

## Service summary and potential applications

Commodity sectors including palm oil, soybean and beef have an important role in food security, energy supply and economic development, but also have significant environmental and social impacts. Stakeholders have a growing preference for using standards on sustainability and economic security in supply chain management, in order to meet growing demand for the above-mentioned commodities while reducing the impact of rapid expansion of plantation and pasture areas.

Earth Observation (EO) technology can provide frequent observations, but cloud cover remains an issue over many production landscapes. Fortunately, new ESA satellite sensors such as Sentinel-1 can help as they can see through clouds to monitor changes as they happen. Moreover, with much improved spatial detail, historical and current information can be provided that improves decision-making even at the level of the small parcels and plantations of smallholder farmers.

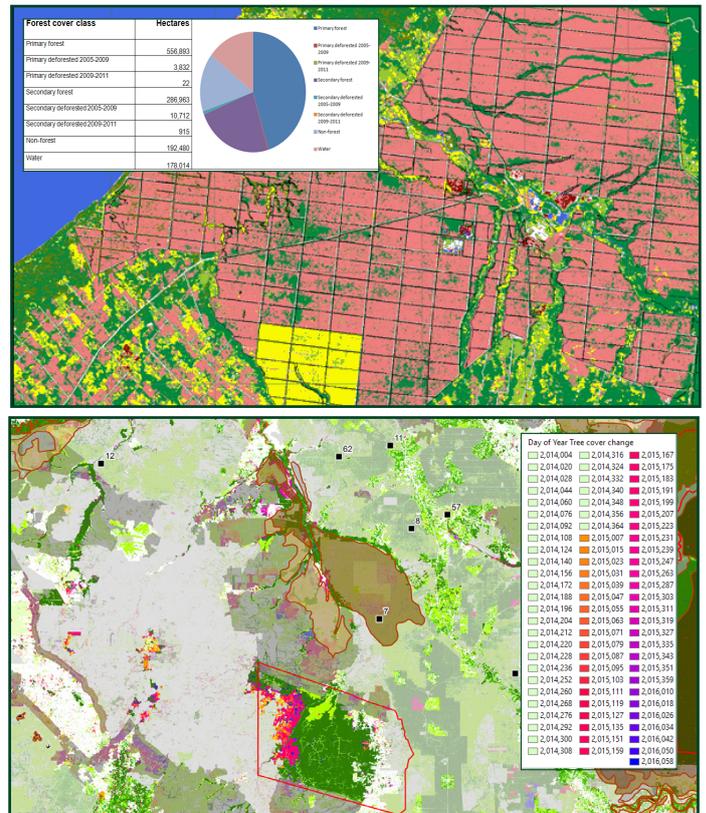
EO4SD will implement map services tailored to the requirements for monitoring agriculture commodity production and offer scientifically robust and objectively measurable, repeatable, historical information. Such mapping can be applied consistently over large areas to advance transparency and provide independent information. This approach also saves costs: a synoptic overview over very large, often poorly accessible production landscapes can enable more targeted field surveys as a part of project planning, monitoring and evaluation.

At landscape level, EO-based products and services provide information on infrastructure development and on key variables such as type of land use, forest and agriculture commodities in an area (i.e. feed, fuel, fiber, food) as well as their extent and changes over time.

This can assist in the assessment and management of the impact of agricultural commodity production on deforestation, ecosystem health and sustainability and help mitigate negative impacts to critical habitats due to road reconstruction or maintenance and expansion of planting areas.

Debates on sustainability can be heated, and accusations made are not all based on facts. In this context, EO is an unparalleled source of evidence-based information, for neutral monitoring of compliance with agriculture sector sustainability criteria (such as the RSPO and RTRS round table initiatives on sustainable palm oil and responsible soy) or associated MDB safeguards policies.

The agriculture sector has been identified as the primary driver of approximately 80% of deforestation worldwide which is often occurring in the most biodiversity and carbon rich forests in the world. Experience shows that map series based on EO data can be a tangible indicator of the MDBs' strengthened efforts to improve environmental monitoring, showing increased efficiency, indicating environmentally sensitive areas, and helping to evaluate mitigation strategies over time.



*Top: Commodity mapping and land tracking service. Detailed 5 meters land cover map of oil palm distribution (in pink), degraded secondary forest and primary forest in Papua New Guinea provides independent proof of the location of (new) plantations. In combination with historical forest change the service provides independent proof that new plantations are not developed at the expense of vulnerable primary forest area. Such information is critical for the assessment of investment risks. Bottom: Forest, land use and land cover change monitoring service. Palm plantation development in vulnerable tropical peatland (brown) and high carbon stock forest (dark green) has globally significant implications for greenhouse gas emission and biodiversity loss. Oil palm plantation concession license boundaries overlaid on actual deforestation (colours) indicate high risk areas in Sumatra, Indonesia. Such information is critical for independent verification of supply of sustainably managed commodities and policy development for responsible business. Copyright: SarVision (top), Satelligence (bottom).*

## EO information services

Information service	Content / Products
<b>Commodity mapping and land tracking service</b>	<ul style="list-style-type: none"> <li>» Mapping of spatial distribution and area of agricultural commodities (palm oil, soy and beef) and other land use</li> <li>» Allocation of land for licensed concessions (if local data is available)</li> </ul>
<b>Forest, land use and land cover change monitoring service</b>	<ul style="list-style-type: none"> <li>» Land use and land cover change (e.g. deforestation, changes in extent of wetlands)</li> <li>» Mapping of highly biodiverse grasslands, mapping of high carbon stock areas, infrastructure etc.</li> </ul>
<b>Environmental impact monitoring service</b>	<ul style="list-style-type: none"> <li>» Infrastructure development mapping and monitoring</li> <li>» Water quality monitoring</li> <li>» GHG emissions from farm operations</li> </ul>

