Image Processing Research Laboratory (INTI-Lab)

UCH UNIVERSIDAD DE CIENCIAS Y HUMANIDADES

INTI Lab LABORATORIO DE INVESTIGACIÓN EN TRATAMIENTO DE IMÁGENES

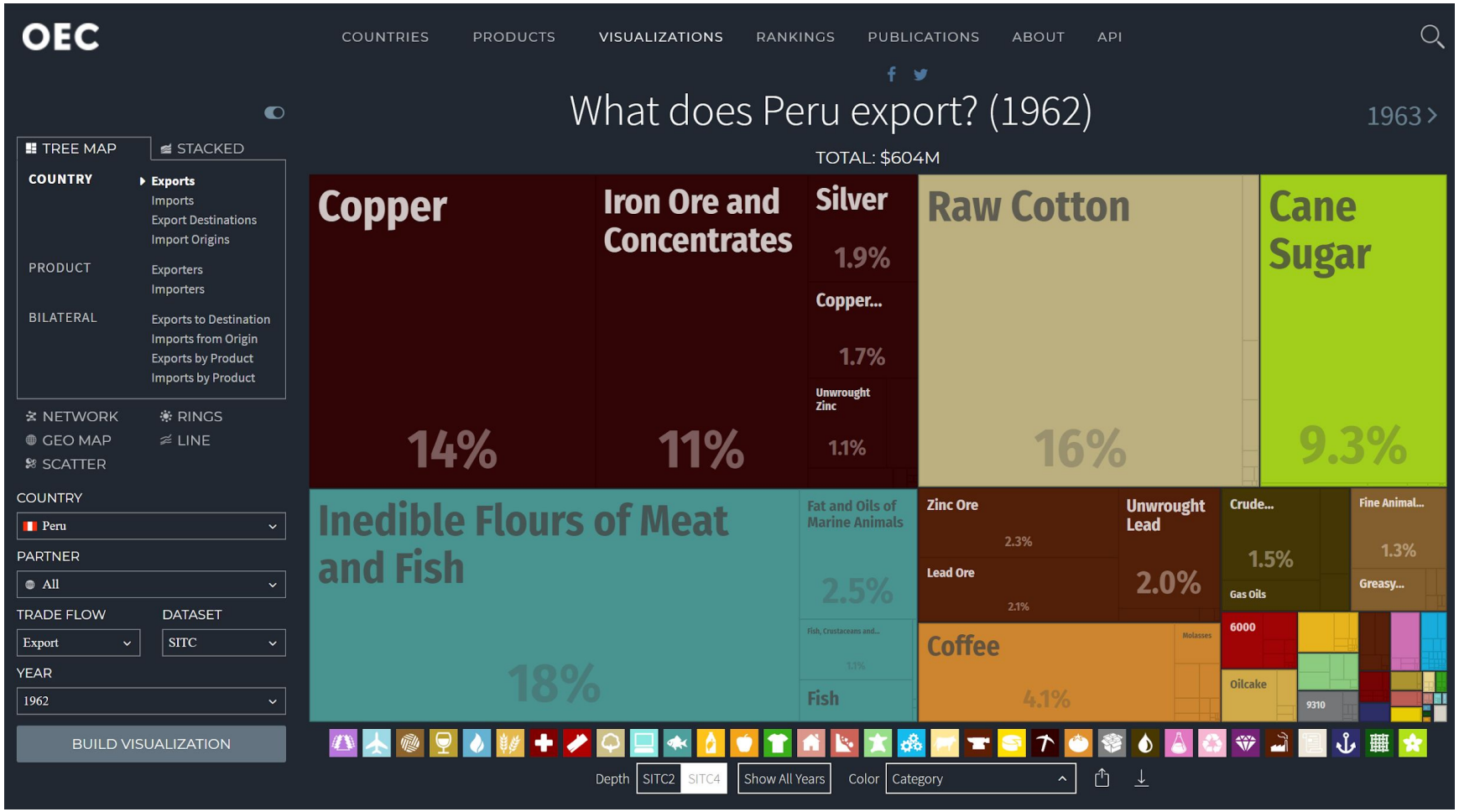
The United Nations/Romania International Conference
on Space Solutions for Sustainable Agriculture and
Precision Farming"
08 May 2019
Cluj Napoca, Romania

