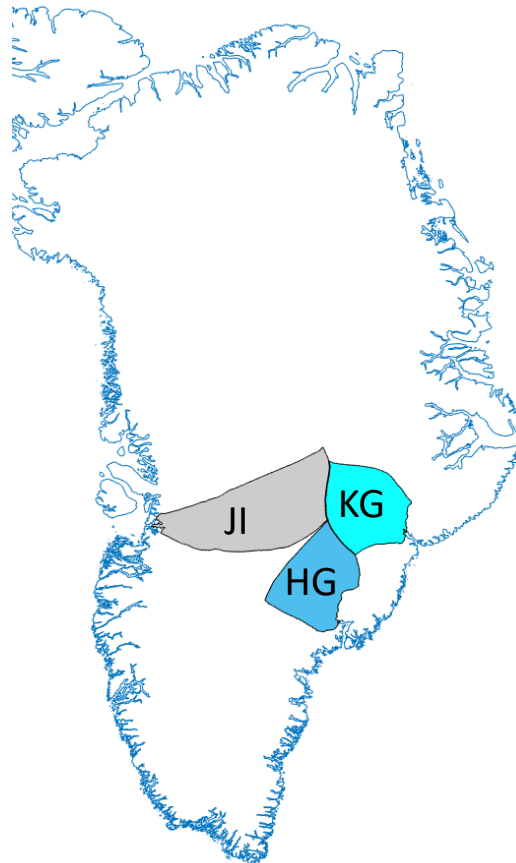


Centennial response of Greenland's three largest outlet glaciers

Shfaqat A. Khan, Anders Bjørk, Jonathan Bamber, Mathieu Morlighem, Michael Bevis, Kurt Kjær, Jérémie Mouginot, Anja Løkkegaard, David Holland, Andy Aschwanden, Bao Zhang, Veit Helm, Niels Korsgaard, William Colgan, Nicolaj Larsen, Lin Liu, Karina Hansen, Valentina Barletta, Trine Dahl-Jensen, Anne Sofie Søndergaard, Beata Csatho, Ingo Sasgen, Jason Box, Toni Schenk

1900-2020





Idag, kl. 5 efterm. har vi heist det norske
flagg og tatt landet fra Carlsbergfjorden i syd
til Bessel-fjorden i nord i buiddelen i
H. M. Kong Haakon den 7.4. navn, og kaldet
dette område Eivis Rauder Land.

Utgittet den 27. juni 1931.

