

LARGE-SCALE EXPLOITATION OF SATELLITE DATA IN SUPPORT OF INTERNATIONAL DEVELOPMENT

→ AGRICULTURE ECOSYSTEM MAPPING AND MONITORING

Sustainable agricultural management practices are critical to realising the benefits of ecosystem services from agricultural activities. Earth Observation (EO) data supports integrated **ecosystem management** by determining the spatial extent and condition of agroecosystems, associated trends and changes over time.

A major contribution is the mapping of detailed, large-scale land cover and land use and its changes at watershed or sub-watershed level. This service helps to identify how farm and landscape management impact on the flow of ecosystem services to and from agroecosystems and can also enhance the understanding of the environmental benefits that this sector can provide if agricultural production is well-managed.

Impacts of farm and landscape management on the flow of ecosystem services to and from agroecosystems can be detected directly or as a proxy with EO products such as satellite based land cover, land use and change as provided in this service.

The EO mapping service consists of maps describing changes in agriculturally dominated ecosystems over a user-defined time, providing targeted analyses of the country's natural capital and substantial flows (this includes greenhouse gas emissions, biomass, crop status and diversity, as well as ecosystems fragmentation, erosion potential, potential nutrient runoff, sedimentation of waterways, etc.). Maps are provided in raster or vector format for easy integration within existing GIS systems and/or webportals. It is also possible to access the service (maps and analytical tools) via a webportal. Furthermore, summaries of information, such as statistics per administrative unit, can be provided in tables or graphs and included in email reports.

DESCRIPTION

Quantitatively and qualitative mapping of the change in agricultural ecosystems at different spatial and temporal scales

USE

- › Baseline mapping
- › Detect ecosystem extent, condition and changes that can be related to services
- › Identify hotspots and evaluate impact of interventions

INPUT PRODUCTS

- › Land cover/use and change (incl. forest, wetlands, riparian areas, crop status and diversity)
- › Fragmentation and change
- › Erosion potential
- › Soil moisture

SPATIAL RESOLUTION AND COVERAGE

Local/national/regional (10-250m)

BENEFITS

Improved strategy and decision making:

- › Prioritise actions
- › Select and upscale successful practices and interventions
- › Improved understanding of agricultural ecosystems (trade-offs between ecosystem services and disservices)
- › More effective and efficient Sustainable Land Management

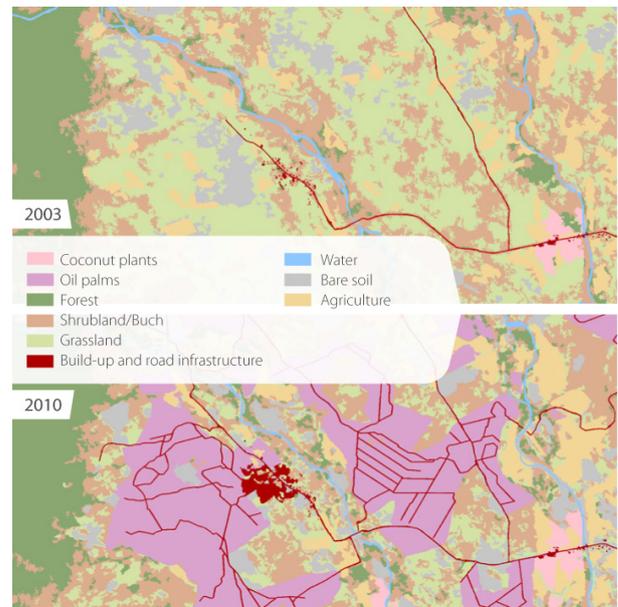
DELIVERY FORMAT

Depending on user needs, e.g.:

- › Vector and raster formats
- › Through a web portal
- › Statistics in tables and/or graphs

FREQUENCY

Depending on user needs but can vary from customised high frequency information to single date for the selected baseline year



Satellite-based detailed land cover/use information shows changes in agricultural ecosystems. In this case, natural vegetation was transformed into oil palm plantations leading to increased sedimentation in a catchment of southern Palawan, Philippines. Such information supports integrated ecosystem management. Copyright: GeoVille for ESA/World Bank WAVES.