

GEO WEEK & MINISTERIAL SUMMIT 2023

Showcase session

#TheEarthTalks



science & innovation

Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA



GEO WEEK
2023 MINISTERIAL
SUMMIT

GEO GROUP ON
EARTH OBSERVATIONS



**GEO
WEEK
2023
MINISTERIAL
SUMMIT**

#TheEarthTalks GEO WEEK & Ministerial Summit 2023

Enhancing public and private sector partnerships for delivering transformative services for Climate Adaptation and Food Security

POTATO2UP: Adoption of a holistic and environmentally friendly approach to potato cultivation

Tuesday 7th 09:30 - 10:00



**Betty
Charalampopoulou**



science & innovation

Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA



OUTLINE

1. Challenge

2. Solution

3. Impact from your work

4. Opportunities for scale up or replication

POTATO2UP

POTATO2UP: ORGANIC POTATO CULTIVATION PRACTICES FOR IMPROVED PRODUCTION QUALITY AND RESISTANCE TO DISEASE



POTATO2UP

Partners:



Co-financed by Greece and the European Union

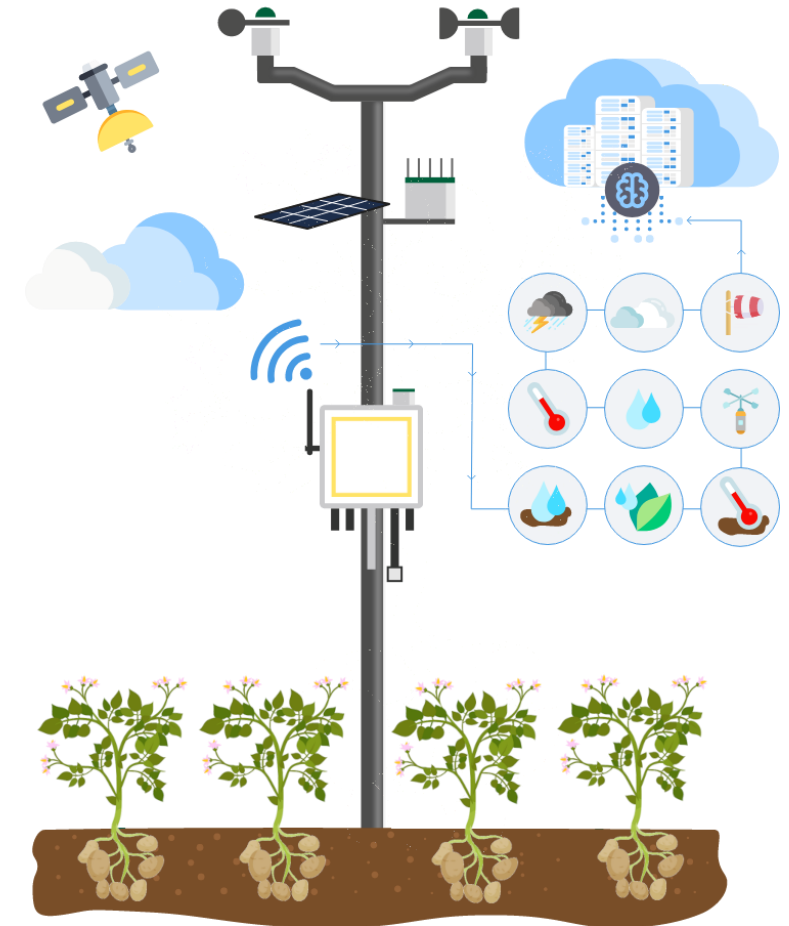
1. Challenge

Potato cultivation is one of the dynamic agricultural exports with a significantly positive trade balance in our country.

It is the pillar of the **local rural economy** for the R.U. of Drama (Nevrokopi area, Greece). Finding an agricultural practice that will provide improved quality production via efficient absorption of nutrients during the growing season, while reducing chemical fertilisation and inputs, will contribute to the improvement of the yield and quality of potato production.

What are the circumstances surrounding the development of this partnership?