# Satellite and Drone Images to Help Cacao Farming in Peru

*Ph.D. Ing. Avid Román-González*

UNIVERSIDAD NACIONAL TECNOLÓGICA DE LIMA SUR

# Context




Source: The Observatory of Economic Complexity https://atlas.media.mit.edu

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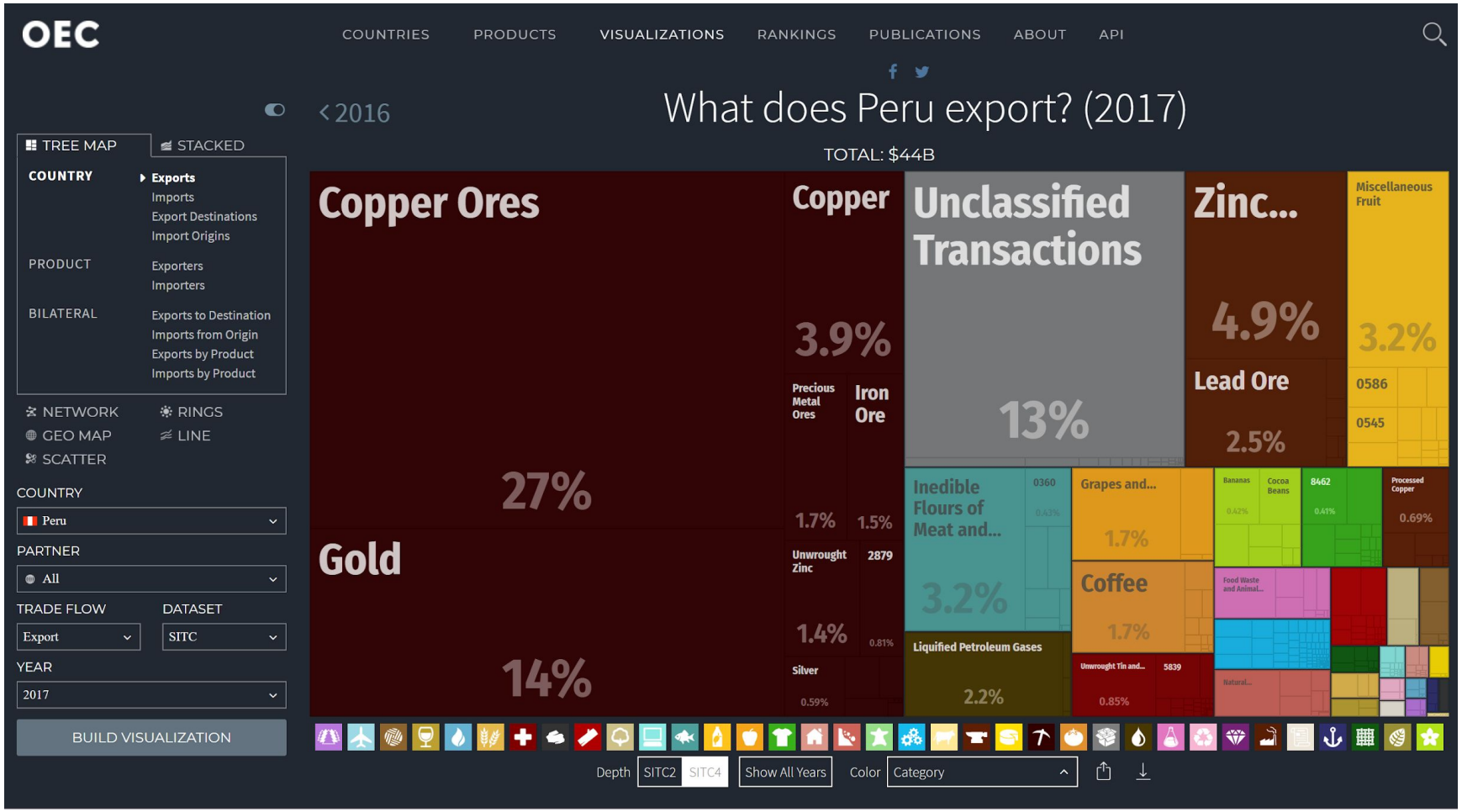


