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Estimating periglacial creep rates in mountain regions of Southern Norway using InSAR ground deformation data

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This study aims at estimating present-day rates of periglacial erosion using Interferometric Synthetic Aperture Radar (InSAR) satellite data for non-glaciated low-angle mountain slopes in Southern Scandinavia. The InSAR ground deformation satellite product measures mm-changes in elevation and lateral deformation and is available every 6 days through the latest Sentinel-1 satellite deployment. It is therefore usable to capture frost-heave related surface changes on cold-region slopes and corresponding lateral displacements.
We target low-relief, high-elevation, non-vegetated mountain surfaces that are subject to freeze-thaw processes and often composed of blockfields. The remotely sensed ground deformation data and estimated erosion rates of the slopes and plateaus will be validated with field measurements of repeat Lidar and drone surveying, as well as repeat DGPS measurements in 100 points in the five main field sites. This will also capture possible mixing activity suggested to take place in blockfield settings.
Estimated periglacial erosion rates on low-angle mountain slopes will later be connected with a long-term simulation of the ground thermal regime and complemented with surface exposure and erosion cosmogenic nuclide dates.