ARSET - Crop Mapping using Synthetic Aperture Radar (SAR) and Optical Remote Sensing – NoR report

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ARSET - Crop Mapping using Synthetic Aperture Radar (SAR) and Optical Remote Sensing

Monitoring crop growth is important for assessing food production, enabling optimal use of the landscape, and contributing to agricultural policy. Remote sensing methods based on optical and/or radar sensors have become an important means of extracting information related to crops. Optical data is related to the chemical properties of the vegetation, while radar data is related to vegetation structure and moisture. Radar can also image the Earth's surface regardless of almost any type of weather condition.

This three-part, advanced training builds on previous ARSET agricultural trainings. Here we present more advanced radar remote sensing techniques using polarimetry and a canopy structure dynamic model to monitor crop growth. The training will also cover how to apply machine learning methods to classify crop type using a time series of Sentinel-1 & Sentinel-2 imagery. This series will include practical exercises using the Sentinel Application Platform (SNAP) and Python code written in Python Jupyter Notebooks, a web-based interactive development environment for scientific computing and machine learning.

This webinar series is a collaboration between ARSET, Agriculture and Agri-Food Canada (AAFC), European Space Agency (ESA), University of Stirling, University of Ljubljana, and the CEOS Working Group on Capacity Building & Data Democracy (WGCapD).

TRAINING

ARSET - Crop Mapping using Synthetic Aperture Radar (SAR) and Optical Remote Sensing

PROGRAM AREA: AGRICULTURE   WATER RESOURCES

- (2023). *ARSET - Crop Mapping using Synthetic Aperture Radar (SAR) and Optical Remote Sensing*. NASA Applied Remote Sensing Training Program (ARSET).

  http://appliedsciences.nasa.gov/get-involved/training/english/arset-crop-mapping-using-synthetic-aperture-radar-sar-and-optical

Part 2: Crop Classification with Time Series Optical and Radar Data

- 10:00 am ~ 12:30 pm EDT (UTC-4:00)
- Thursday, April 6, 2023
- Trainers: Sean McCartney & Erika Podest
- Guest Trainers: Krištof Oštir & Matej Račič (University of Ljubljana)
- Detecting crop type with machine learning and time series data from Sentinel-1 & Sentinel-2 imagery
- Q&A Session
- Optional for Part 2: Although not a prerequisite, in Part 2 there will be a demonstration on detecting crop type with machine learning and time series data from Sentinel-1 & Sentinel-2 imagery.

YouTube

https://youtu.be/0sdBiVcLFIE?feature=shared

Online material

- https://appliedsciences.nasa.gov/sites/default/files/2023-03/Sentinel%20Hub%20Credentials_instructions.pdf