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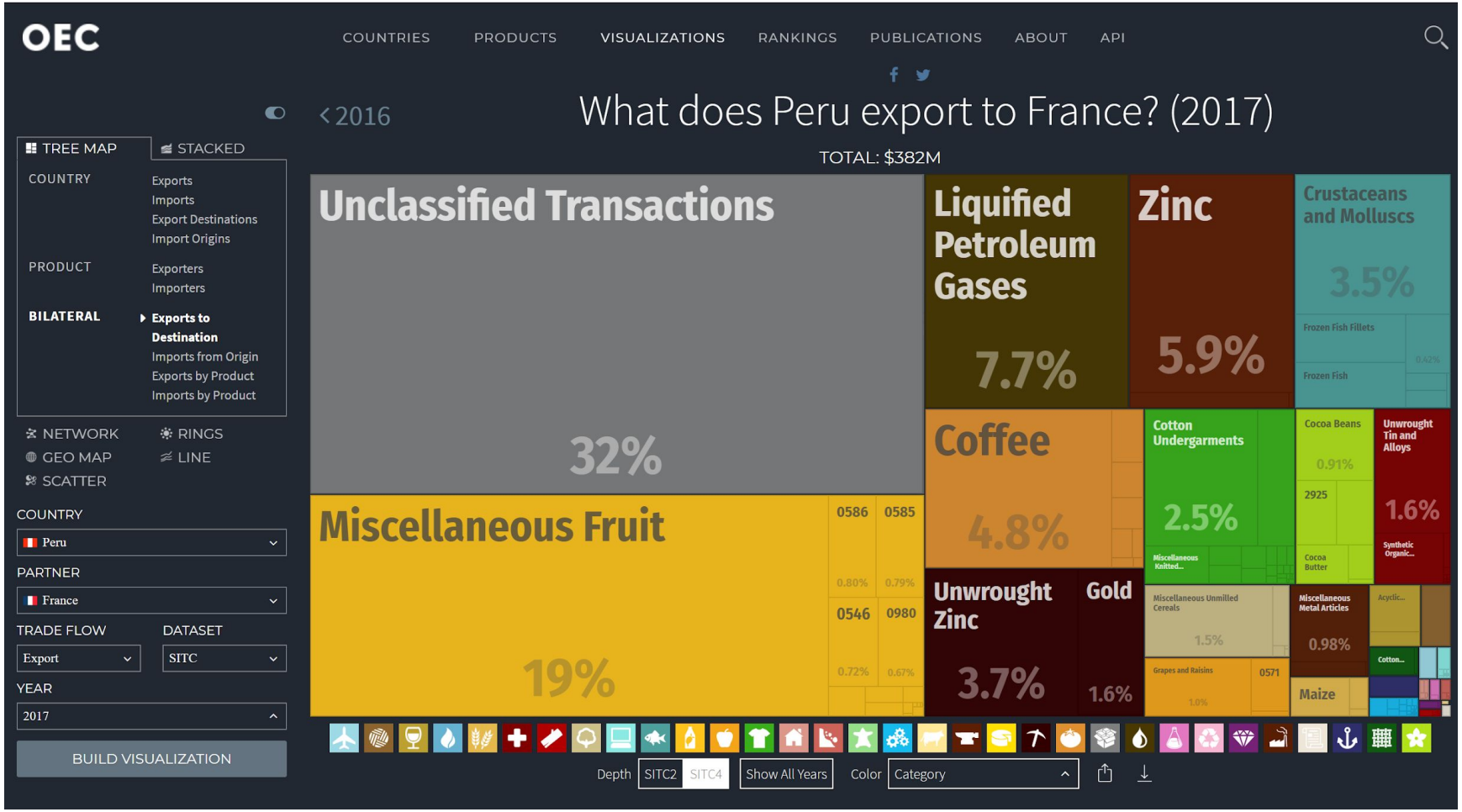


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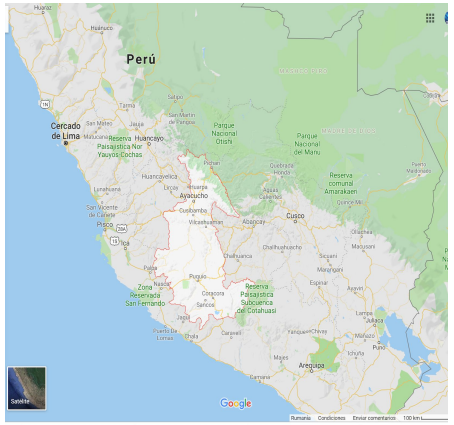

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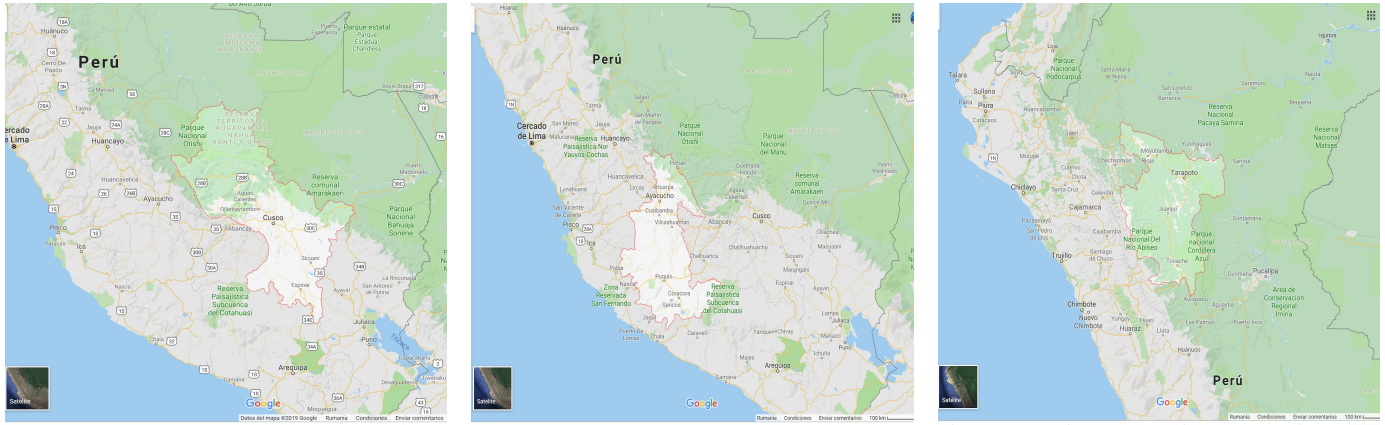

