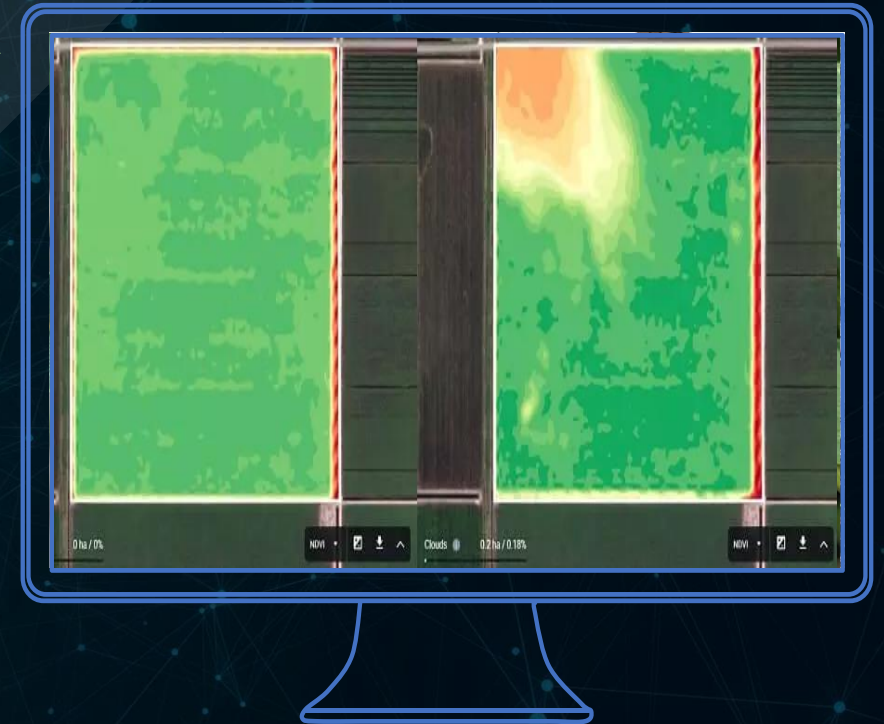


# Wheat

## Problems:

- **Droughts** - Winter crop won't yield seed until it endures a prolonged period of cold conditions, below (4°C). spring crop varieties may grow in temperatures as low as (4°C) and as high as 35°C.
- **Pest Infestation** - During dry years, irrigated crops are less likely to experience leaf diseases such as **Septoria tritici blotch** and **Stagonospora nodorum blotch**, as well as **Fusarium head blight (head scab)**. However, if there is sudden rain after the irrigation, these problems may return since most fungal infections that attack crops proliferate in moist, humid environments.