Hallvard Bergholm

Ingvald Kræm

Sören Richter

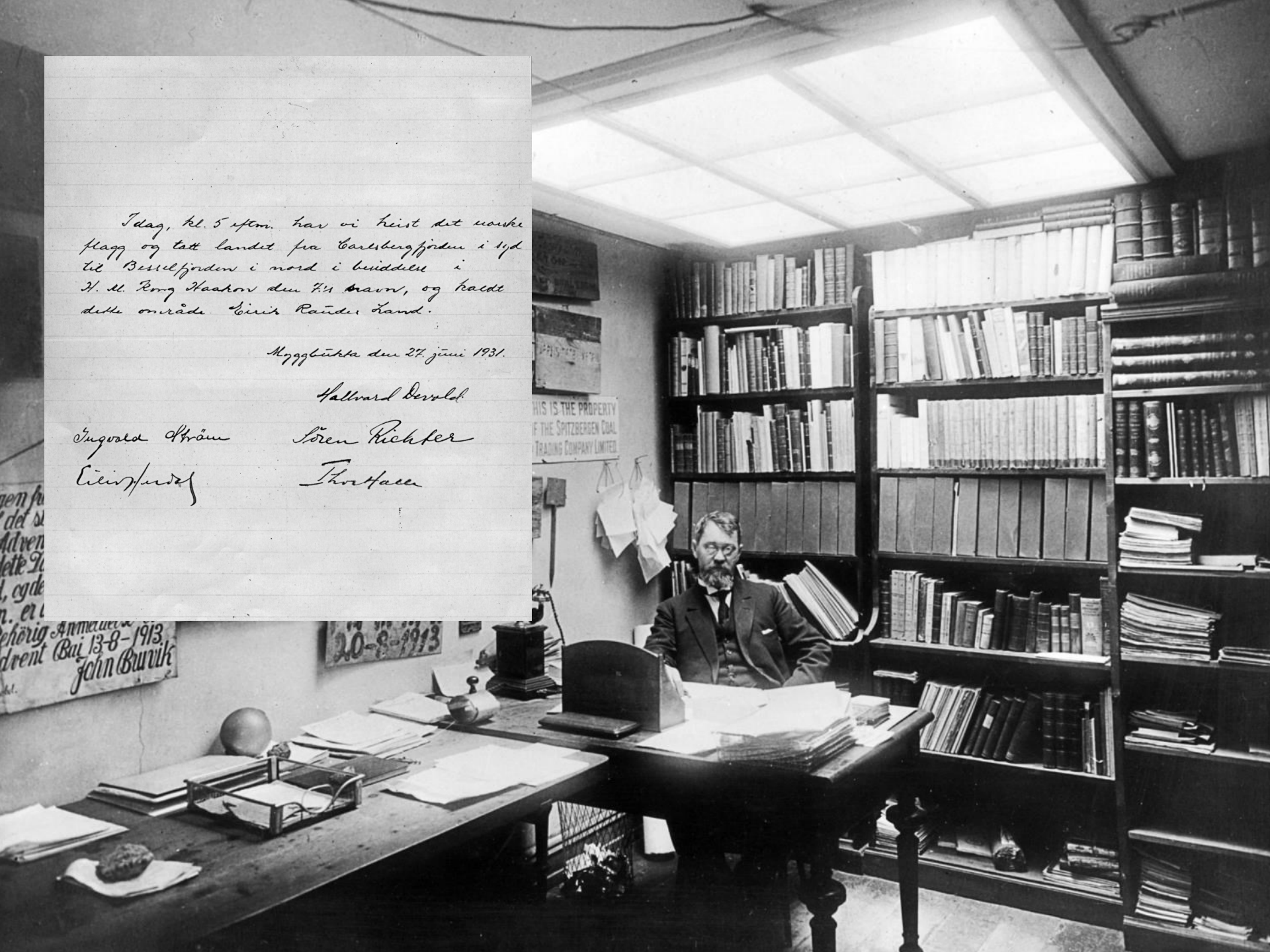
Eivis Rauder

Thor Hallen

den for
del s
Adven
lette T
l, cyde
n. er i

ehörig Anmelde
drent Bai 13-8-1913
John Burvik

20-8-1913



Idag, kl. 5 eftermiddag har vi heist det norske