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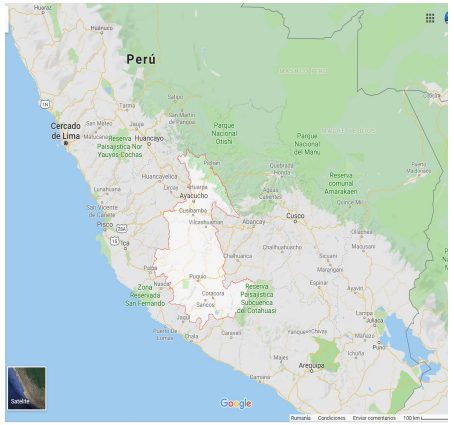

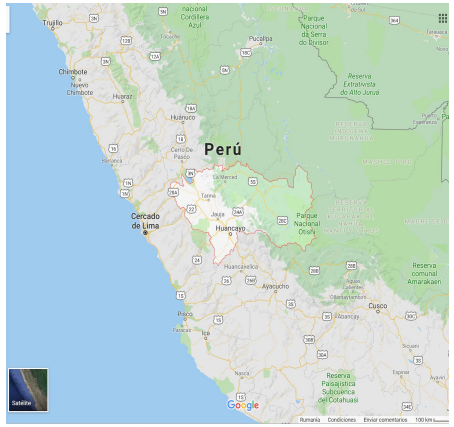

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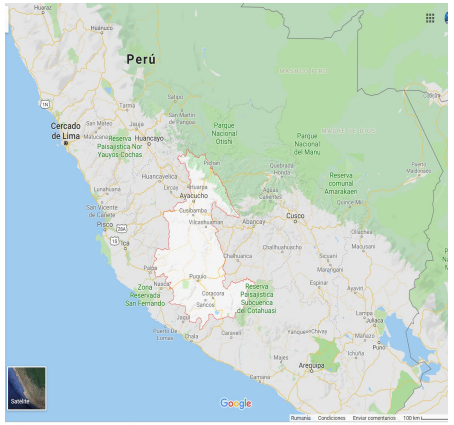

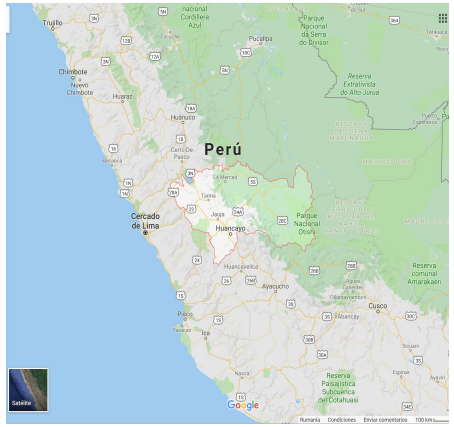

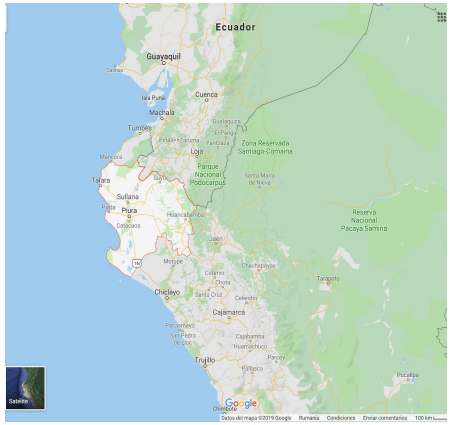

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- This strategy is a novel approach in Peru that has to be trained and optimized during the next years.

