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ACCESS AND PROCESSING OF SATELLITE DATA WITHIN THE COPERNICUS DATA SPACE ECOSYSTEM

Abstract

A major milestone in access to Copernicus satellite data is the Copernicus Data Space Ecosystem (CDSE). The main novelty is the paradigm shift that almost all user-level Copernicus data, including global coverage and full archive, are with no cost immediately available online. The product list comprises Copernicus satellite imagery (Sentinel 1 GRD/SLC/ONC, Sentinel 2 L1C/L2A, Sentinel 3 OLCI/SLSTR/SRAL/SYNERGY, Sentinel 5p L1B/L2), Copernicus services and other satellite data missions (e.g. Landsat, SMOS, Envisat). In orderable mode, historical Sentinel-1 RAW data and processing of Sentinel 1/2/3 data using official ESA processors are available. So-called Sentinel Engineering Data (mostly Level-0 data) are available in the rolling 2-week archive. In addition, CDSE provides access to commercial satellite data including Pleiades, Spot, Worldview, PlanetScope, SkySat, and more.

Another novelty of the CDSE is the different interfaces through which the data are available: from the old-fashioned download to different interfaces that allow searching the catalogue linked to the same database to ensure consistency. The first interface is OData - a standard adopted by ESA based on https RESTful Application Programming Interfaces. Another interface is a STAC catalogue and API, which has become a standard in the EO community. STAC elements are provided for all available products, as well as for products generated by users within the CDSE. In addition, EO data can be accessed via a complete set of interfaces. It can be accessed directly via a standard HTTP S3 object interface. Data stored in the repository can also be dynamically published as user-configurable OGC web services using a streamlined access API. The CDSE also provides Jupyter Hub - a very suitable tool for prototyping, developing and testing applications for Earth observation data processing. It is an open source, online, interactive web application that provides access to computing environments and resources without burdening users with installation and maintenance tasks.

The vast majority of the capabilities described are available free of charge to individuals for personal, research or commercial use. For those interested in larger scale operations, there are virtually unlimited resources available on commercial terms. The first of these is CREODIAS, which allows users to access and process data directly from a federated cloud environment, order serverless processing of EO products and access EO-dedicated services. However, other third parties are joining CDSE to provide a range of additional services. This presentation will show how the Copernicus Data Space Ecosystem can revolutionise the use of satellite data.