flagg og tatt landet fra Carlsbergfjorden i syd
til Besselfjorden i nord i beviddelse i
H. M. Kong Haakon den 7.'s navn, og kaldt
dette område Sirik Ränder Land.

Myggbukta den 27. juni 1931.

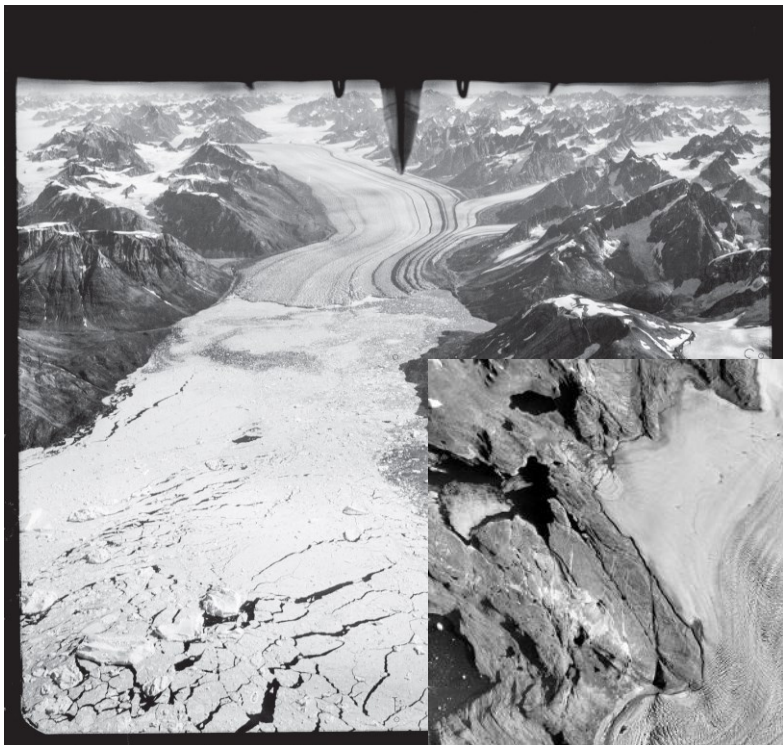
Hallvard Devold.

