



Using the Sentinels to detect glacier lake outburst floods, snow avalanches and the glacier, lake ice and snow cover in Norway

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The Norwegian Water Resources and Energy Directorate (NVE) is responsible for monitoring the country's water resources. NVE operates national warning services for ice, snow avalanche, and flood and landslide.

The Sentinel mission is developed by ESA as part of the Copernicus Programme to perform terrestrial observations. Sentinel-1 comprises a constellation of two polar-orbiting satellites, performing C-band synthetic aperture radar imaging, enabling them to acquire imagery regardless of the weather. Sentinel-2 is a constellation of two satellites at Sun synchronous orbit ensuring revisit times of less than 5 days in mainland Norway. The multispectral bands and spatial resolution of 10-20 m makes it ideal for glacier studies. Sentinel-3 takes daily imagery of Norway at 250/500/1000 m resolution making it suitable for snow cover and lake ice extent estimation.

Here we present how data from the Sentinel satellite sensors 1, 2 and 3 are applied to detect glacier lake outburst floods and snow avalanches and map glacier extents and velocities, survey lake ice and snow-covered area.