SEN3APP

Processing Lines and Operational Services Combining Sentinel and In-Situ Data for Terrestrial Cryosphere and Boreal Forest Zone

Aurora Borealis, photo from Finland by Matias Takala

SEN3APP is concerned with the development, implementation, operationalization and validation of Sentinel data processing lines for cryospheric (terrestrial) and land cover/phenology applications. Both global and regional applications are included, focusing to high latitudes of the Earth and other parts of the cryosphere.

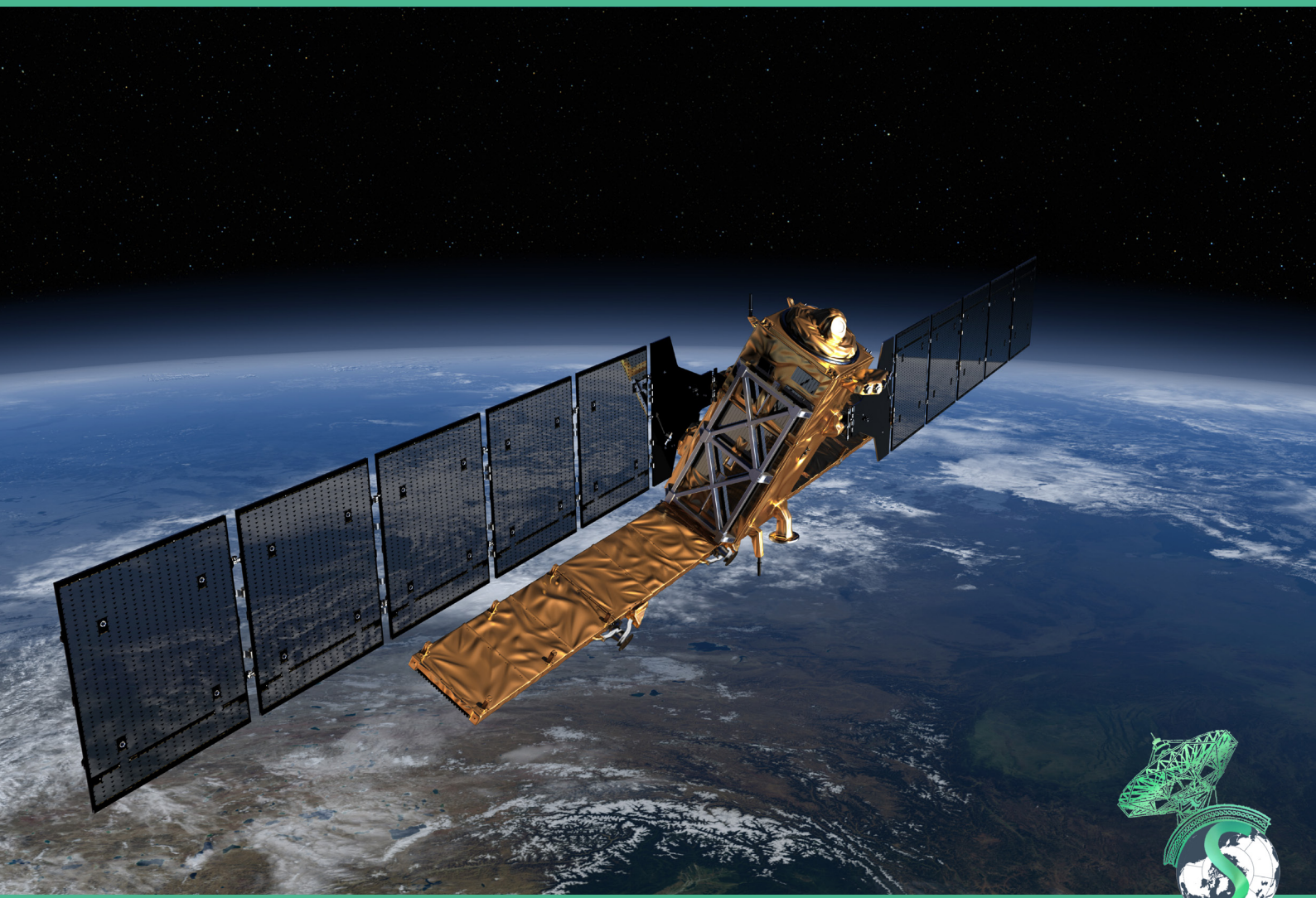
An essential aspect of the project is the development and harmonization of data processing modules/routines in order to facilitate new European satellite data processing capabilities for the European and global user community.