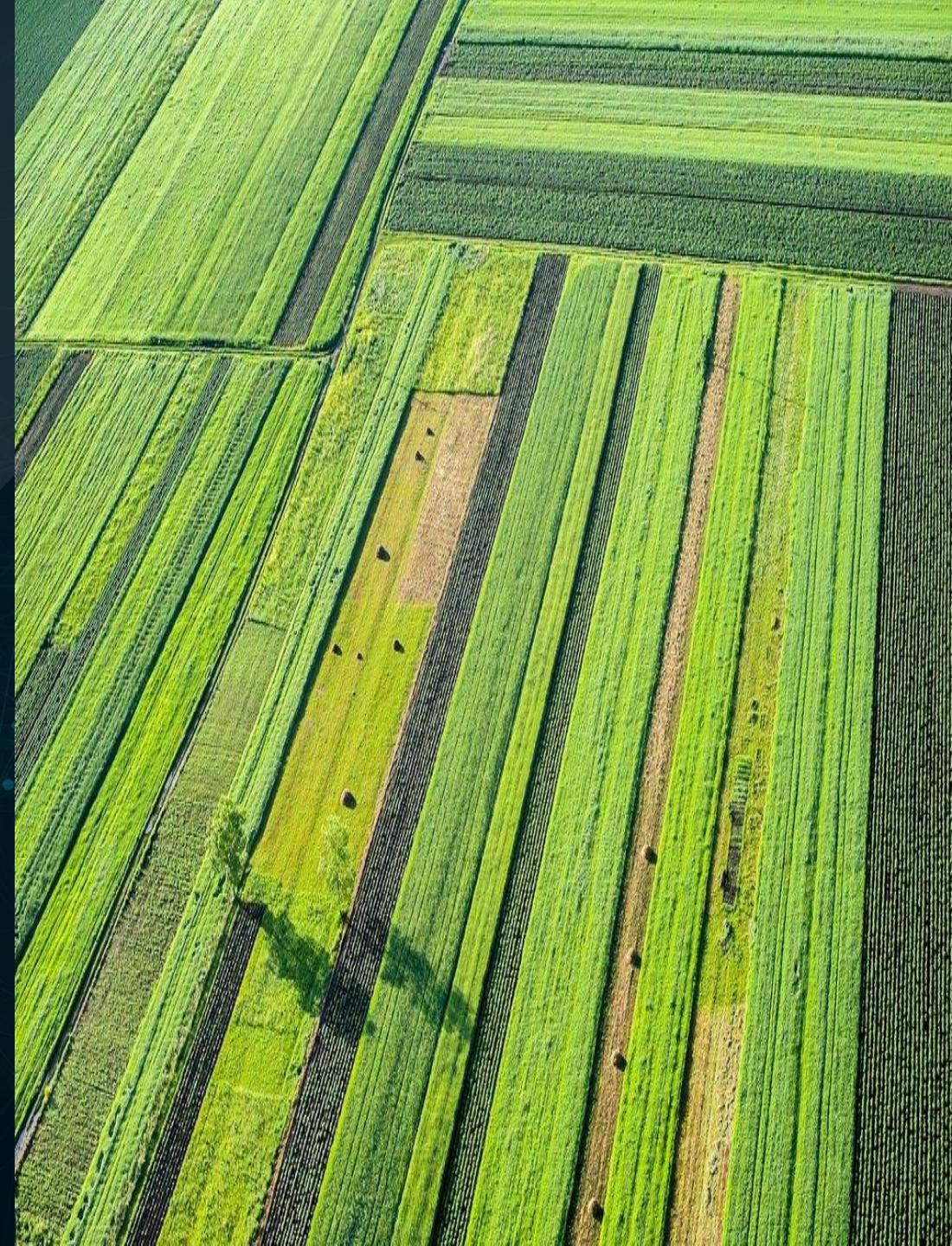
- **Crop yield forecast** – Most of the farmers are looking for a way to forecast the production of grain so that they can make more stable contracts with buyers.



# Shiraz: crop monitoring

Orbit Lab team made a project for Shiraz agriculture chamber in Iran in order to help local farmers and business with it's fight with harsh drought summer periods.

We helped local community with satellite data and vegetation maps and shows a better way for irrigation of the wheat fields in the region.



# Problem, Solution, Needed Data

- **Problem:**

There are many regions in the world that suffer from climate change, irrigation problems, and constant heat waves. Those regions do not have enough money to buy new equipment, and fertilizers or to buy enough seeds for the farm field in order to full capacity of the fields.

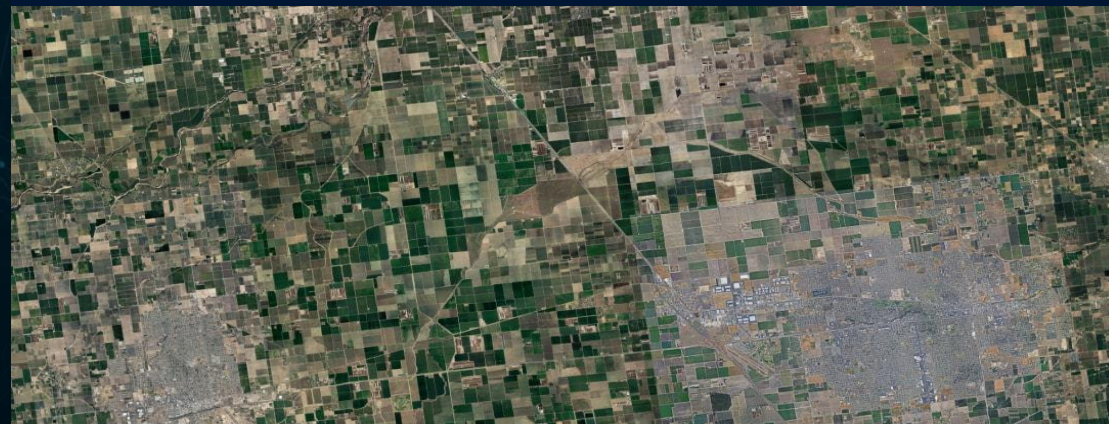
It comes worse with the economic recession and war in Ukraine that split the world in two directions.