# Location

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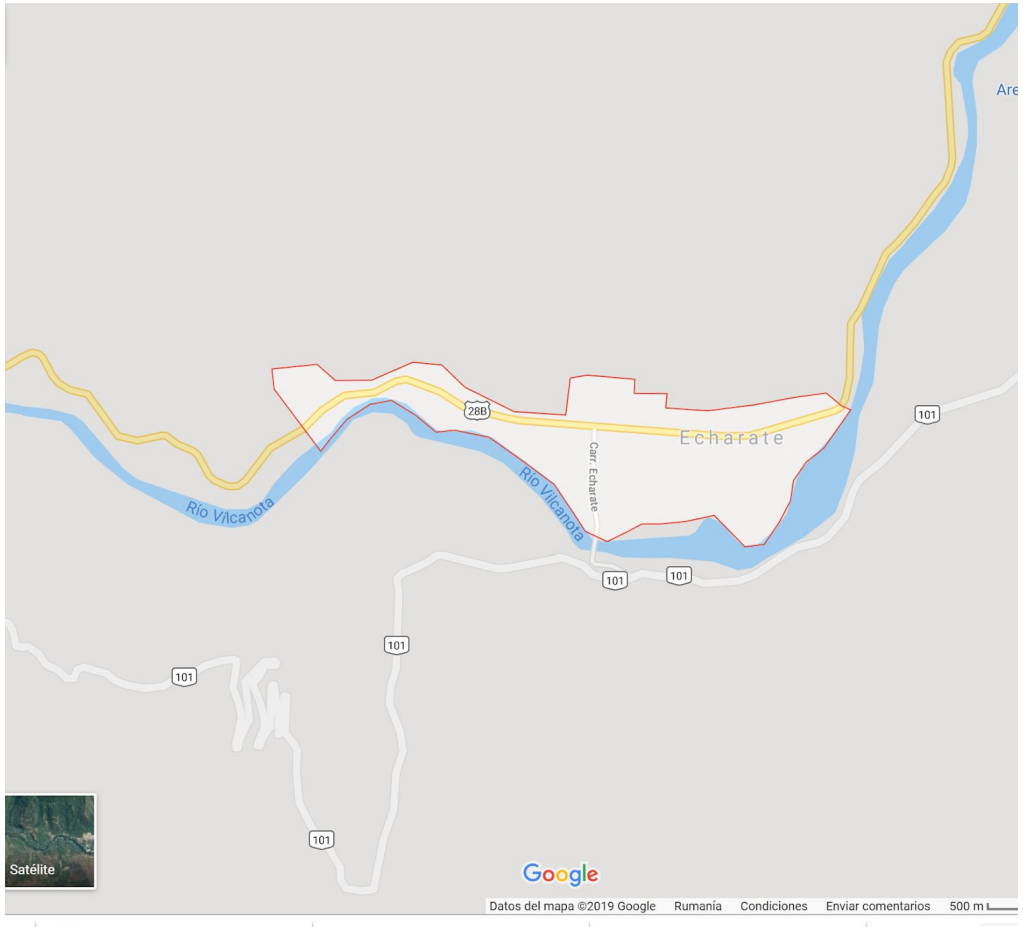
Echarate
Río Vilcanota
Río Vilcanota
Carr. Echarate
28B
101
101
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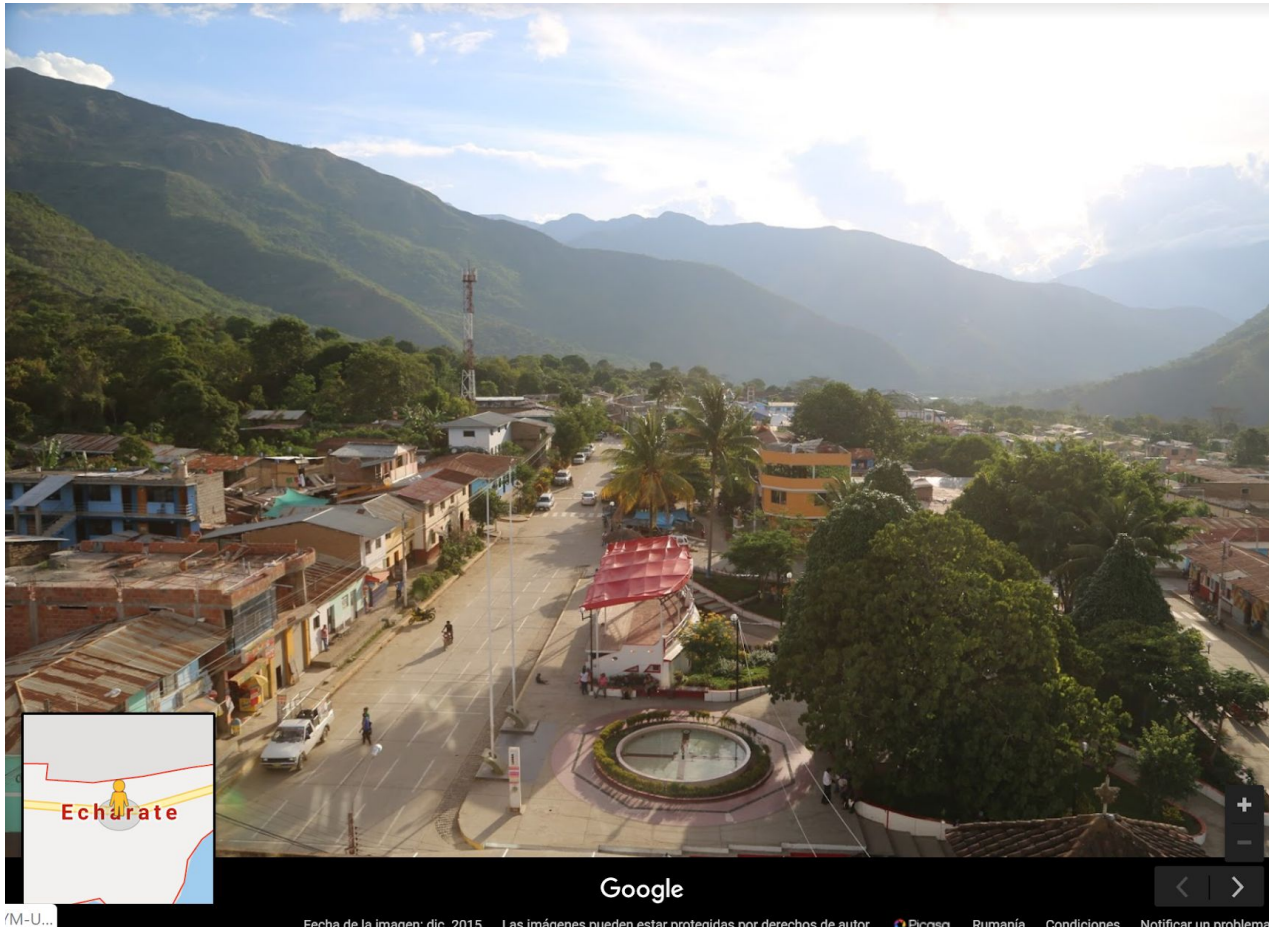
101
Satélite
Google
Datos del mapa ©2019 Google
Rumanía
Condiciones
Enviar comentarios
500 m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Google