Climate change, land monitoring and security

The Sentinel- satellites aim at frequent global coverage of the Earth surface. This enables the use of well-established satellite products, built up with earlier more research oriented satellites, to be used for the benefit of users in six core areas of Copernicus: security, land, climate change, atmosphere, emergency and marine. The SEN3APP addresses three of these, namely climate change, land monitoring and security. The SEN3APP processing lines will utilise Synthetic Aperture Radar (SAR) and medium/high resolution optical/IR-range data from Sentinels 1, 2 and 3. An essential aspect of the project is the development and harmonization of data processing modules/routines in order to facilitate new European satellite data processing capabilities for the European and global user community. For selected applications/products, the processing lines will also provide the automated validation tools. Operational capabilities of FMI Sodankylä satellite data centre are applied to host part of the infrastructure and also complete processing lines. The overall objective of the proposed project is to provide end-users with products and services relevant to:

1. Numerical Weather Prediction (NWP): land surface processes and albedo
2. Local/regional scale climate change studies and planning of adaptation strategies
3. Ecosystem studies & assessment of ecosystem services
4. Evaluation of nutrient leaching caused by different land use and management practices for implementation of Water Framework directive objectives
5. Hydrological forecasting and monitoring including hydro-power industry, flood prevention and water resources assessment
6. Carbon balance monitoring and assessment
7. Environmental monitoring including disasters, forest diseases and crop yield
8. Construction and logistics as to soil frost and permafrost (roads, buildings, timber collection)

Picture below: Sentinel-1 satellite, ESA



Sodankylä Satellite Data Centre

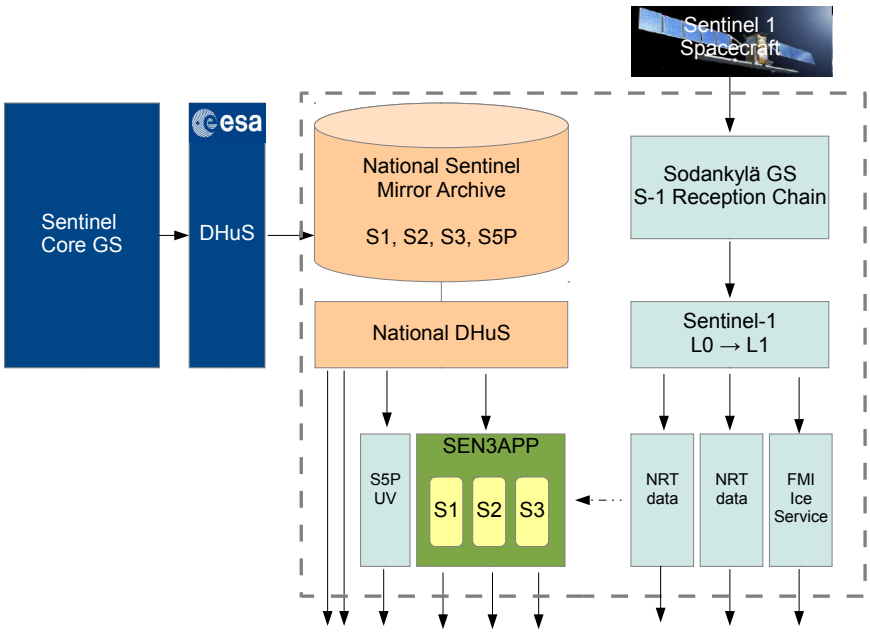
The Sodankylä Satellite Data Centre is a national satellite data center providing satellite data reception and data processing services to Finnish and international partners. The Finnish collaborative ground support (GS) initiative consists of two parts:

1. Local reception of Sentinel-1 Direct Broadcast

- Focus on NRT and Quasi-Real-Time products
- Special Interests:
  S1 -> Baltic Sea Ice monitoring, Oil spill monitoring

2. National Sentinel mirror site

- Provision of Sentinel data to Finnish Data users
  S1, S2, S3, S5P
- Medium-term data archive
- Automated data processing lines for specific products
- Hosting of processing services



Photographs on this page are from the Sodankylä receiving station and the above flow chart is showing SEN3APP data flow.

Picture above: Snow cover and climate change issues are among those covered by SEN3APP project. Photo from Helsinki, Finland by Sini Merikallio

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