

Title: The European Space Agency's support to the uptake of satellite Earth Observation for official statistics

Authors:

- Phillip Harwood, Evenflow
- Monica Miguel-Lago, EARSC
- Marc Paganini, ESA

There is a growing interest in using remote sensing data for the enhancement of official statistics. In 2021 the European Statistical System Committee adopted the Warsaw Memorandum on Earth Observation for official statistics, and many national statistical institutes/offices (NSIs/NSOs), as well as the European Statistical Office (EUROSTAT) and supporting organisations, are actively investigating how this can best be done.

Although earth observation satellites, such as those within the EU's Copernicus programme, provide a steady stream of quality-controlled data, these must be translated into products capturing the information needed. This process is typically outside the direct control of the statistics offices themselves, requiring a degree of trust in the process.

The European Space Agency (ESA) has been in the forefront of supporting the statistical community in the uptake of EO data, with a series of projects developing new methods and assessing their value for official statistics. Examples of such projects include:

The Sen4STAT project, which created an open-source toolbox for assessing agricultural statistics in a country or region utilising data from the Copernicus programme's Sentinel spacecraft, with a particular focus on parameters relevant for SDG monitoring.

The GAUSS (Generating Advance Usage of EO for Smart Statistics), which worked closely with the statistical agencies of Greece, Poland and Finland to create a range of geographical statistics (on air quality, urban green areas, drought and snow cover) which could be directly integrated into the portfolio of the NSOs.

The PEOPLE-EA project, which created a framework and tools for using EO data to provide data required by the SEEA (System of Environmental Economic Accounting) compliant Natural Capital Accounting.

There have also been a range of projects supported by ESA assessing different Sustainable Development Goal (SDG) indicators, which although not directly aimed at official statistics could easily be adapted for this purpose.

Representatives of National Statistical Offices have been involved in all of these projects. However there are still challenges ahead to translated the research and development performed into operational services suitable for production of official

statistics. These include technical challenges in making sure that NSOs have access to EO data and are able to extract the necessary information. There are also significant non-technical challenges, for example in proving the reliability of the data, before the data can be formally adopted as official statistics. In some cases there may also be legal considerations that mandate the gathering of data in a specific form.

ESA continues to engage with and support the statistical community to increase its uptake of earth observation data. This includes supporting the development of new products, but can also include awareness raising activities, training, and technical support to operationalisation. ESA is seeking to better understand the issues faced by the statistical community so that it can focus the support it provides.