

Operational and Experimental Products on Cold and Polar Regions of the Earth Observation Center (EOC)

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Experimental approaches on the Aletsch Glacier

Within the DLR “Polar Monitor” project, the expertise of several DLR institutes (DFD, MF, OS, HR) is brought together to study polar and cold regions to investigate topics like the possible effects of a changing cryosphere on society. A flight campaign over the Aletsch Glacier in Switzerland allowed testing of various technologies and methodologies for cryosphere research.



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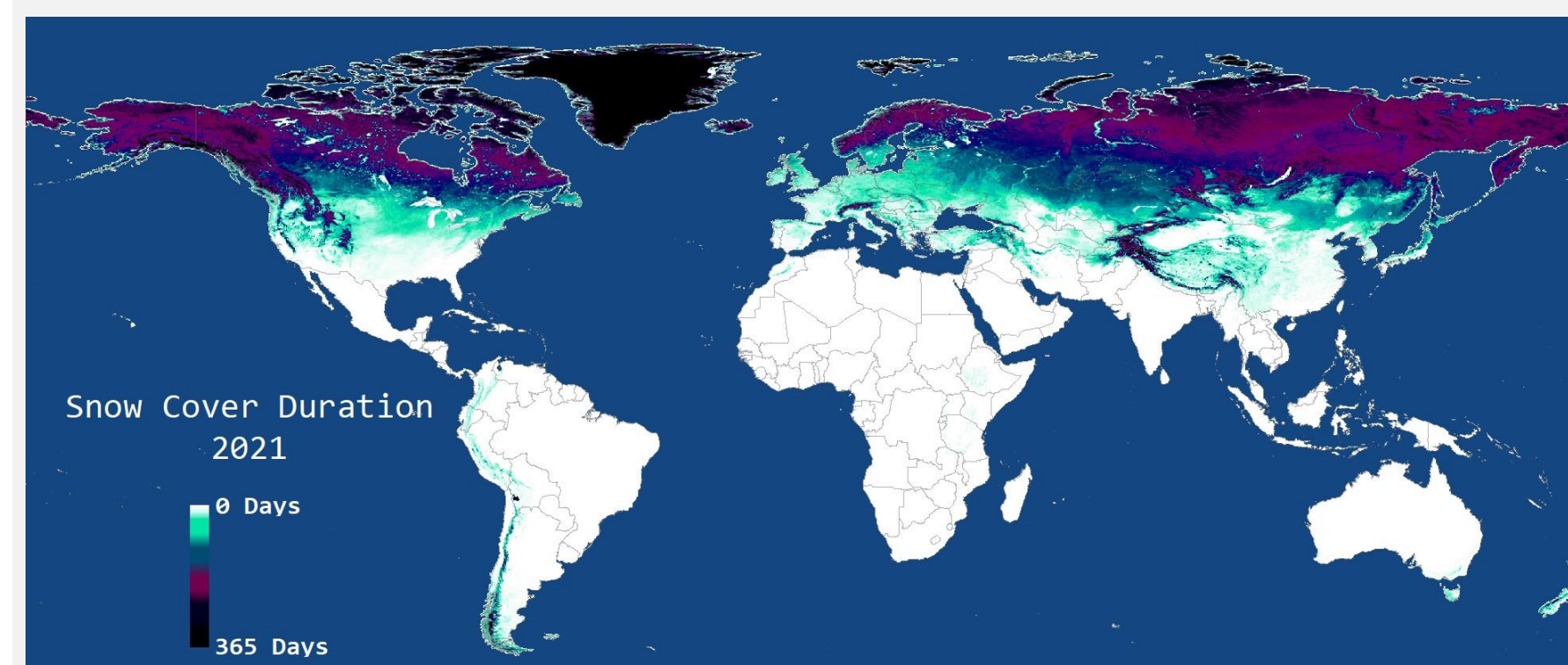
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Global SnowPack

“Global SnowPack” is another operational product from the “Polar Monitor” project. It provides daily gap-free snow cover information on a global scale and is based on MODIS snow cover information. Daily coverage is provided in near real-time on the EOC Geoservice, but cumulative products such as Snow Cover Duration are also available for hydrological years since 2000.



