

The Use of the VSC for Earth Observation Science

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Earth observation satellites have been used for monitoring of global environmental processes since the 1970s. Yet, only recently, satellites capable of providing high-resolution global coverage every few days have become available. This has spurred scientific studies dealing with the exploitation of these satellite data for monitoring of global land surface processes.

So far, the majority of these studies have been conducted on Googles Earth Engine (GEE) platform that combines a multi-petabyte catalogue of satellite imagery and geospatial datasets with planetary-scale analysis capabilities. While the GEE is undoubtedly very powerful, it poses certain restrictions on what kind of data and algorithms can be used. From a scientific perspective there is hence a high need to build up independent science-driven platforms that are transparent for their users and offer a higher diversity and flexibility in terms of the data sets and algorithms used.

Recognizing this need, TU Wien founded the EODC Earth Observation Data Centre together with other Austrian partners in May 2014 as a public-private partnership. The central site of the EODC infrastructure is the Science Centre Arsenal, where a cloud platform and Petabyte-scale storage system were set up and connected to the Vienna Scientific Cluster (VSC).

In this presentation, I will give an overview of our efforts to analyse Synthetic Aperture Radar (SAR) data as provided by the Sentinel-1 satellites on a continental to global scale using the VSC. The Sentinel-1 data can be used for many purposes, such as the monitoring of water stored within the soil and vegetation, or the mapping of water bodies, wetlands, agricultural crops, forests, and other land cover classes.