

IAF EARTH OBSERVATION SYMPOSIUM (B1)
Interactive Presentations - IAF EARTH OBSERVATION SYMPOSIUM (IP)

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MOCUPP : MONITORING OF CHANGE OF USE IN PRODUCTIVE LANDSCAPES, AS A
METODOLOGY FOR CROP DYNAMICS SURVEILLANCE BASED ON EARTH OBSERVATIONS.

Abstract

The Costa Rican agro-export sector presents numerous challenges to achieving environmental policies aimed at the sustainable use of natural resources that allow international markets to acquire environmentally sustainable products. To address this country's need, the Monitoring of Change of Use in Productive Landscapes (MOCUPP) project emerged as a management tool to monitor the dynamics of various crops and their interaction with the surrounding tree cover, with technologies based on earth observations. The PRIAS Laboratory of the National High Technology Center implemented this innovative idea in its technical phase, which ended successfully at the end of September 2022. The study was carried out throughout the entire continental territory of Costa Rica, using the Google Earth Engine platform to process annual mosaics of images from the European Space Agency's Sentinel 2 sensor. These mosaics were segmented using software developed by the University of Berkeley and classified using the Land Cover Classification System Tool of the Food and Agriculture Organization, focusing on identifying pineapple, palm, and grass crops, with a classification validated according to the Chuvieco 2010 method. This sequence of steps was carried out over several periods, allowing for an in-depth analysis of crop dynamics and the relationship between agricultural expansion and tree cover distribution in the study areas. We used Geographic Information Systems software such as ArcGIS and QGIS for these analyses. As a result, digital layers representing pineapple (2017, 2018, and 2019), palm (2018 and 2019), and grassland (2018 and 2019) production landscapes were generated. This information is available for consultation in the National Territorial Information System, GeoExplora, and UNBiodiversity Lab. Also, studies of distribution and changes in the agricultural landscape in the country complement it. These results can significantly influence the decision-making of different actors at the national and international levels. For example, they provide valuable data for local governments that could carry out territorial planning to create a responsible space for the economic and environmental sustainability of the country.