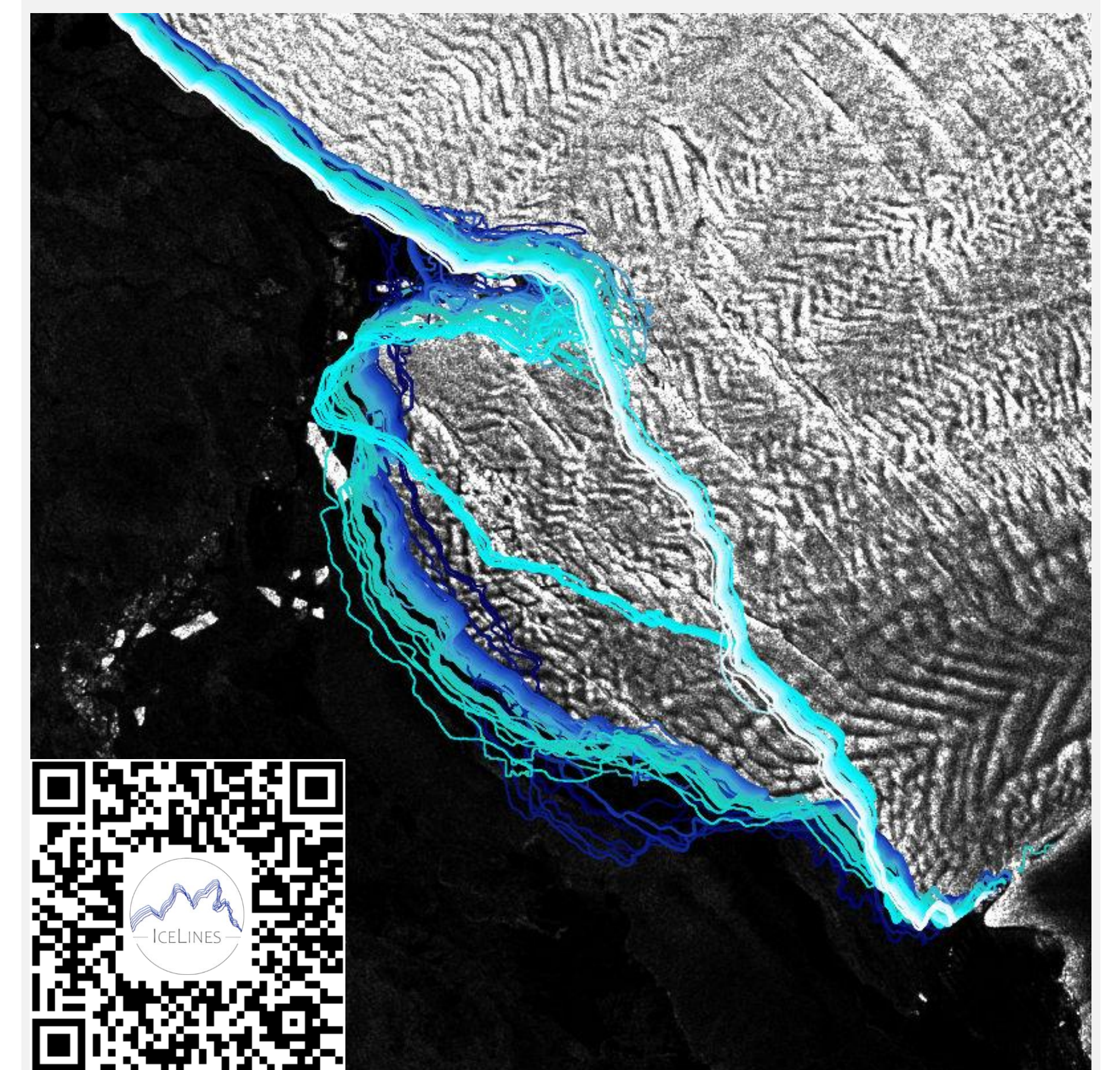
Possible applications

- Spatial Analysis of SCD
- Hydrological Models
- Radiative Forcing
- Trend Analysis