# Location

Río Vilcanota
Río Vilcanota
28B
28B
101
3D
Mapa
Google
Imágenes ©2019 CNES / Airbus, Datos del mapa ©2019 Google
Rumanía
Condiciones
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500 m

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- In Cusco, the River Vilcanota, embedded in the agricultural matrix can be used to characterize landscape connectivity.

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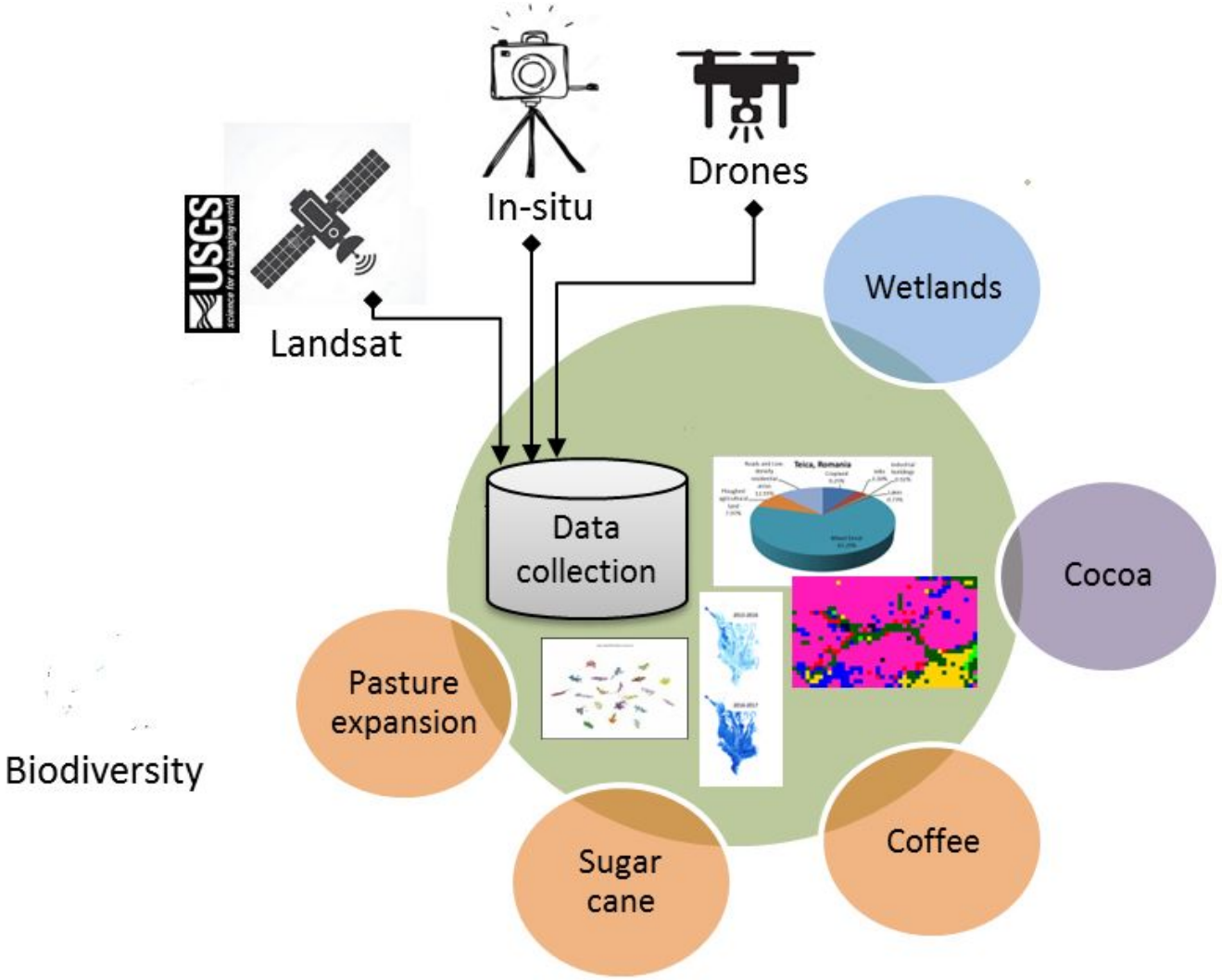

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- The idea is to analyse the temporal evolution of the derived classifiers to understand the temporal evolution of the target area from the point of view of vegetation changes.
- This evolution, could be used to understand the situation of our observed target areas.
- This proposal can be accomplished by a coordinated effort within an international team whose members are specialized in different fields like: data provision, feature extraction, image classification, and the analysis of image time series to land cover identification and crop assessment.