Eugvald Ström

Lören Richter

Eivind

Thorsen

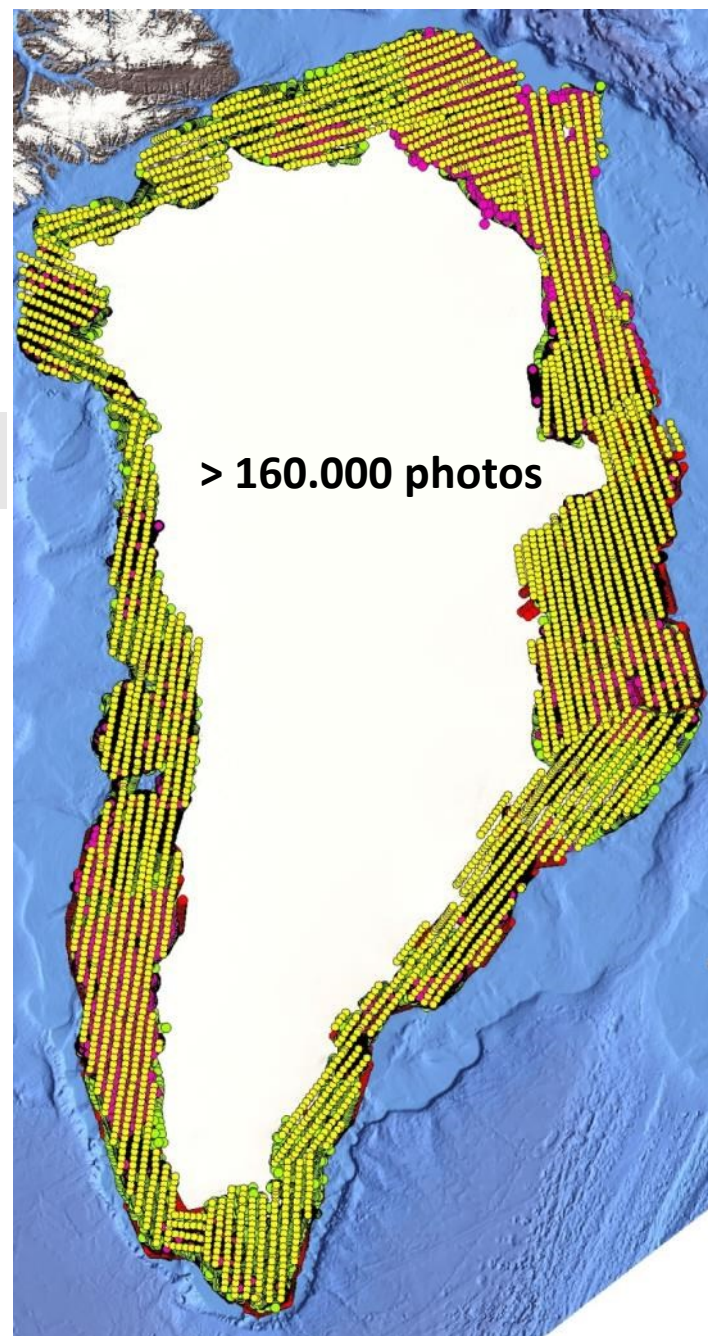


1930s

1940-50s

1960-70s

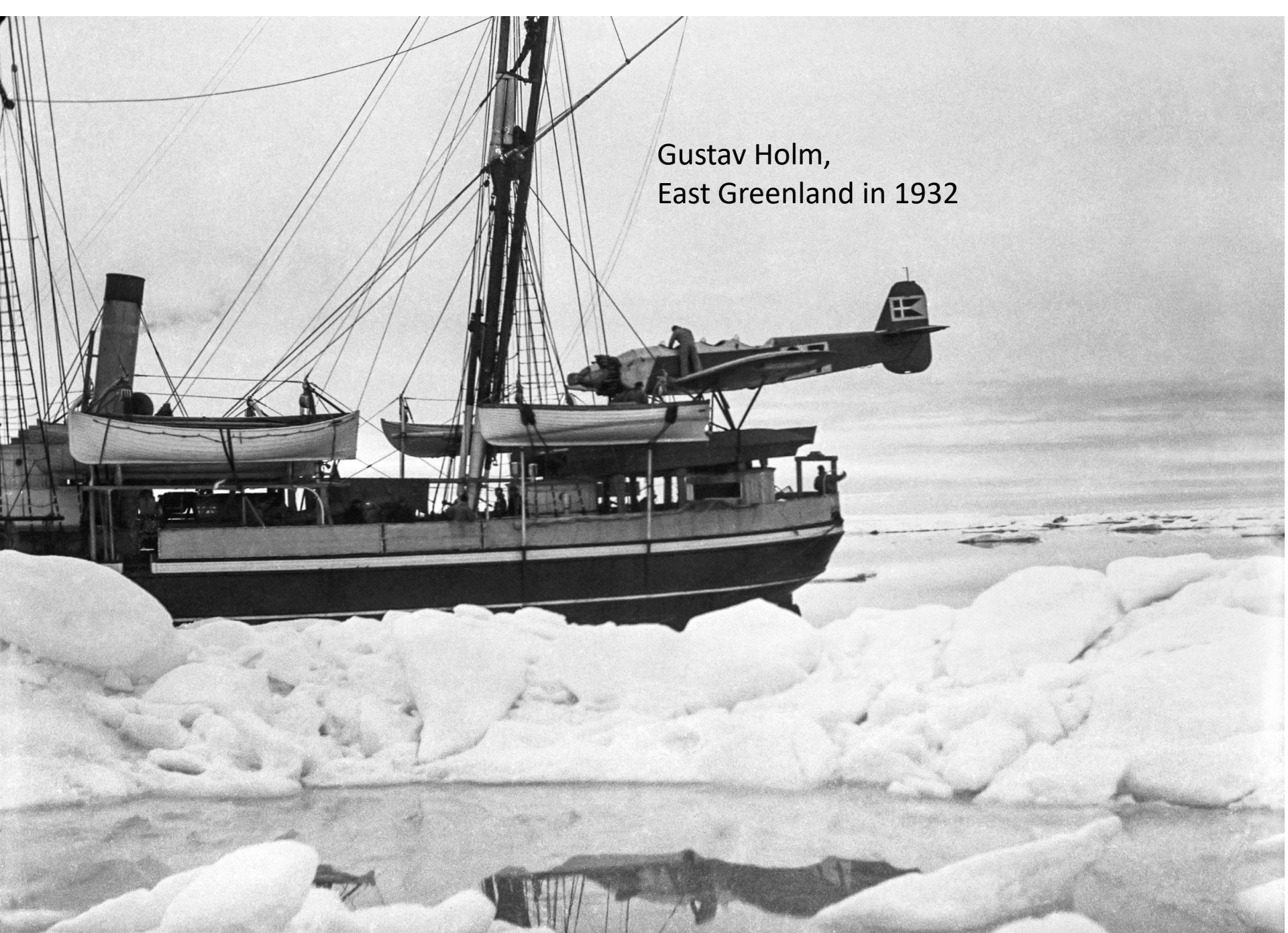
1978-87