Ice Lines

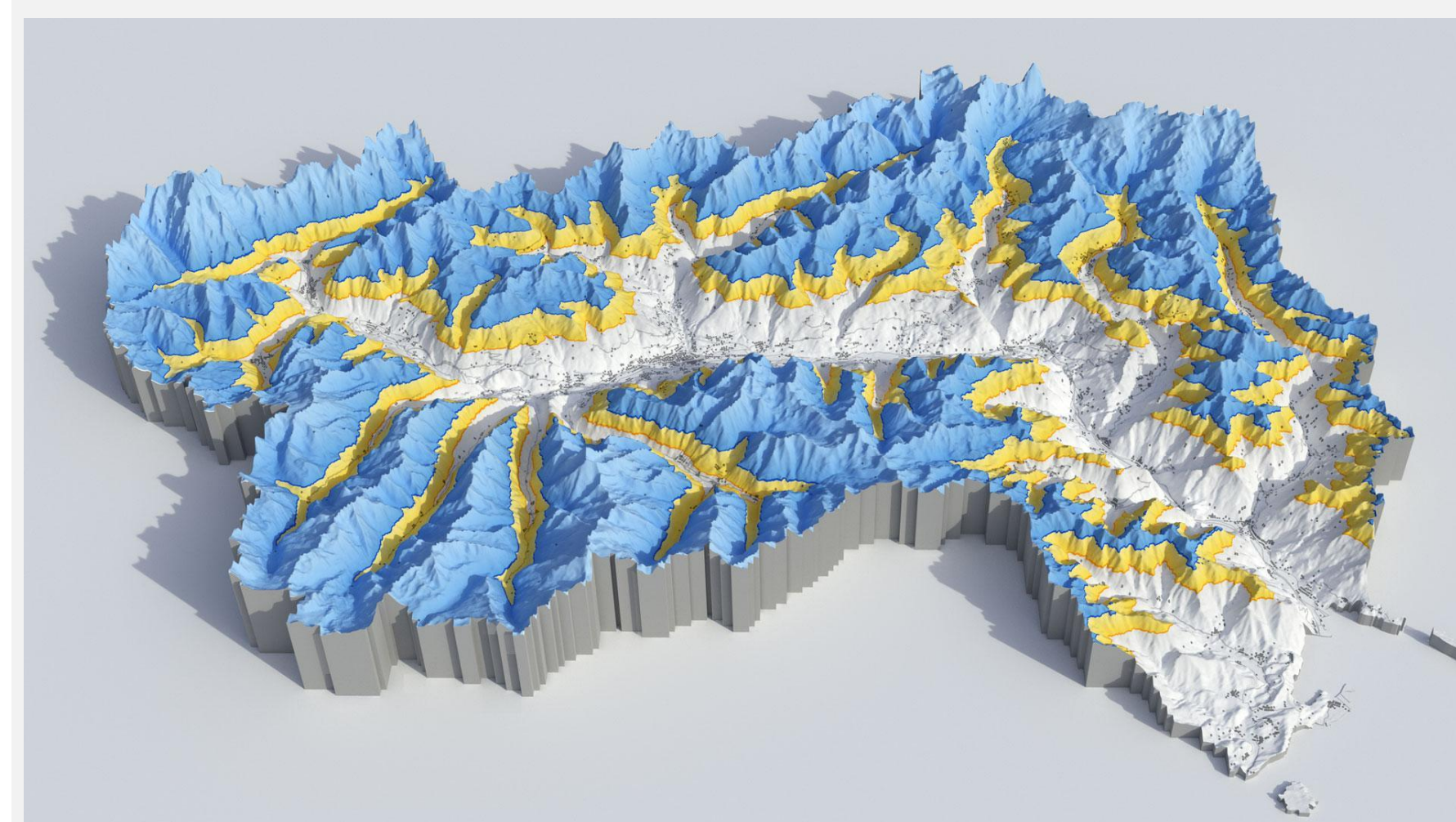
The “Ice Lines” product (also from “Polar Monitor”) detects ice shelf fronts in Antarctica using AI and SAR remote sensing data. Analysis of ice shelf calving through time series analysis enables the determination of rates of glacier loss and trends.



