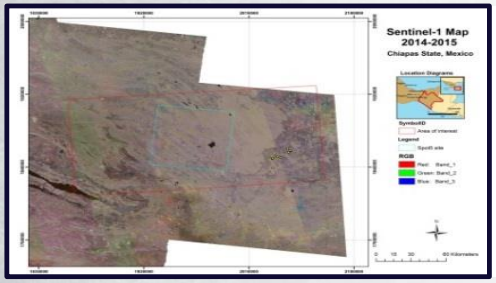
Case study

Mapping forests in Mexico in the framework of the REDD programme thanks to Copernicus

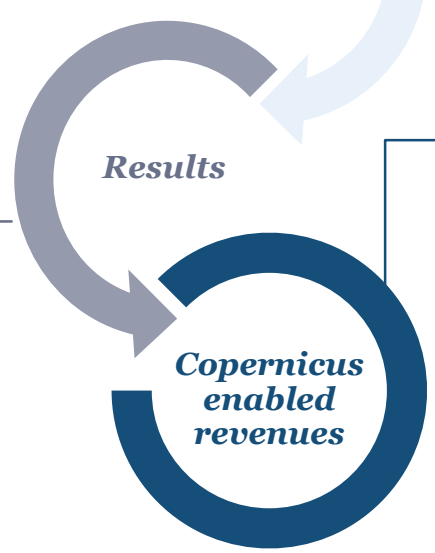
Implementation of the ESA Forestry Thematic Exploitation Platform (F-TEP) has been subcontracted to VTT Technical Research of Finland Ltd as Prime Contractor.

This dedicated platform will be a one-stop shop for both academic and commercial users, including Copernicus core services, UNREDD and other international programmes, national forest inventories, universities and research centres, forest managers, value adding industry, NGOs etc.), and will provide services based on pre-processed Copernicus and other types of satellite data, ancillary data, and computing power. The platform will provide various functionality such as access to EO data, visual product analysis, EO and GIS toolboxes, simple user interface and advanced features, support of in-situ data, product accuracy assessment, collaborative working and a support helpdesk.

All available Sentinel-1 images have been acquired and will be calibrated. A mosaic image will be developed using VTT in-house software. The forest map will be constructed by applying a random forest classifier of the Orfeo toolbox, an open source library for remote sensing images funded by the French Space Agency (CNES). The forest maps will be published with a 40 meters pixel size. Sentinel-2 data images will be selected and used if they are relatively cloud-free.



Sentinel-1 Map 2014-2015 of Chiapas Region in Mexico *(Source: VTT Technical Research of Finland Ltd and the Forestry TEP Team ESA)*



A pilot project was launched in March 2015 in Mexico in the **temperate and tropical regions of Chiapas** (73,311 km^2) **and Durango** (123,317 km^2) with the objective of using **Sentinel-1 and 2 data to map forest cover** in the framework of the REDD+ programme.

The initial phase of the pilot project consists of an accuracy assessment of the Chiapas and Durango states through randomly-sampled Pleiades data locations. In total, 100 40m x 40m "plots" of forests will be used to compose one image. Of these 100 plots, 25 will be used for model training and 75 for an independent accuracy assessment.

200,000 km²
area monitored for forest mapping

The objective of the F-TEP prime project stakeholder is for **Sentinel-2 data to account for up to 90% of the entire data processed**.

The spectral bands of Sentinel-2 missions are particularly suitable for the assessment of important structural and biochemical variables in the vegetation, and Sentinel-2 data **will improve significantly the quality of forest mappings**, **with regard to the identification of tree species for example**.

The preparation of forest maps based on Sentinel-1 and 2 data should greatly improve the efficiency of the current process which relies on field inspections only. The establishment of the Forestry TEP is also expected to diversify and balance the distribution of take-up between expert users, intermediate users and non-expert users.