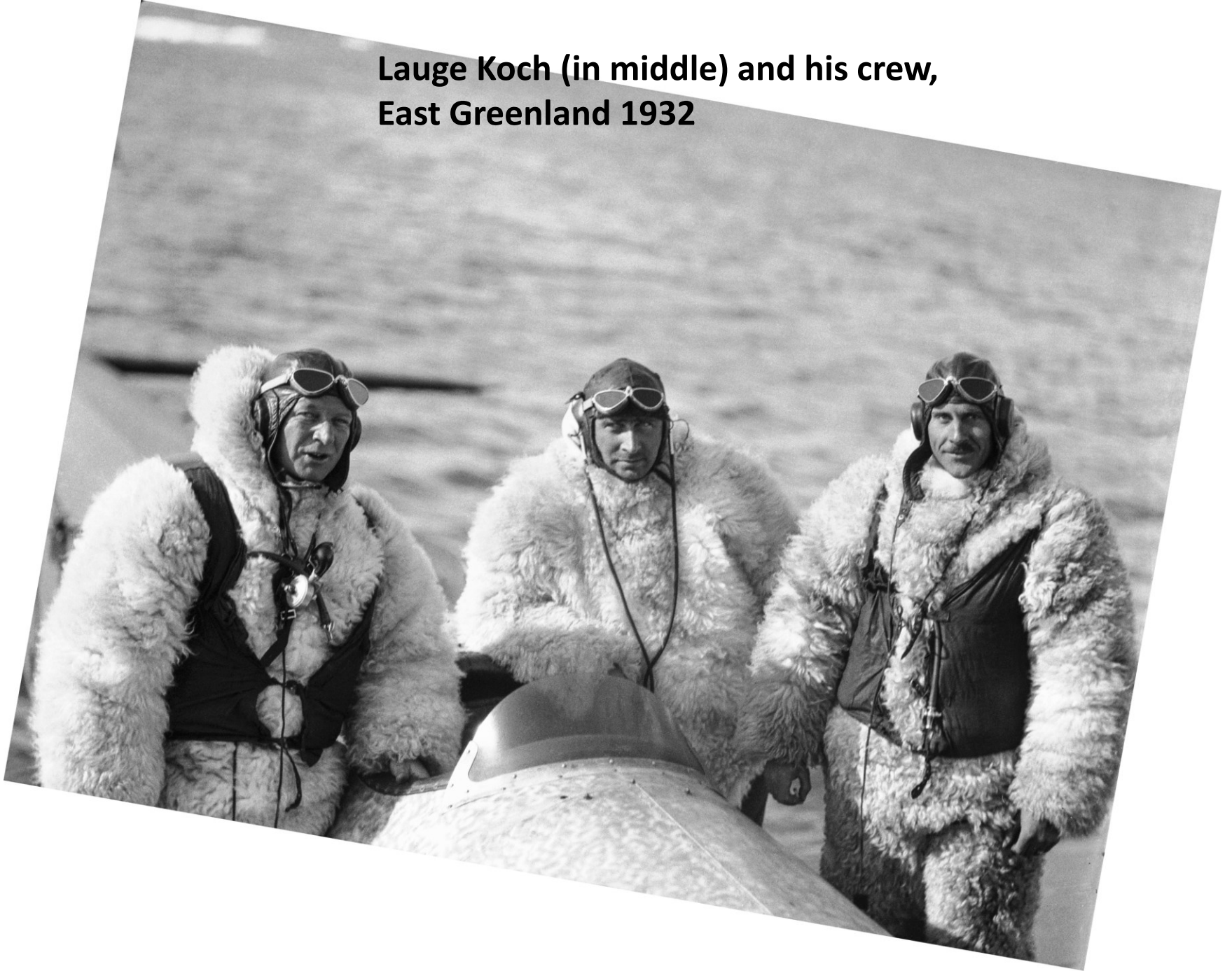
Gustav Holm,
East Greenland in 1932



Gustav Holm,
East Greenland in 1932



**Lauge Koch (in middle) and his crew,
East Greenland 1932**



