

## SEN3APP: Processing lines and operational services combining SENTINEL and in-situ data for terrestrial cryosphere and boreal forest zone

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The Sentinel- satellite series aims at frequent global coverage of the Earth surface in full spectrum of remote sensing. This enables the use of well-established satellite products, built up with earlier more research oriented satellites, to be used for the benefit of people in six core areas of Copernicus/GMES: security, land monitoring, climate change, atmosphere monitoring, emergency management and marine environment monitoring. The SEN3APP- project which is funded by EU FP7 program addresses three of these, namely climate change, land monitoring and security. The 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. The processing lines will utilize 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. The processing lines to be designed and implemented contain distributed systems with contributions of the project partners. Operational capabilities of FMI Sodankylä satellite

data center 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:

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