



# FAO partnerships

working for the Sustainable Development Goals

## ACCESS TO NEW TECHNOLOGIES



In collaboration with Google technology company that specializes in Internet-related services and products, which include online advertising technologies, search engine, cloud computing, software, and hardware



### Timeframe

2015–2021



### Beneficiaries

technical experts



### Geographical coverage

Global

### Contributing to:



natural resources, and still rely on time-consuming and error-prone manual methods to monitor these processes.

## THE PARTNERSHIP

In this context, the Food and Agriculture Organization of the United Nations (FAO) and Google, through its Earth Outreach program, agreed to partner to make geospatial surveillance and mapping tools more accessible, help countries tackle climate change with the latest technology, and build the capacity of experts working in the field of forestry policies and land use.

The partnership, which began in 2015, marked a major ramping up of existing collaboration between the two organizations. In addition to boosting visibility and implementation of efforts to encourage sustainable environmental practices around the world, it foresees sharing knowledge and identifying needs that will diversify the kind of satellite data collected, broadening the focus to include monitoring drylands and agricultural crop productivity.

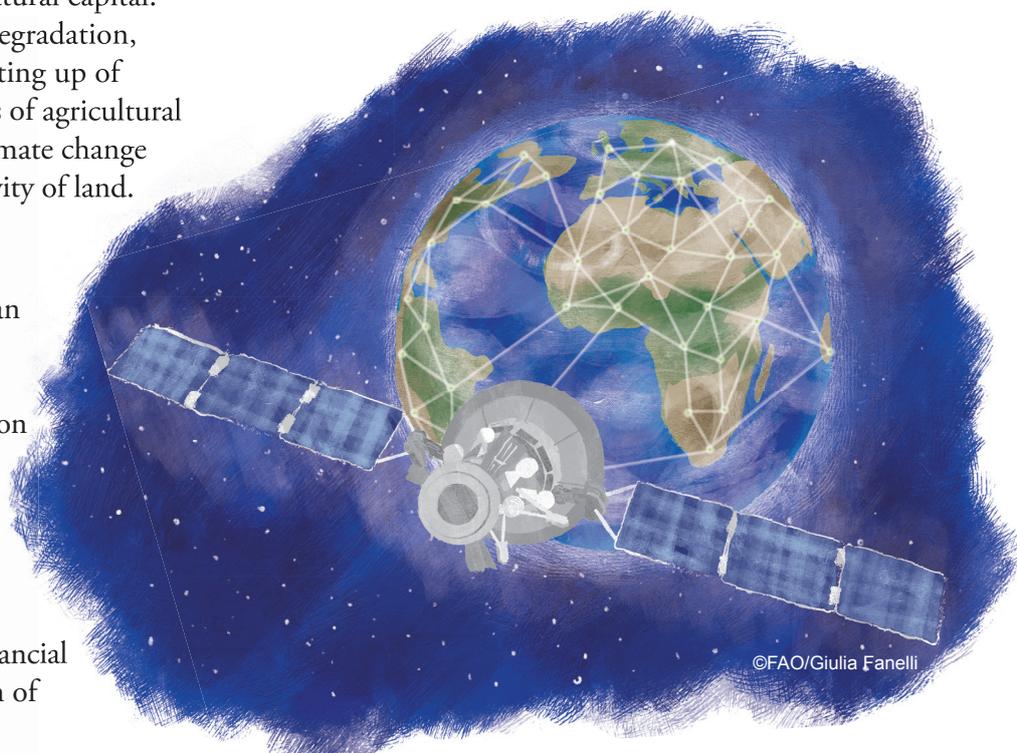
The pressures on global land and water resources are greater than at any other time in human history. Rapidly increasing populations and rising levels of consumption are placing ever-larger demands on our natural capital. Current land use patterns are leading to degradation, desertification, deforestation, flooding, silting up of reservoirs and waterways, and falling levels of agricultural production, while biodiversity loss and climate change further jeopardize the health and productivity of land.

## CHALLENGE

Digital technology and satellite imagery can transform the way countries can assess, monitor and plan the use of their natural resources, including monitoring deforestation and desertification. The technology offers wide coverage, is faster than ground methods and facilitates long term monitoring of land coverage and usage.

However, many countries lack adequate financial resources to prevent the causes of depletion of

Through the partnership, Google Earth Outreach provides 1 200 trusted tester credentials on Google Earth Engine to FAO staff and partners and trains users. FAO trains its own staff and technical experts in member countries,



upon their requests, to use free and open source software tools developed within the [Open Foris Initiative](#) that use Google technology, such as Earth Engine.

## ACTIVITIES AND OBJECTIVES

The joint activities began with the launch of a training programme in the forestry sector. The programme supports setting up National Forest Monitoring Systems (NFMS) in 19 countries and training 19 teams of experts on the use of Remote Sensing and GIS techniques

in the development of the FAO Atlas of Automatic Identification System (AIS)-based Fishing Footprint and Effort in partnership with Global Fishing Watch. The Atlas describes the strengths and limitations of measuring fishing effort from AIS in each FAO region. It compares fishing effort calculated through AIS algorithms with those of Vessel Monitoring Systems and logbooks, and it offers advice over how to interpret AIS-derived fishing effort. The preliminary findings of this study were presented at the Committees on Fisheries in July 2018.



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for forest monitoring, allowing them to use an FAO computer program and Google's accessible geospatial data files. Similarly, the collaboration has led to exploring the various uses of the Google Earth Engine that include facilitating data collection, analysis and access in addressing specific problems, namely desert locusts, greenhouse gases, deforestation and forest degradation, and vessel registration. Google Engine was later adopted by FAO's Emergency Center for Locust Operations as a tool to improve the forecasting and control of outbreaks of this pest.

In the area of sustainable forest management, the collaboration has led to significant progress with FAO's Collect Earth application, which works with Google Earth to analyze forest areas in conjunction with Google Earth Engine and Open Foris Collect. Using this technology, FAO and other partner institutions have been able to conduct the first detailed assessment of trees and forest cover in dryland biomes.

## PRELIMINARY RESULTS

Thanks to this collaboration and through the use of Collect Earth, a free and open-source land monitoring software, twenty-five FAO Member States have already reported land-use data to the United Nations Framework Convention on Climate Change. Under this collaboration, Google has also assisted

An estimate of the global forest area in dryland biomes was obtained using large databases with high-resolution spatial and temporal satellite imagery available through the Google Earth platform. According to the data, based on an analysis of more than 210 000 plots of half a hectare, previously undeclared forest areas in drylands have increased global forest cover estimates by at least nine percent. The preliminary results of this work were published in the "Science" journal in May 2017 as a reference for the global monitoring of drylands.

## SUSTAINABILITY

The collaboration between FAO and Google continues through the National Land Monitoring and Information System project, which supports the process of reducing emissions from deforestation and forest degradation. Meanwhile, Collect Earth has been adopted by several member countries and its use now extends beyond national assessments to project implementation, monitoring and baseline assessments. Collect Earth has also been recommended as a tool to support country reporting on different Sustainable Development Goals. The project team is currently collaborating with Google to develop a new web based tool, Earth Map, which will be released by the end of 2019.



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