Fenris glacier in southeast Greenland



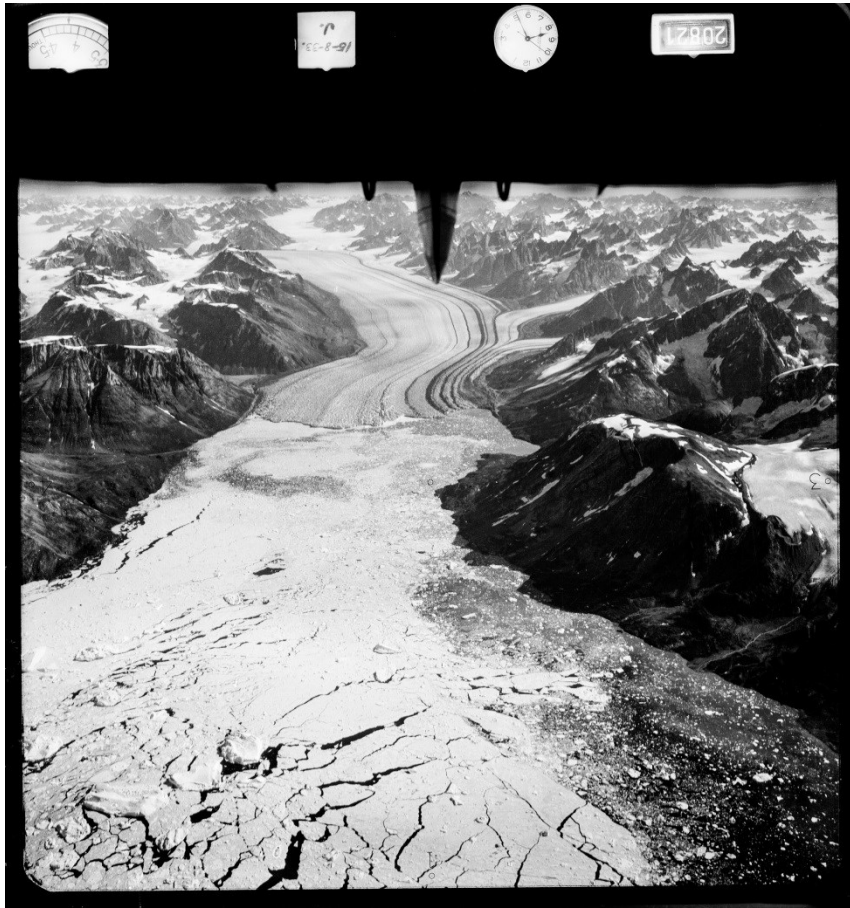
Lauge Koch mission in 1933



2013

Note the trim lines, close to LIA max position

Midgaard glacier, southeast Greenland