POTATO2UP is an innovative project with the goal of improving potato production by using a smaller environmental footprint while creating a more efficient use of resources. This project will demonstrate the **advantages of using biostimulants for more efficient nutrient absorption and the use of an activator of plant defense mechanisms, which could significantly reduce the need for chemical fungicides**. To provide better data for evaluating the effectiveness of these strategies, POTATO2UP incorporates the use of **remote sensing techniques**. By providing more efficient ways to reduce the use of chemical inputs, while at the same time increasing the production of potatoes, POTATO2UP aims to be a major contributor to sustainable potato production.



1. Challenge

Case study: Perithori, Municipality of Kato Nevrokopiou, Drama

Topographic information: The mean altitude is 600 m and surrounded by the mountains Orvilos, Vrontous. The basin of the area is very fertile and provides the local population with a variety of resources.

Agricultural information: Potato cultivation has a long tradition in the wider region of Nevrokopi, and this project seeks to study the organic practices of fertilizing and protecting the potato crop in an area of around 10,000 m² in Perithori, Regional Unit Drama.

Why? The specific climate and soil composition of this mountainous region, combined with the experience and knowledge of local producers, all contribute to the success of potato cultivation in the area.

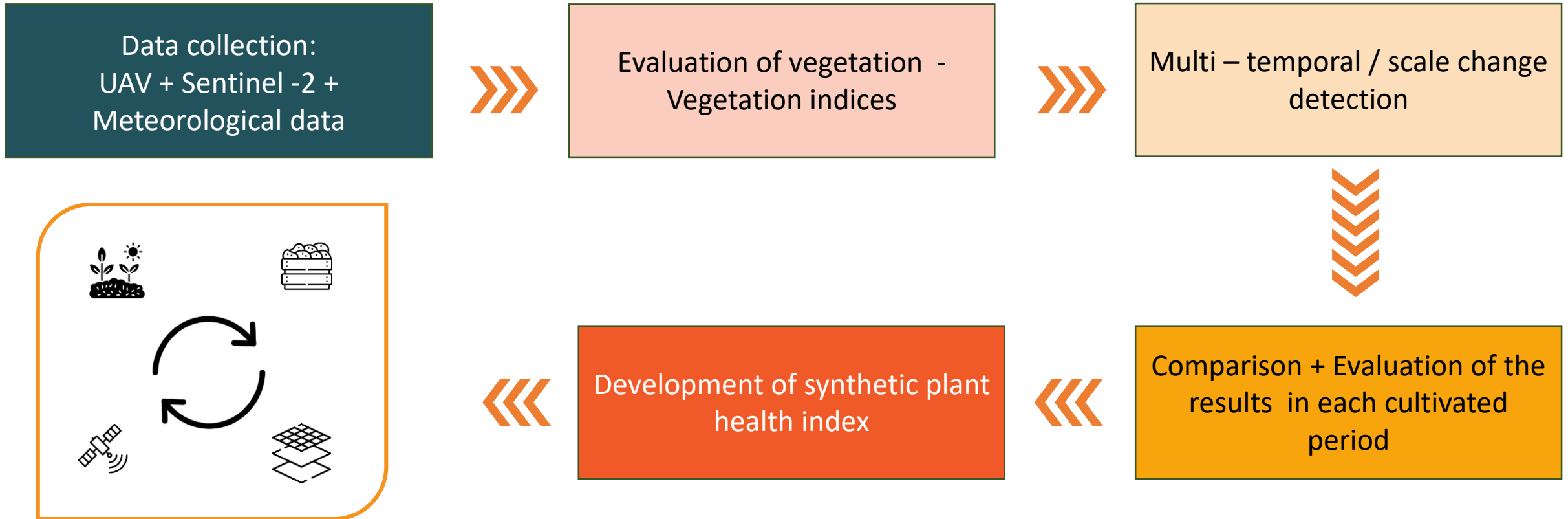


Pilot case



Perithori,
Nevrokopi

2. Solution



2. Solution: Data acquisition

Data acquisition of UAV



Data acquisition of Sentinel - 2



Installation of meteorological station

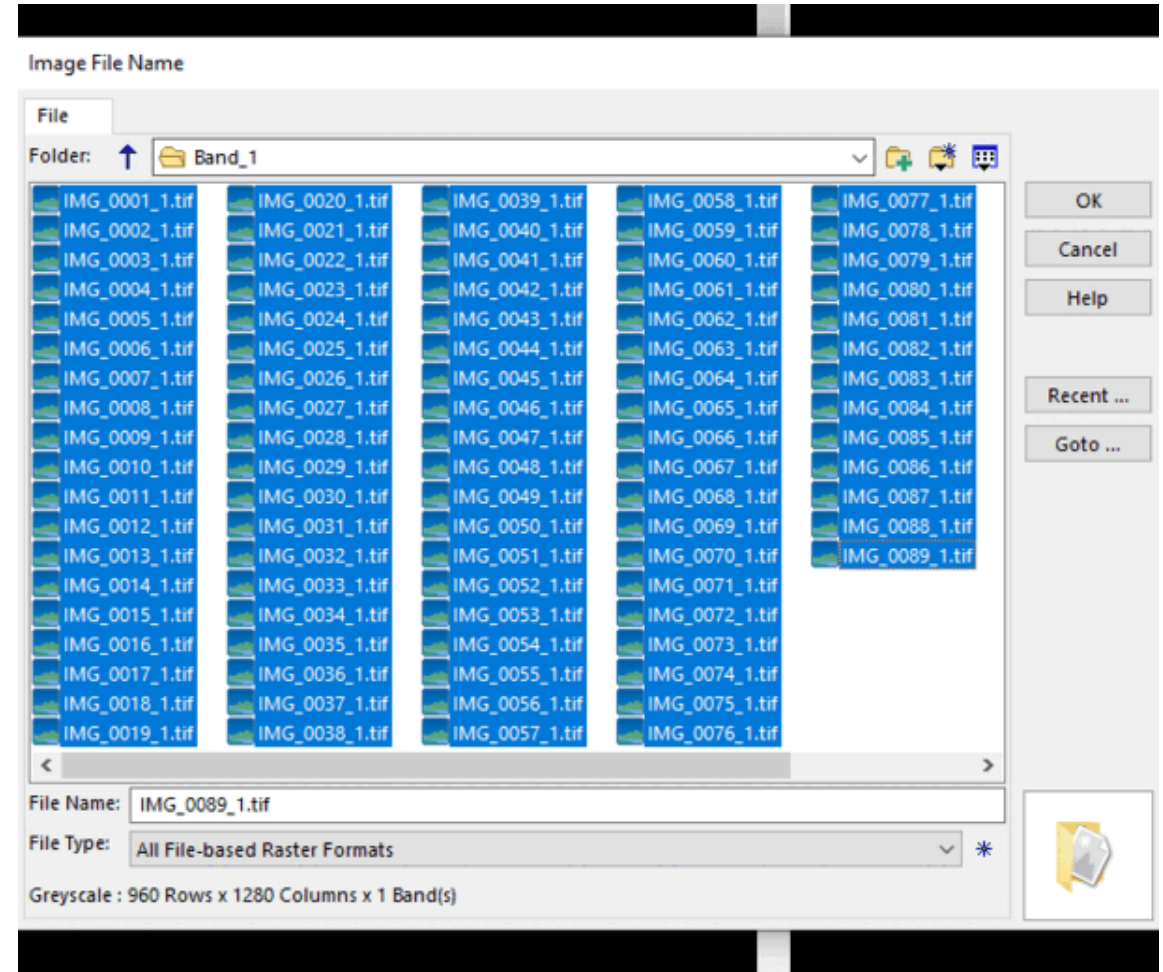


2. Solution: pre - processing

- UAV 5 separate bands: Blue, Green, Red, Red Edge, Near Infrared
- Use of ERDAS Imagine Photogrammetry
- Aerial triangulation for every dataset per band.
- Construction of Digital Elevation Model
- Creation of ortho-mosaic per band
- Stacking for the creation of multispectral orthophoto