Calving of iceberg B47 (October 2019) from the Getz Ice Shelf in West Antarctica

Regional Snow Line Elevation

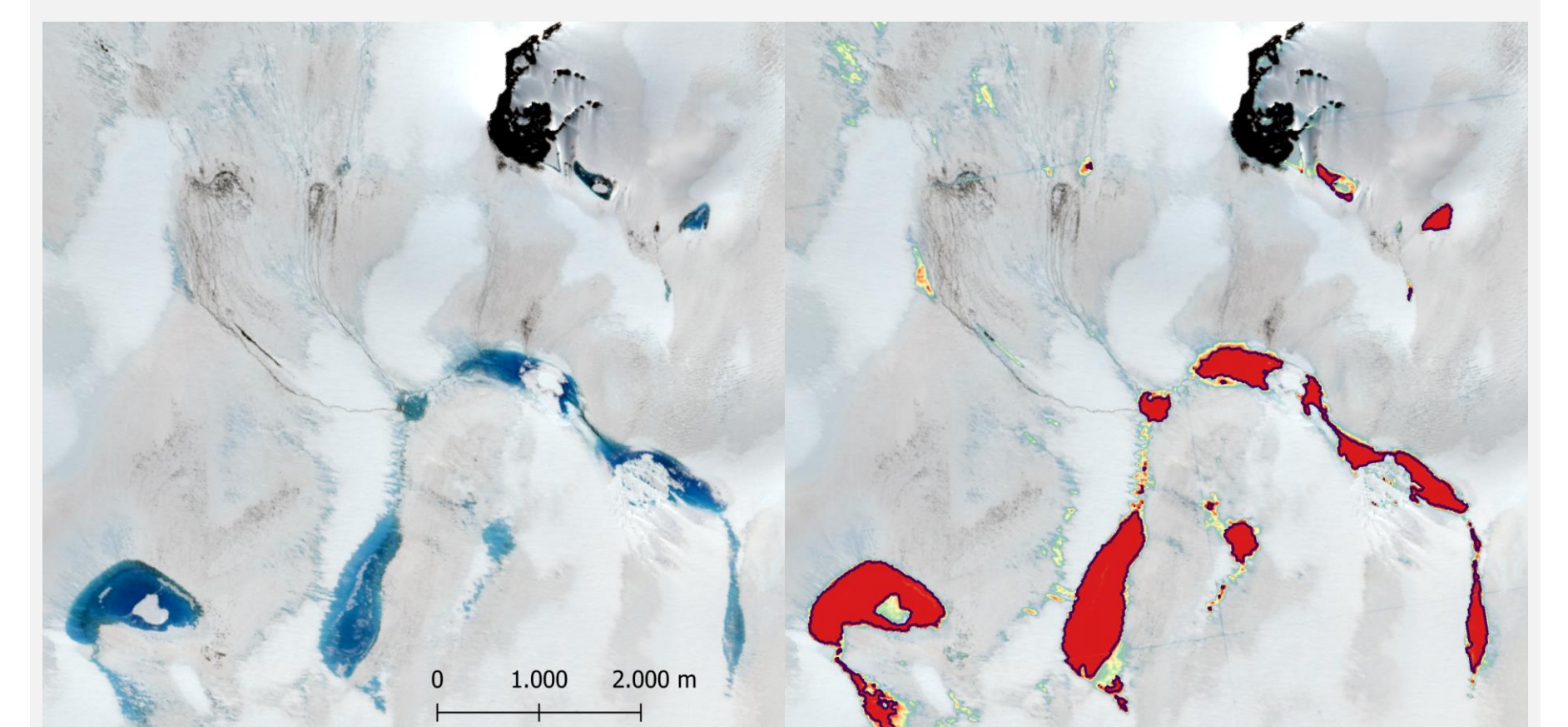
The “Regional Snow Line Elevation” (RSLE) processor uses high-resolution multispectral data to determine the snow line – the boundary between a snow-covered and snow-free surface. Their intra- and inner-seasonal variations can be used to predict snow cover development in mountain areas.



Snow line change in the Aosta Valley (Italy). Blue: snow-covered areas in March 2022. Yellow: Average snow coverage in March (1985 – 2021)

Supraglacial Lakes

Within the project “Polar Monitor II”, an innovative AI method was developed and will be used for automatic, large-scale monitoring of Antarctic supraglacial lake extents using spaceborne remote sensing data.



Detection of supraglacial lakes on the Amundsen Bay on the West Antarctic Ice Sheet (WAIS)

On EOC Geoservice

- Global SnowPack & Ice Lines already available
- RSLE and Supraglacial Lakes coming soon