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- When one applies a deep multi-layer neural network (DNN), one can then access the final results, and extend that to refer also to a physical and multi-temporal meaning.
- For instance, one foresees that some layers will refer to specific image characteristics.
- One expect new results when one combines and interpret the individual results from several intermediate and final layers of the neural networks.

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## Satellite

## Drone

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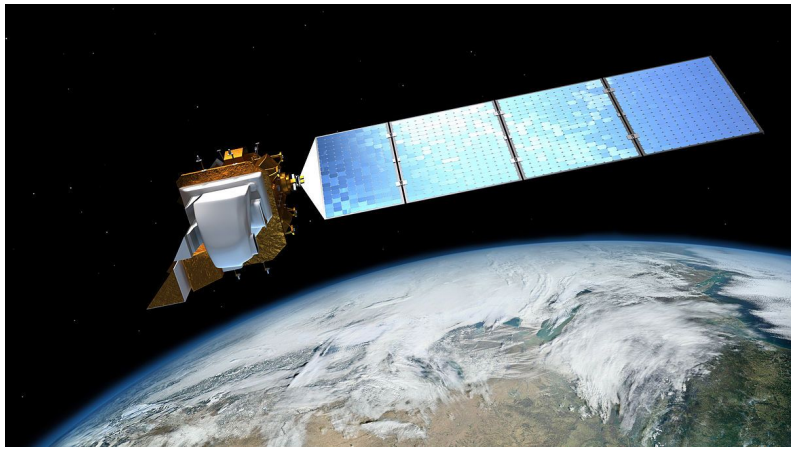
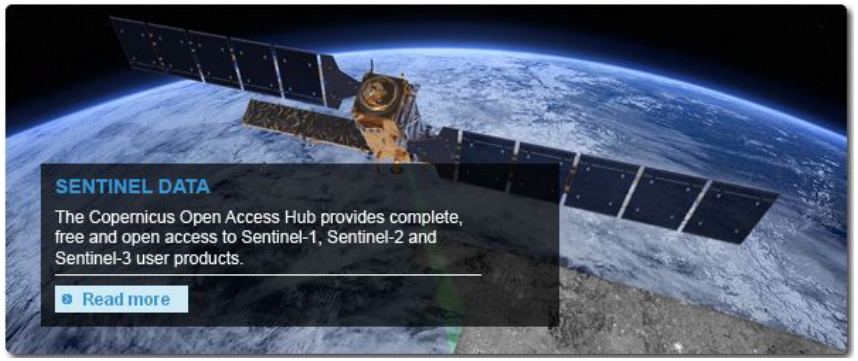


Landsat




## Drone

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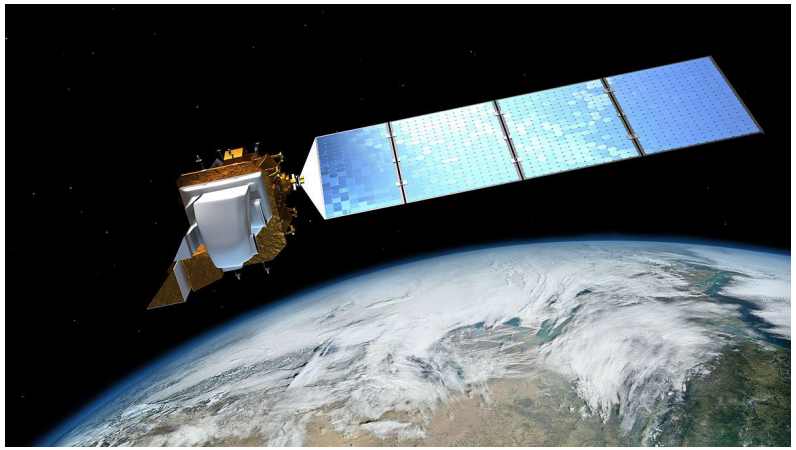

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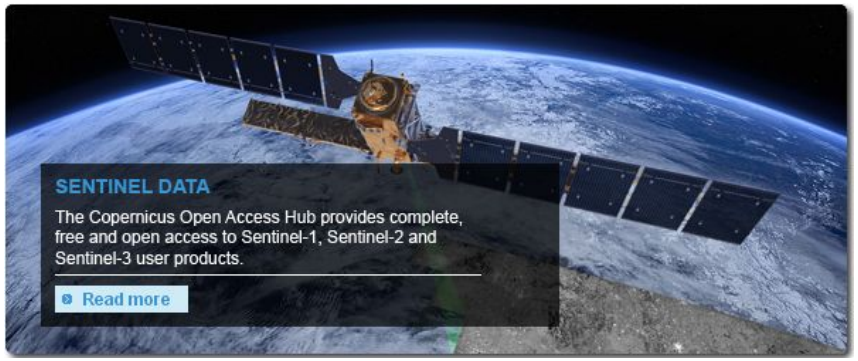


