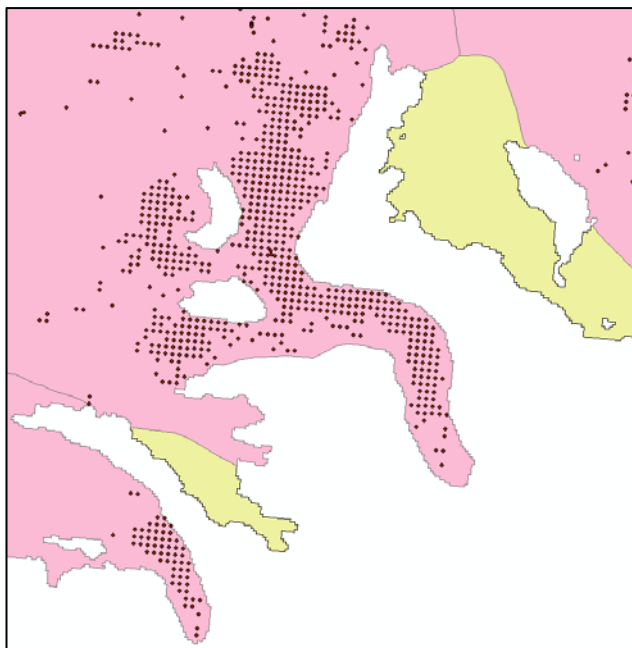


Product sheet: Glacier surface velocity

DESCRIPTION



Glacier surface velocity data for mainland Norway.

Surface velocities are mainly derived from Sentinel satellite imagery using available Sentinel-2A (from 2015) and Sentinel-2B (from 2018) acquisitions.

The dataset also contains velocity measurements from stakes from selected glaciers.

DATA PURPOSE

Velocity data can be used to study and characterise glacier dynamics in Norway.

POINT OF CONTACT

Norwegian Water Resources and Energy Directorate (NVE).

Data worker: Teodor Nagy, teon@nve.no

Field expert: Liss M. Andreassen, lma@nve.no

DATASET RESOLUTION

Period of measurements will vary from seasonal to multi-annual.

Sentinel: Results of feature tracking available at 80 or 160m grid spacing.

Stakes: Typically, 1-10 points per glacier with measurements. Number and positions will vary.

EXTENT INFORMATION

The dataset covers glaciers in mainland Norway.

SOURCES AND METHOD

Satellite: Sentinel-2A and Sentinel-2B imagery was used for establishing pairs for feature tracking. SenDiT toolbox that incorporates IMCORR feature tracking software was used to calculate displacement fields. All glaciated regions in mainland Norway were analysed to find glaciers suitable for feature tracking. Resulting displacement fields were manually filtered taking into account expected magnitude and direction of movement.

Stake: The stake positions were measured with Global Navigation Satellite System (GNSS). Repeated measurements were used to calculate the displacement and derive glacier surface velocity in the period of measurements.

UPDATE

No specific update time.

PRODUCT DESCRIPTION

Service

The dataset can be downloaded at:
<https://nedlasting.nve.no/gis/>

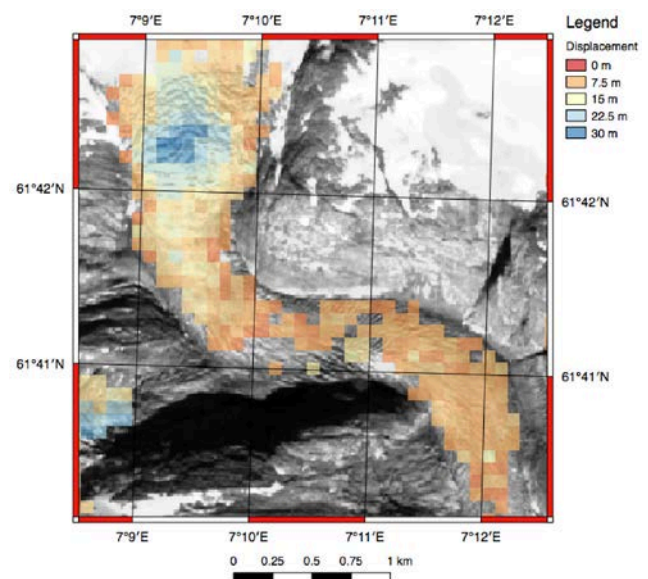
Visualization

The dataset can be visualized at:
[NVE-Atlas](#)
[NVE's Glacier Atlas](#)

ATTRIBUTES

- Object ID
- X coordinate of a point

- Y coordinate of a point
- Velocity
- Day difference
- Data source
- Relative satellite orbit
- Processing description
- Filtering description
- Date of image 1
- Date of image 2
- Flow direction
- Displacement magnitude
- Correlation strength
- Shift direction
- Shift magnitude
- Stake number
- Measurement uncertainty
- Calculated by
- Glacier ID



LINKS

- [Metadata i geonorge](#)
- www.nve.no/glacier
- [NVE's glacier Atlas](#)

REFERENCES AND CITATION

Kjøllmoen, B., Andreassen, L. M., Elvehøy, H., and Jackson, M. 2018. Glaciological investigations in Norway 2017. NVE Report 82-2018, 84p.

Nagy, T., Andreassen, L. M., Duller, R. A. and Gonzalez, P. J. 2019. SenDiT: A Sentinel-2 Displacement Toolbox with application to glacier surface velocities. Remote Sensing, 11, 1151, <https://doi.org/10.3390/rs11101151>.

Nagy, T. and Andreassen, L. M. 2019. Glacier surface velocity mapping with Sentinel-2 imagery in Norway. NVE Report 37-2019, 35p.

Citation in publications and presentations:

When using the data in publications, please cite Nagy and Andreassen (2019) for the dataset and Nagy et al. (2019) for the feature tracking method. Cite Kjøllmoen et al. (2018) if using the stake velocity data.

When using the data in presentations, please cite Data: NVE/Copernicus Glacier Service Norway.