- **Solution:**

We from Orbit Lab believe that technology has to be used by everybody and every man should benefit from it.

That is why we are offering a brand new platform that utilizes all geospatial and weather data in order to give needed insights to the farmers.

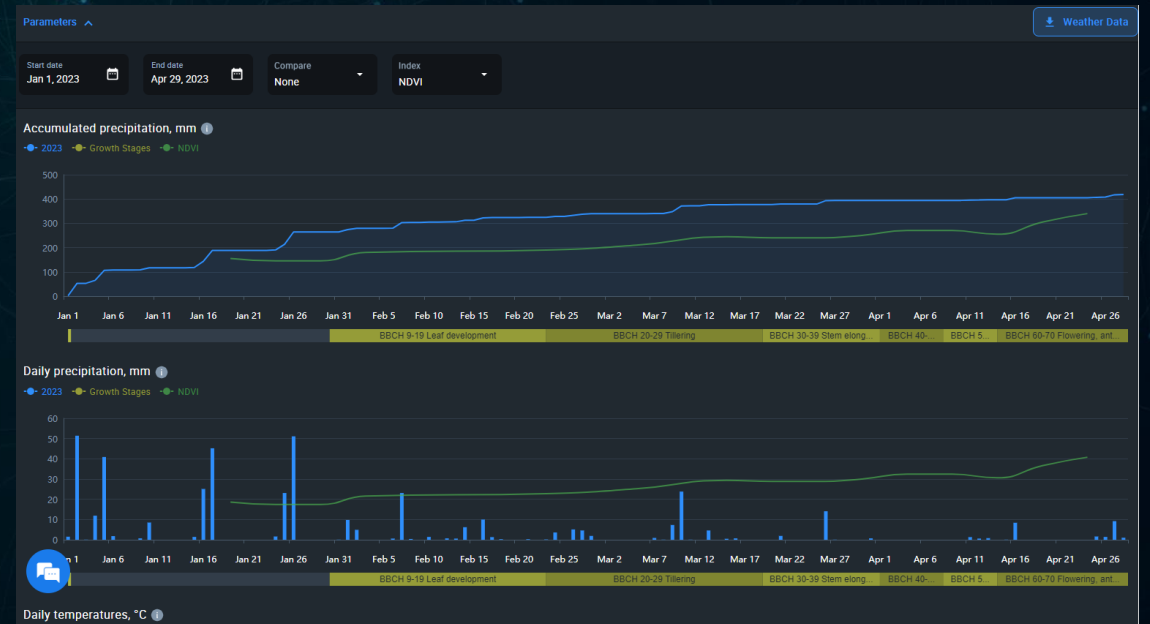
With enough knowledge of how the climate goes the farmers can make better decisions about their business.



# Iran - Shiraz

The demo includes a field of wheat with a total area of **10.8 ha**. The main problems of the field are irrigation and pest control. There are many zones where the wheat didn't grow properly and there are problems with the development of the vegetation.