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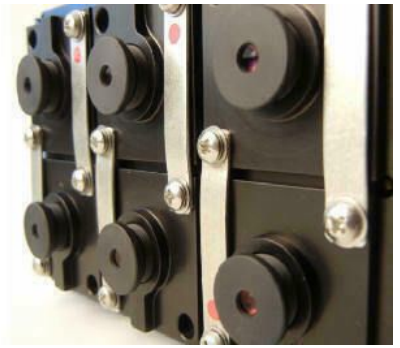

Tetracam's MiniatureMultiple, Camera Array

Hyperspectral Firefleye S185 SE

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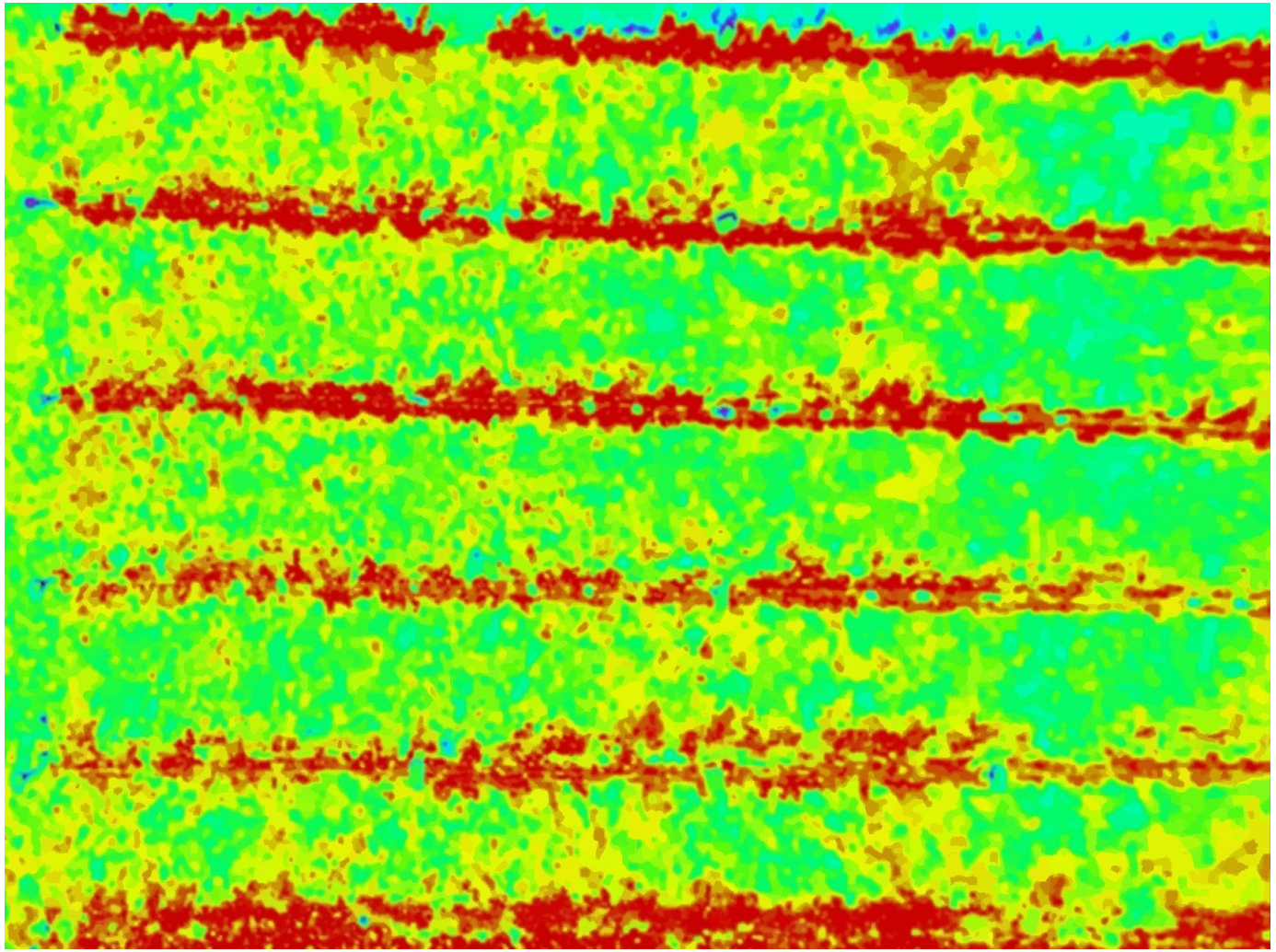

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- An intelligent monitoring of the current crop areas and future hectares will have a substantial economic impact for Peru due to our proposal leads to improved farming practices, better risk assessments, and, finally, to a higher crop yield.
- However, a proof of concept will require the observation of cacao plantations over a full growing time period and has to include irrigation, fertilization, pest management, plant diseases, and ecological side effects.

# Call for Proposal

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| | |
|---|---|
| Funding | $ 100 000.00 |
| **Deadline** | **18 June 2019** |
| Results | 15 August 2019 |

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