Lauge Koch mission in 1933



2013

Retreated ~20 km

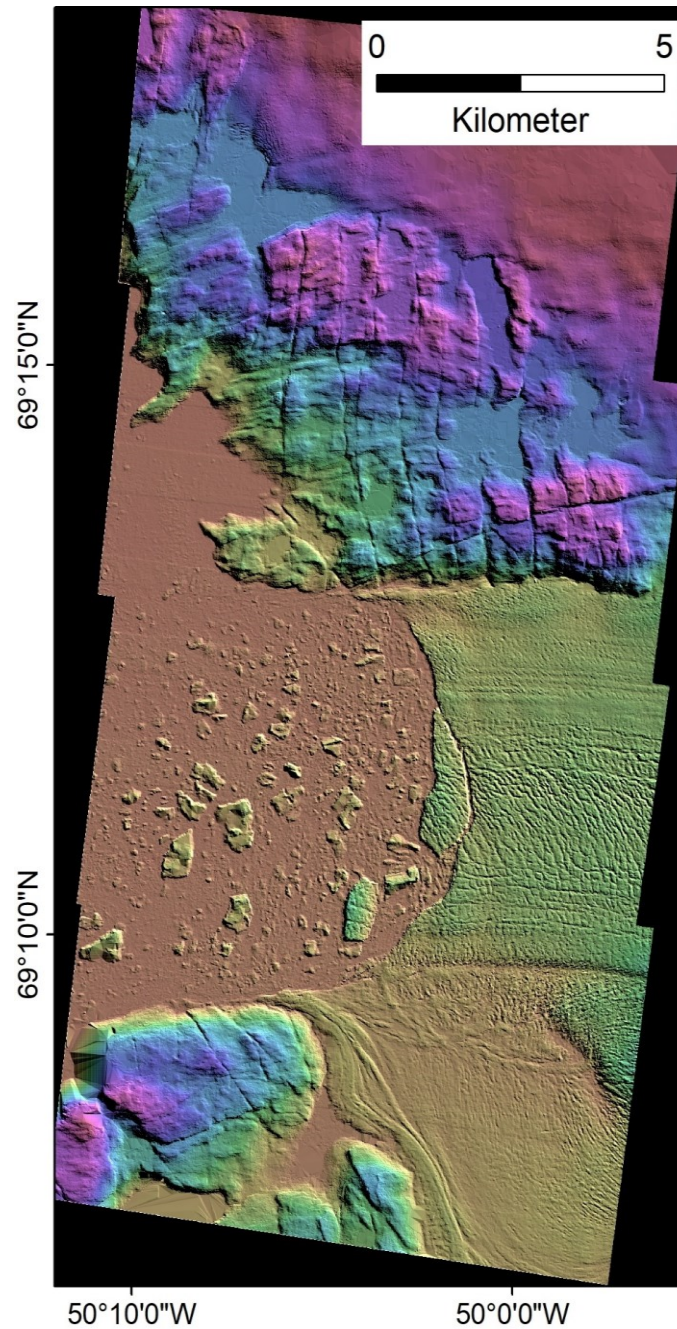
Trimlines + Historical geodetic maps + Ariel photos + satellite data