ERDAS Imagine Photogrammetry

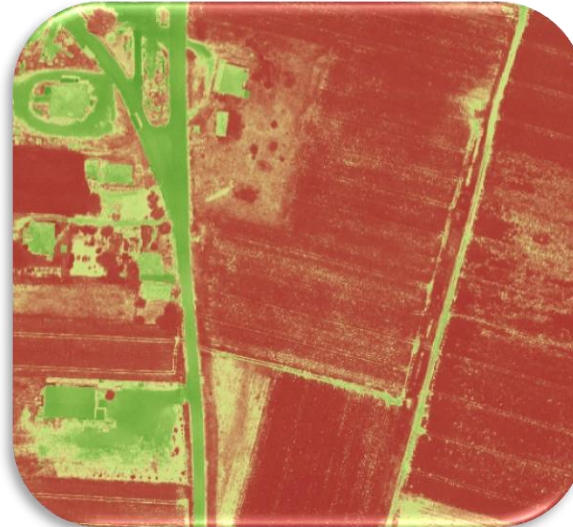


2. Solution: Implementation of vegetation indices

RGB Image (UAV)



NDVI (UAV)



NDRE (UAV)

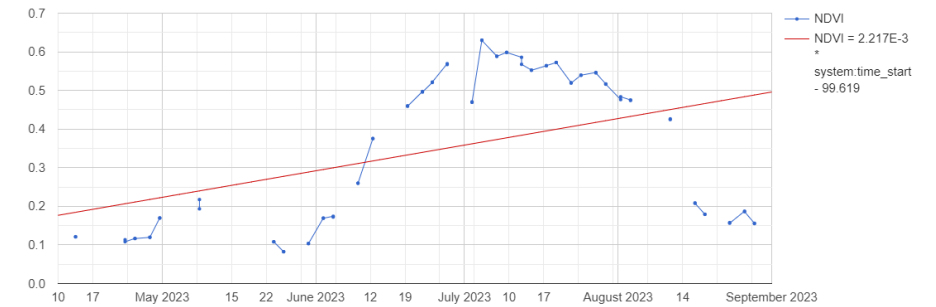


2. Solution: Implementation of vegetation indices

04/2023 - 8/2023 Index: mARI, spraying: biostimulants – Sentinel 2



04/2022 - 8/2023 Index: NDVI, spraying: biostimulants – Sentinel 2



04/2023 - 8/2023 Index: mARI, spraying: elicitor – Sentinel 2



04/2023 - 8/2023 Index: NDVI, spraying: elicitor – Sentinel 2



3. Impact from your work

- **Improving production quality** through better and more efficient absorption of nutrients, as well as a pro-environmental management of important crop pathogens
- It is based on the application of an innovative cultivation protocol with the application of a biostimulant and a defence activator. It will lead to the **decrease of chemical fertilisers and defence activator products to the yield.**
- By the adoption of alternative pro-environmental cultivation techniques, it will contribute to the **reduction of production costs.**
- **Crop monitoring will be achieved quickly for vast areas at low cost through remote sensing techniques.** In parallel, reliable data on plant health and production quality will be readily available, providing a complete picture of the crop.

Policy: How will this EO product contribute to monitoring a particular area of sustainable development with the UN 2030 agenda?



End hunger, achieve food security and improved nutrition and promote sustainable agriculture



Ensure sustainable consumption and production patterns



Take urgent action to combat climate change and its impacts

4. Opportunities for scale up or replication

- Monitoring the production quality at regional scale using satellite images
- Creating an decision support system for agricultural production
- Apply the same methodology in other kinds of cultivation, such as rice, for testing purposes
- Creation of a new agricultural production protocol.

AGENDA

Day 1

Opening Ceremony
Flash Talks
Workshops

Day 2

Showcase
Sessions
Workshops
Excom

Day 3

Thematic Plenary
Sessions

Day 4

AM: Thematic
Plenary Sessions

PM: GEO Plenary
business

Day 5

Ministerial
Summit

**EXHIBITION
OPENING**

EXCOM

GALA

**MINISTERIAL
DINNER**

- Exhibition runs all week
- Days 1, 2 and 3, as well as the morning of Day 4 are open to all registered attendees. The afternoon of Day 4 and the Ministerial Summit are only open to GEO Delegates and Ministers. Decisions can only be made by GEO Members present.

#TheEarthTalks



**GEO
WEEK
2023**
MINISTERIAL
SUMMIT

6-10 NOVEMBER

CAPE TOWN, SOUTH AFRICA



+30 210 28 46 145 – 144



mail@geosystems-hellas.gr



www.geosystems-hellas .gr



225 Imittou, GR 116 32 Athens
Branch: HMU – Building K34
Estavromenos, GR 714 10, Heraklion, Crete



science & innovation

Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA