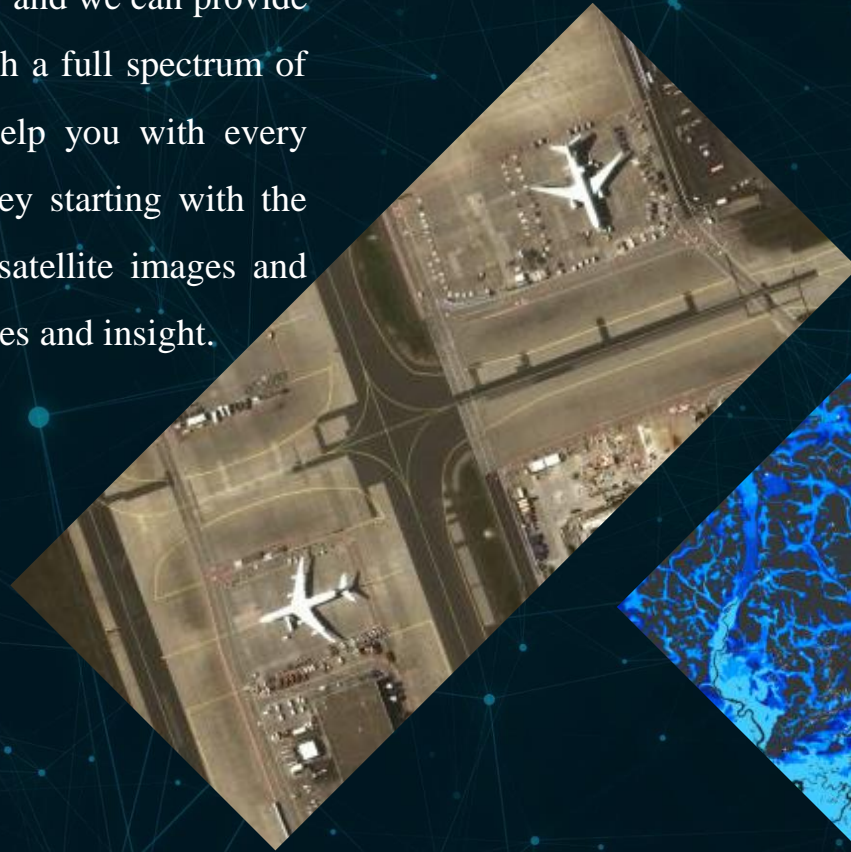
The **NDRE index** indicates that there is not enough chlorophyll in the leaves of the crops. The project is made only for research purposes.



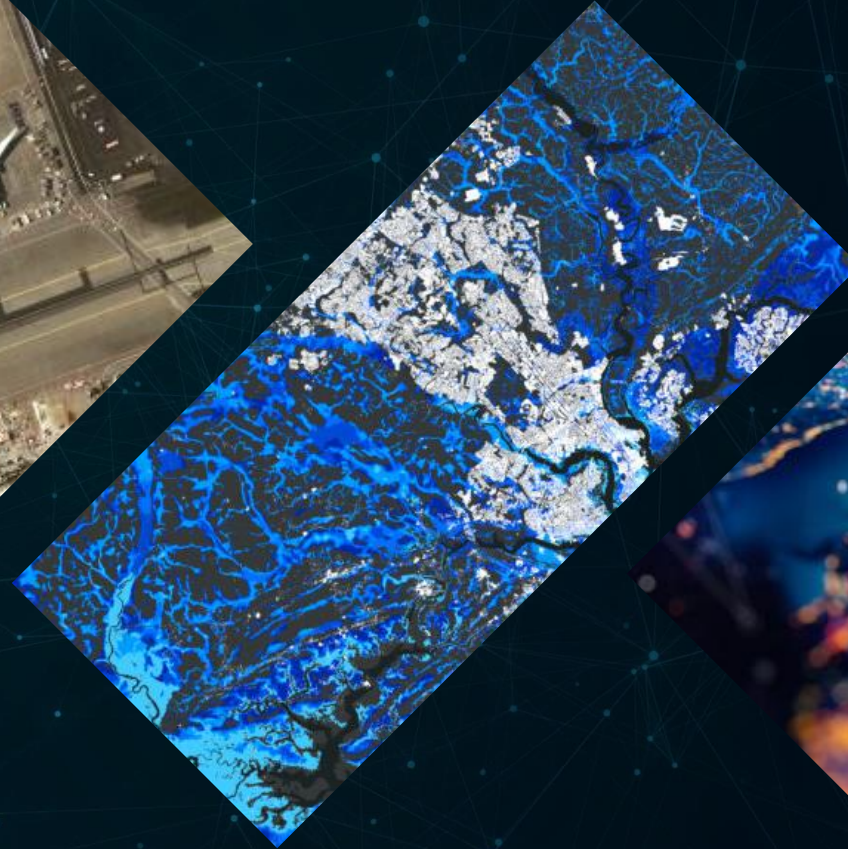


# Our services

Orbit Lab has a long experience in the field of GIS and Remote sensing technology and we can provide our partners and customers with a full spectrum of geospatial services. We can help you with every stage of your geospatial journey starting with the acquisition of high-resolution satellite images and finishing with geospatial analyses and insight.



