POLAR MONITOR – CROSS-INSTITUTE COLLABORATION PROJECT ON REMOTE SENSING OF POLAR REGIONS

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Background and Objectives

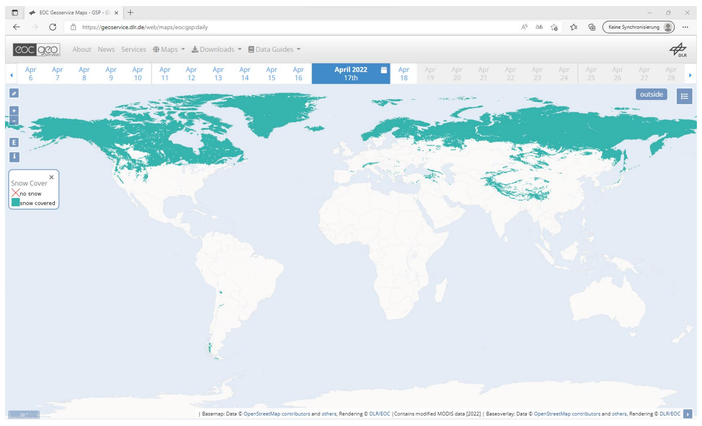
- Bringing DLR's polar research expertise together
- Development and operationalization of remote sensing methods to derive relevant parameters for recording and quantifying change processes in the polar regions
- Identify and use synergies of different sensors and methods
- Provision of the results via an internet platform
- Cooperation of the German Remote Sensing Data Center (DFD), the Remote Sensing Technology Institute (IMF), the Microwaves and Radar Institute (HR) and the Institute of Optical Sensor Systems (OS) since spring 2020

https://www.dlr.de/blogs/en/Portaldata/66/Resources/aeronautics/dlr-macs-kamera-befliegung-aletschgletscher.png

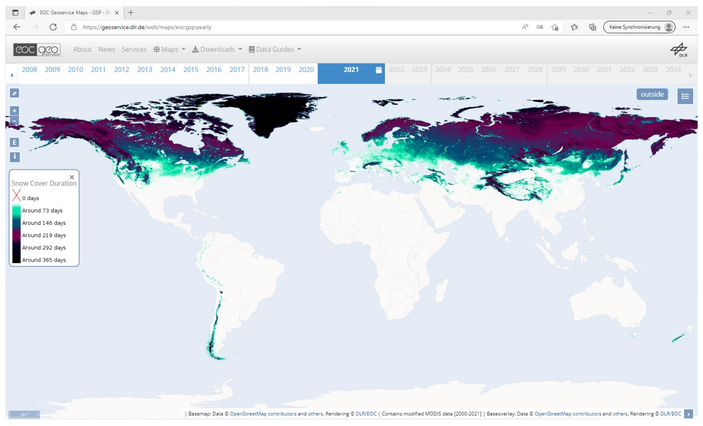
Joint field and flight campaign of the Aletsch Glacier with the MACS 3D Aerial Camera Systems in August 2021 (© DLR/Jörg Brauchle)

Global SnowPack

- Global SnowPack (GSP) processor h implemented in the operational service
- global snow cover information is now freely available in near real-time and without data gaps due to clouds or polar night
- Available on



Daily Snow Cover Extent (SCE)



Yearly Snow Cover Duration (SCD) for a hydrological year and Long Term mean

Possible Applications

- Spatial analyzes of snow cover duration (e.g. at catchment area level, administrative units, mountain ranges)
- Hydrological modelling
- Investigation of radiative forcing due to changing snow albedo
- Identification of long-term trends

daily

Get to know our product on the EOC Geoservice

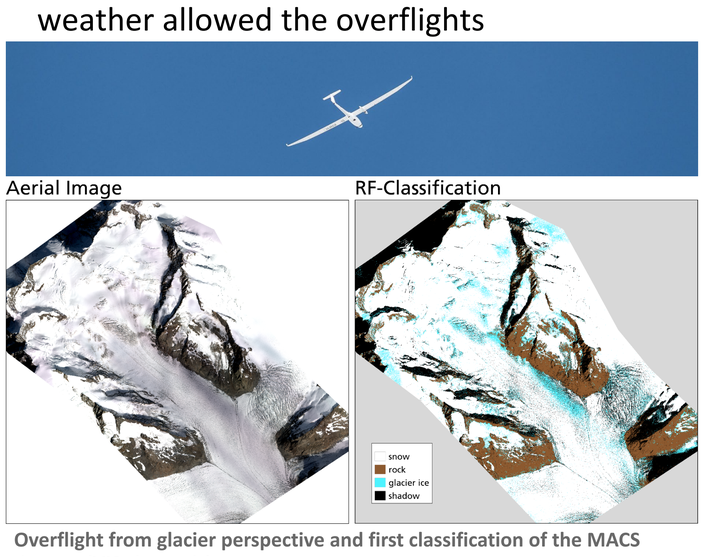
yearly

Aletsch Campaign

- The two-week field campaign took place in September 2021
- On the glacier, reference points for the processing were measured and marked

Traverse over the glacier, installation and GPS measurement of reference points

- On the 18th and 21st of September 2021 the weather allowed the overflights

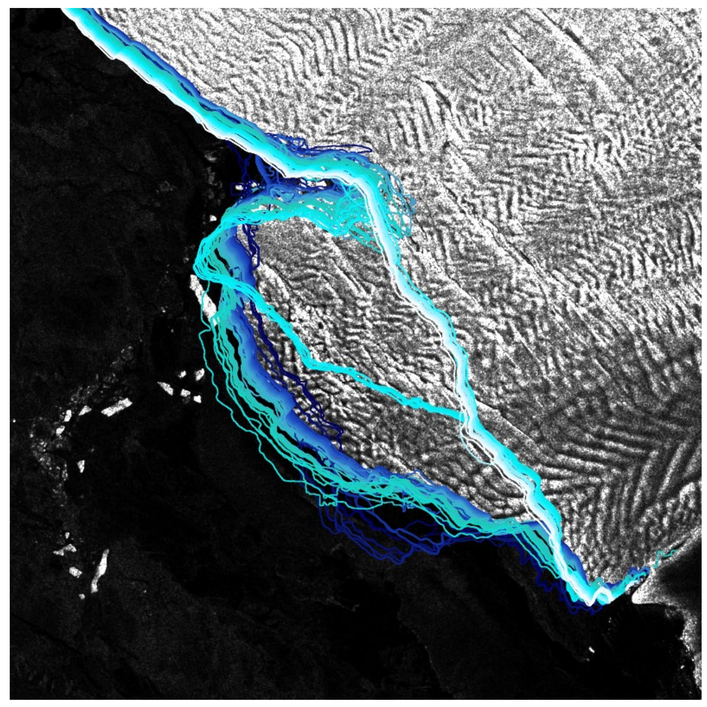


Overflight from glacier perspective and first classification of the MACS dataset (VIS channels)

Read the full blog of our campaign

Ice Lines

- Based on SAR remote sensing
- Development of a routine that automatically detects and vectorizes the ice shelf edges in Antarctica
- Soon on



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

Further activities

- Determination of the grounding line of the glaciers in Antarctica
- Deriving geodetic mass balance from TanDEM-X DEM differences
- Methods development for the correction of the penetration depth of TanDEM-X in snow and ice
- Admission, technical testing and optimization of the MACS camera system for use under extreme conditions in polar fields for the scenarios sea ice, ice sheet and permafrost

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