



## **Implementation of a satellite data based information system for permafrost monitoring - The ESA DUE Permafrost Project**

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Permafrost is an essential climate variable (ECV). It is a subsurface phenomenon which cannot be directly measured with remotely sensed data. However, many parameters which influence the ground thermal regime and surface indicators can be captured with satellite data. Those are e.g. land surface temperature, land cover and snow parameters, soil moisture and terrain changes. The capabilities of currently available remotely sensed datasets need to be assessed with respect to operational monitoring and their value enhanced by a synergistic use. A wide range of EO datasets are investigated and integrated in an information system within the DUE Permafrost project with extensive involvement of the permafrost research community. This project has been initiated and is funded by the European Space Agency (ESA) as part of the Data User Element Program (DUE). It comprises pan-boreal/arctic to regional and local scale investigations. A number of relevant global datasets do already exist or are currently in development. Land surface temperature is available from MODIS and AATSR on global scale. ESA projects such as GlobCover, GlobCarbon and GlobSnow provide important land cover parameters. An operational soil moisture monitoring system is currently provided by EUMETSAT from MetOp ASCAT. The majority of these datasets has been developed and validated outside of the circumpolar permafrost zone. The assessment of these datasets is thus an integral part of the project. The information system will comprise those global datasets and also regional and local scale monitoring results. The latter cover sites in Alaska, Mackenzie basin, Southern Yakutia and Laptev and East Siberian Sea region. The database setup considers use by permafrost modelers and scientists working on local scale (hydrology, geomorphology, botany etc.). A combination with a WebGIS portal will allow efficient dissemination of results and free access.

This presentation summarizes the current achievements within the DUE Permafrost project, reports feedback collected at open project workshops, presents the design of the information system and discusses future perspectives.

<http://due.esrin.esa.int/prjs/prjs116.php>

<http://www.ipf.tuwien.ac.at/permafrost>