- https://github.com/EarthObservation/ARSET23

- https://appliedsciences.nasa.gov/sites/default/files/2023-04/AdvAg23_Part2.pdf

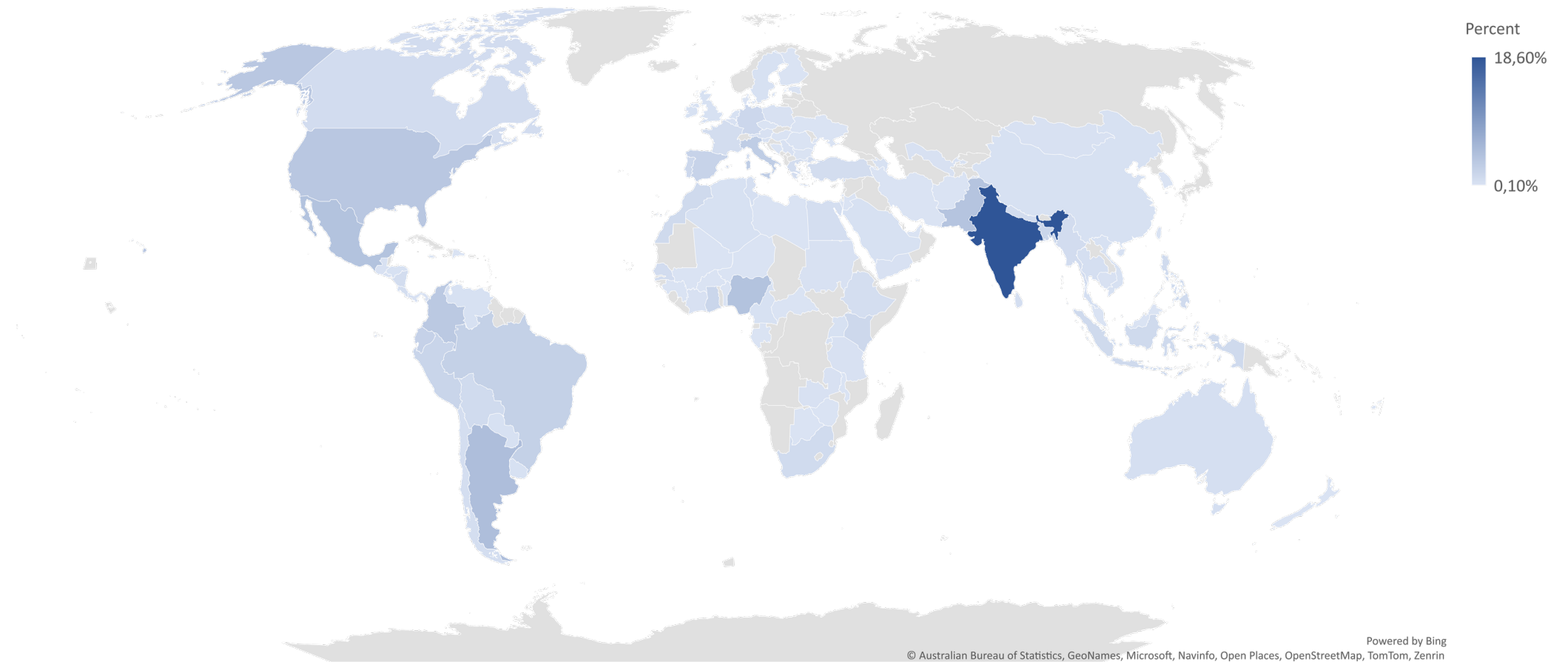- https://appliedsciences.nasa.gov/sites/default/files/2023-04/CropMap_Q%26A_Part2.pdf

Spanish version of the training

[ARSET - Mapeo de Cultivos Usando Radar de Apertura Sintética (SAR) y Teledetección Óptica | NASA Applied Sciences](#)
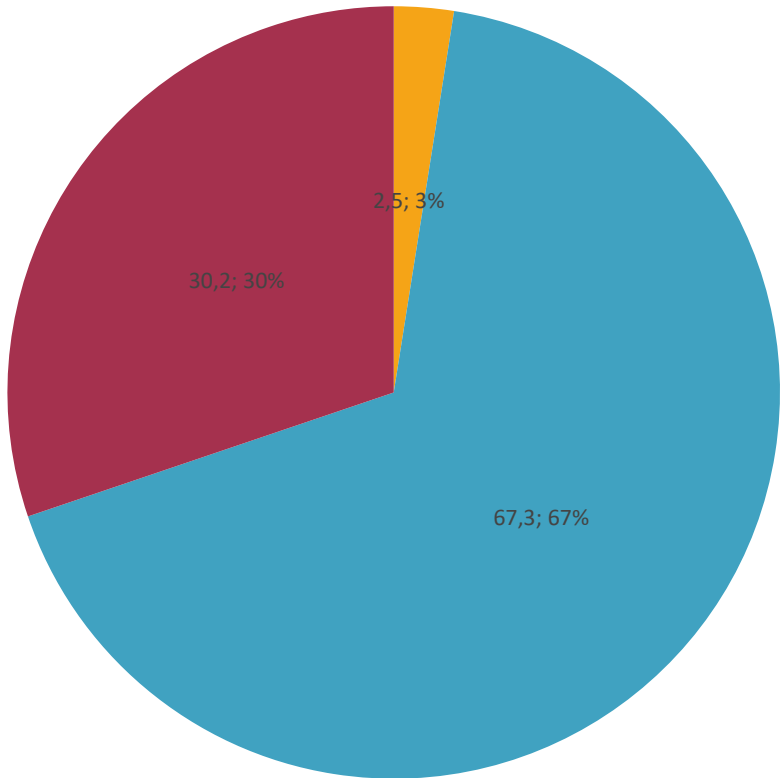
NoR experience

- 1977 participants (representing 900 organizations, from 127 countries and 37 American states)

- 123 participants (out of 233 registered) used Sentinel Hub services

- Total 327.299 requests

- Consuming 555.298 PU

- The participants got familiar with ESA offerings and started to use Sentinel Hub

- Overall their experience was very positive

Participants

Percent
18,60%

0,10%

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Satisfaction

- The training failed to meet my expectations.
- The training met my expectations.
- The training exceeded my expectations.

2,5; 3%

30,2; 30%

67,3; 67%

My ability to classify crop type using a time series of radar and optical imagery (Sentinel-1 & Sentinel-2)