**Delivery of satellite data**



**Geospatial analysis and Geoportals**



**Agriculture platform**

# Delivery of a Satellite Data

- **Delivery of satellite data:**

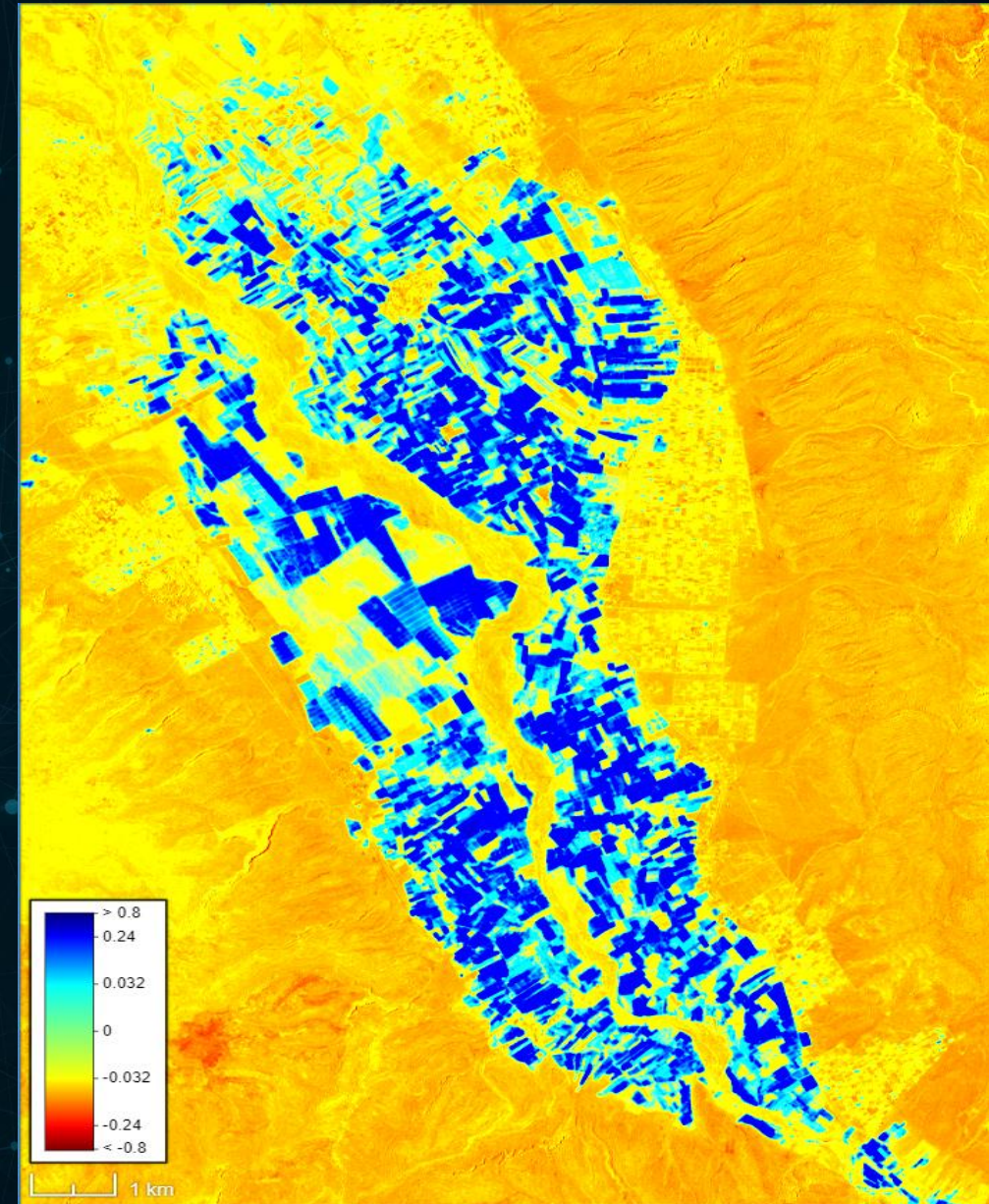
Orbit Lab can help you to gather satellite data for your fields and to harness the power of geospatial data for your fields. We make free consultation for farmers and institutions and help them to build more stable and sustainable business.

