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HOW WILL WE ACCESS SATELLITE AND MODELLED DATA IN THE NEAR FUTURE: A GLIMPSE FROM THE PERSPECTIVE OF A PROVIDER OF CLOUD COMPUTING INFRASTRUCTURES AND BIG EARTH OBSERVATION DATA REPOSITORIES

Abstract

Satellite remote sensing has made a key contribution to our understanding of the climate system. It provides an independent source of observations for assimilation into climate models, for their verification, and for assessing the effectiveness of mitigation plans. Satellite images are also often the only source of spatio-temporally seamless information in areas that are difficult to access, such as the oceans or polar regions, which play a key role in climate change processes. For a long time, the primary obstacle to the use of satellite data in climate research has been the shortness of satellite time series and the associated uncertainties in determining long-term changes. Yet, the data of the most comprehensive Earth Observation programme to date – Copernicus – with the Sentinel satellites - will soon be 10 years long, which makes it possible to observe climate change or its effects. The key aspect is how the data are collected, effectively processed and shared. And this is where big satellite data repositories come into play. Work on two of these, which will form the backbone of Data Space in the EO sector for many years to come, has recently begun.

The Copernicus Data Access Service will foremost provide free-of-charge full archive and always up-to-date repository of, among others, Sentinel 1, 2, 3, 5p and 6 as well as of Copernicus Contributing Missions – most of it immediately available. Data will be offered through various interfaces including direct S3 access with STAC items, and cloud-optimized formats to streamlined access APIs, which are able not just to fetch the data but also to process it.

The DestinE Data Lake is a part of implementation of Destination Earth that aims at developing a very high precision digital model of the Earth to enable end-users to assess the impact of environmental and social challenges and to monitor proposed mitigation solutions. It will provide data available at many external data spaces (e.g. Sentinel and Landsat data, Copernicus Services on Climate, Atmosphere, Marine, Land, Emergency, and many more) or generated by the DestinE Digital Twins. The Data Lake will strive to support near-data processing to enable service scalability and implementation of bigdata distributed workflows. The concepts applied in the DestinE Data Lake Service will provide a harmonisation of data federation, beyond anything that exists today.

This presentation will show how these European initiatives can revolutionise the way projects and research are conducted using satellite data.