

## **National Satellite Data Centre and Finnish Sentinel Collaborative Ground Segment**

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FMI operates satellite ground station at its Arctic Research Centre at Sodankylä Finnish Lapland. The Arctic Research Centre hosts programs exploring upper-air chemistry and physics, atmospheric column measurements, snow/soil hydrology, biosphere-atmosphere interaction and satellite calibration-validation studies.

The satellite ground station is developed towards National Satellite Data Centre (NSDC) serving Finnish Earth observation community and data users as well as foreign partners as primary source of Earth observation satellite data. The National Satellite Data Centre provides data downlink services, data processing services, data archiving services and data analysis services.

As part of European Union's Copernicus Earth observation programme, European Space Agency (ESA) has launched first Sentinel satellites; Sentinel-1A and Sentinel-2A, and is going to launch several satellites more in coming years. The Sentinel core ground segment will be in charge of the downlinking, processing and archiving the Sentinel's data.

The Copernicus Ground Segment is complemented by the Sentinel Collaborative Ground Segment which was introduced with the aim of exploiting the Sentinel data even further. This entails additional elements for specialized solutions in different technological areas such as data acquisition, complementary production and dissemination, innovative tools and applications, and complementary support to calibration and validation activities.

FMI is setting-up Copernicus Collaborative Ground Segment at Sodankylä as part of the development activities of the Sodankylä satellite ground segment towards National Satellite Data Centre. The FMI Arctic Research Centre will be hosting Collaborative Acquisition Station (CAS) for Sentinel-1 mission and Collaborative Archiving Centre for archiving and disseminating Sentinel-1, -2, -3 and -5P data.

The Collaborative Acquisition Station will downlink the pass-through data stream from Sentinel-1 and provide the quasi-real-time (QRT) data products for users, e.g. FMI Ice Service for Baltic Sea ice monitoring. The Collaborative Archiving Centre is downloading subset of Sentinel (-1, -2, -3, -5P) data from core ground segment, maintain Long-Term Archive (LTA), and disseminate the data to the users and processes value-adding products from the data. The Finnish Collaborative Ground station can distribute Sentinel data also to users in Nordic and Baltic countries.

It is often more economically sound solution to transfer processing to the data than move the data to processing, especially when processing large data sets or near-real-time (NRT) applications. The NSDC serves EO data users by providing processing capacity as Platform as a Service (PAAS) and Infrastructure as a Service (IAAS) by providing virtual servers and cloud processing possibilities to users.