- **Benefits:**

- Budget friendly solution for small farmers;
- No need of additional software to run the data;
- No need of strong internet connection;
- Ideal solution for beginners in the field of precision agriculture;
- and many more.

## Satellite data for your business

- 3 to 5 dates every month + 4 maps for your fields, including: **RGB map, NDVI or NDWI map and Moisture map**;
- Delivery by email or social media
- 24/5 free consultation and support
- No need of specific software solution to read the analyse
- No need of specific education and training. We will explain every detail of your business.



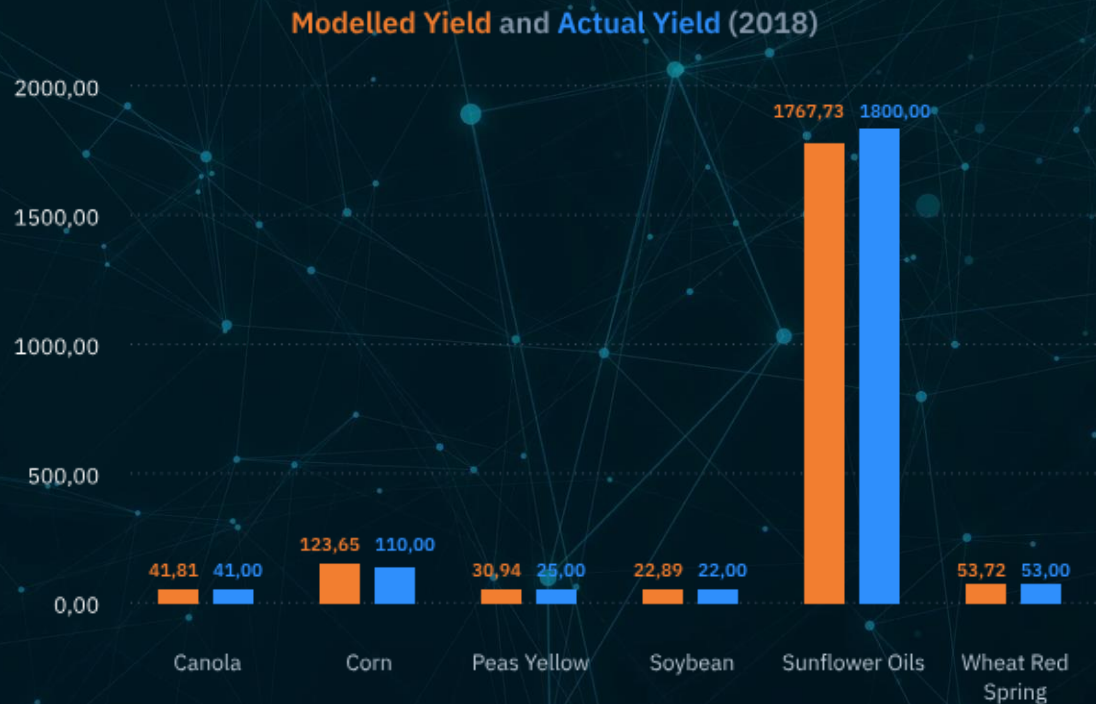
# Geospatial analysis and Geoportals

- **Geospatial analysis :**

We can build software solution, made only for your specific needs. We have big experience in creating different types of geoportals and web maps.

- **Benefits:**

- Your own product, made only for your needs;
- Portable solution and 24/7 monitoring;
- Archive data from previous years;
- and many more.



ORBIT  LAB