

Snowmelt monitored in the Baltic Sea watershed region in near real time



Satellites are monitoring and mapping the snow melting process to help local authorities manage water supplies and predict and prepare for floods. Credit: ESA

As spring melt of winter snow is underway in the Baltic Sea watershed region, satellites are monitoring and mapping the snow melting process to help local authorities manage water supplies and predict and prepare for floods. Remote sensing is the only technique capable of providing a comprehensive view over such a large area.

Within the context of ESA's Polar View programme, funded through the Earthwatch GMES Service Element (GSE), the Finnish Environment Institute (SYKE) is using images from Earth observation satellites to provide snow maps of Finland, Sweden, Estonia, Latvia, Lithuania and parts of Western Russia and Belarus from the beginning of March until the end of May.

Satellite images are downlinked to the Arctic Research Centre of the Finnish Meteorological Institute (FMI) and then passed on to SYKE, which takes the image data and processes it further to create the snow maps.

SYKE's snow-mapping method produces information on fractional snow coverage for all non-mountainous areas, even heavily forested spots, with fine resolution. The maps are published on the SYKE website as soon as they are compiled, usually within four to five hours of satellite overpass.

Because snow is vital to the water cycle, predicting when and how snow will melt and be released into local ecosystems is very useful. For instance several Finnish regional environment centres and the Estonian Meteorological Institute are using the snow maps on a daily basis for hydrological modelling, flood forecasting and water resources management.

The snow maps are also used by the commercial sector for activities such as managing hydroelectric power production and estimating how much time is left in the season for winter sports.

In 2008, the mapping project will expand to include parts of Poland.

Source: ESA

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