Essential Climate Parameters for the Greenland Ice Sheet

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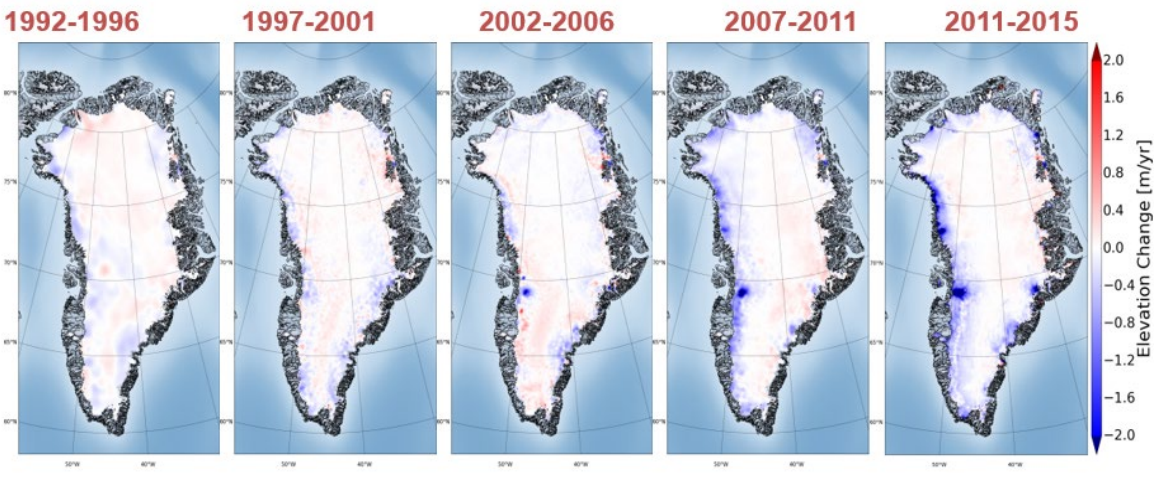
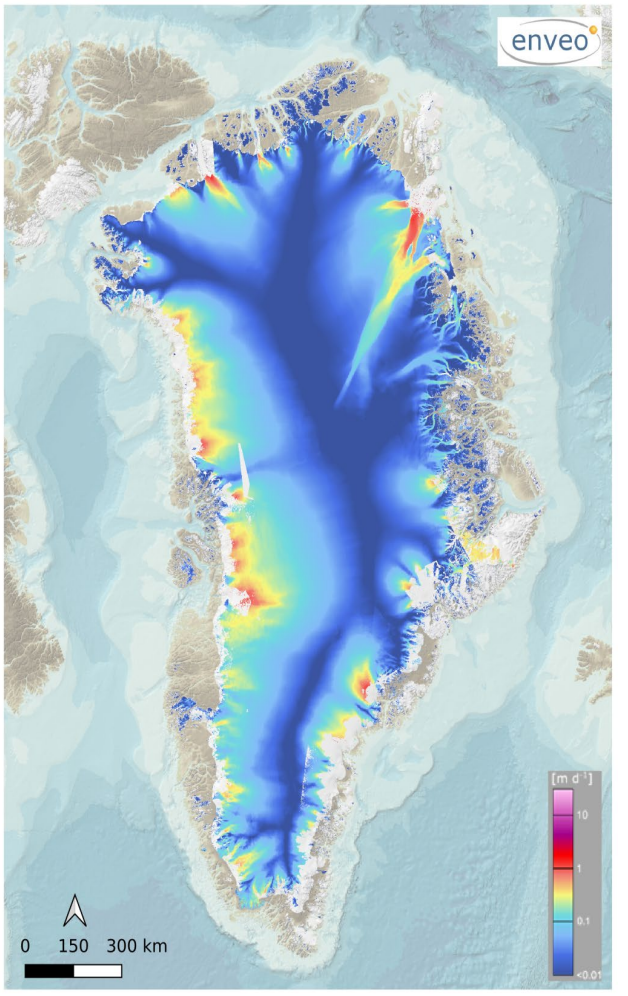
The ESA *"Greenland_ice_sheet_cci"* project is making past and present space measurements of Greenland ice sheet changes available for scientists, stakeholder and the general public. Data are part of a large set of ECV's made available by the ESA Climate Initiative, as a contribution to GCOS. In the CCI+ the following data are produced:

- *Time series of surface elevation changes (SEC)*
- *Ice Velocities from S-1 radar interferometry (IV)*
- *Mass balance time series from GRACE/GRACE-FO (SMB)*
- *Mass flux and ice discharge from outlet glacier (MFID)*
- *Melt lakes of the ice sheet (selected areas)*

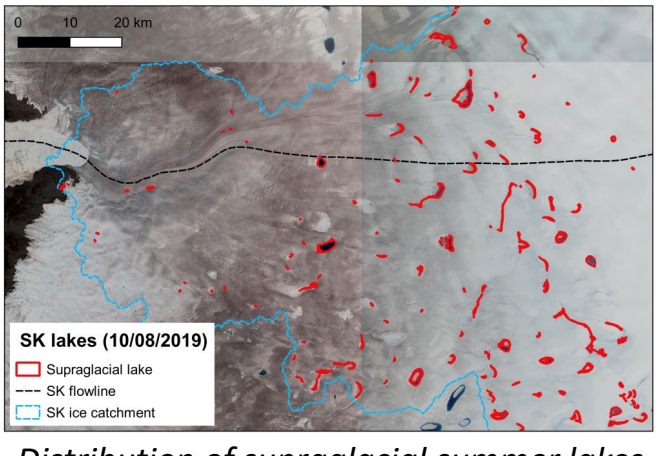
Subsets of SEC, IV and GMB data are also implemented in the ***Copernicus Climate Change Service.*** Greenland data are available via http://products.esa-icesheets-cci.org/ as well as the CCI common portal.



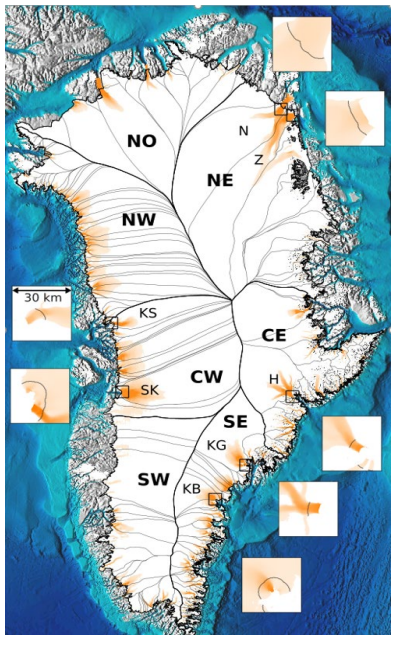
Example of 5-year running SEC from ERS/EnviSat/CryoSat (DTU)

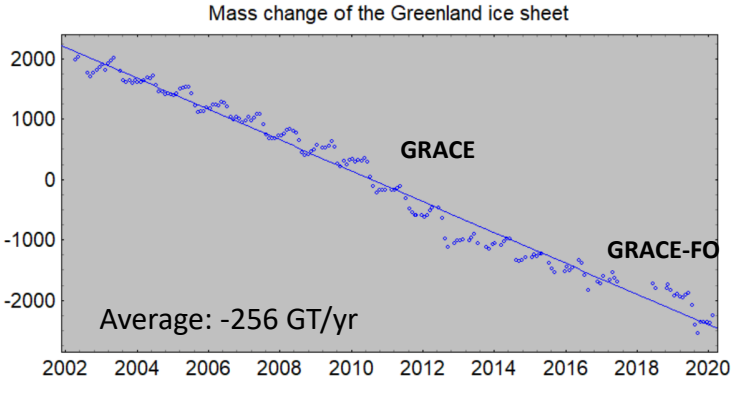


Improved new IV from SAR interferometry (50 m Greenland-wide grid, supplement earlier yearly feature-tracking products)



Distribution of supraglacial summer lakes, Jakobshavn drainage basin. These data allow better understading of IV changes





Mass loss 2002-2020 from GRACE/GRACE-FO Record melt events of 2012 and 2019, and melt rate decrease in 2013-18 was a surprise.

Mass flux of ice from IV across "gates" (GEUS). Data are base of "input-output" mass loss estimates

Highly temporally resolved response to seasonal surface melt of the Zachariæ and 79N ice streams in Northeast Greenland

Switches in flow regime of Hagen Bræ, North Greenland

MDPI

Article

An integrated view of Greenland Ice Sheet mass changes based on models and satellite observations

Ongoing CCI+ research activities include IV improvements (optical and SAR interferometry), unified processing schemes for SEC, integrated mass change products, understanding rapid changes...