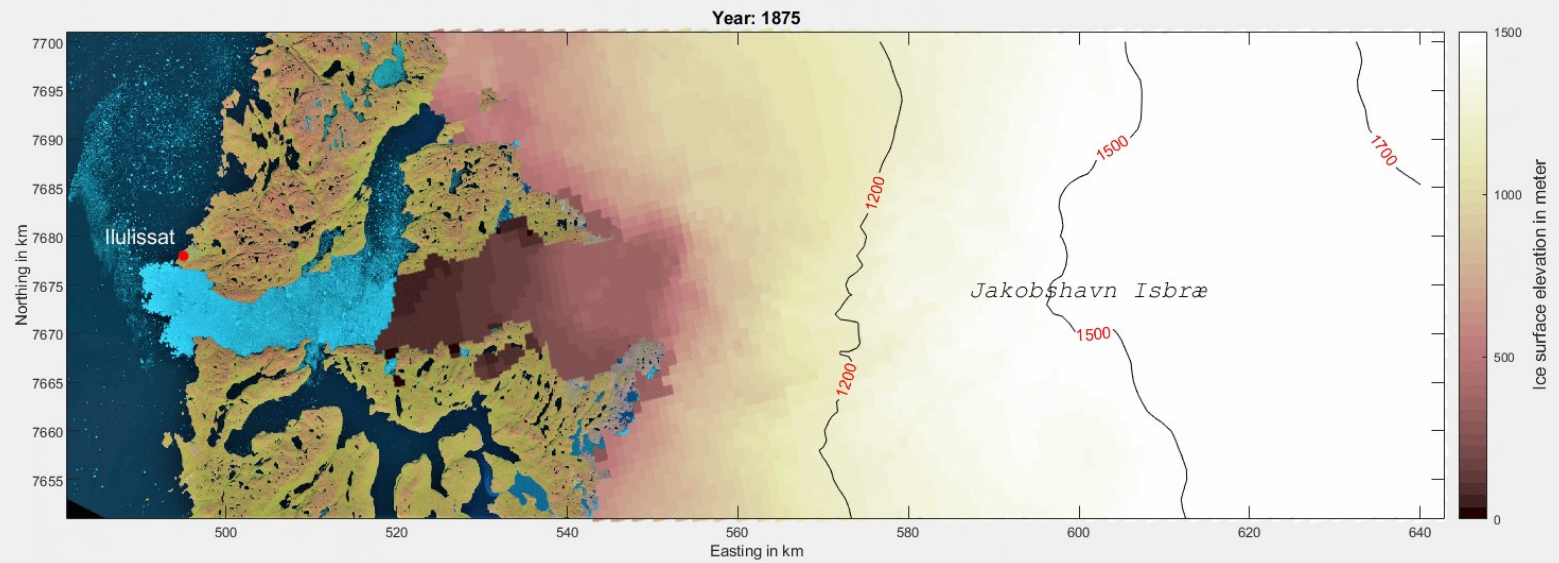


Trimlines

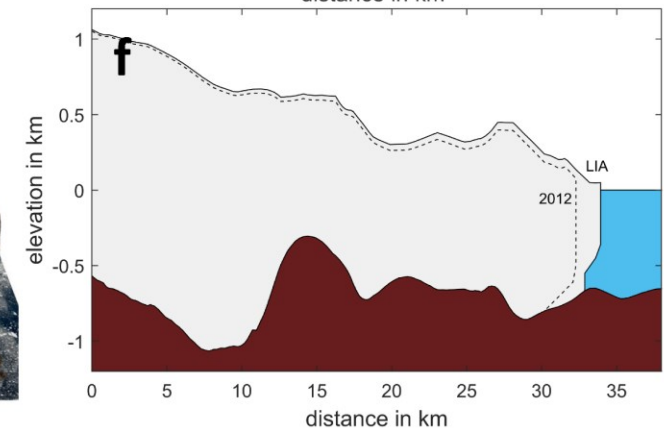
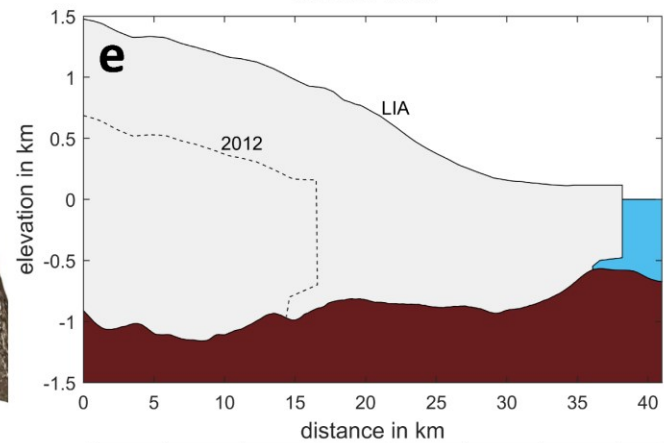
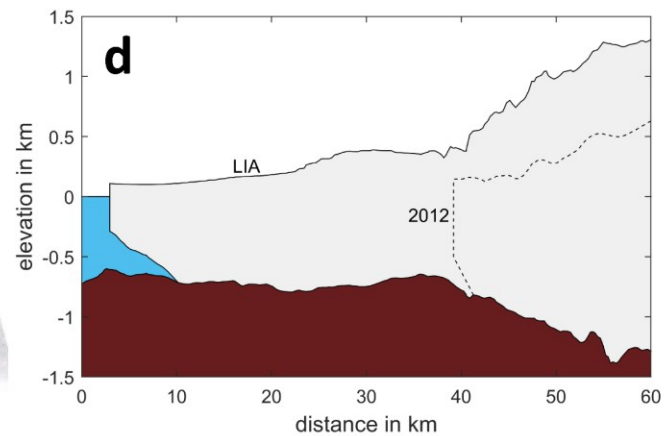
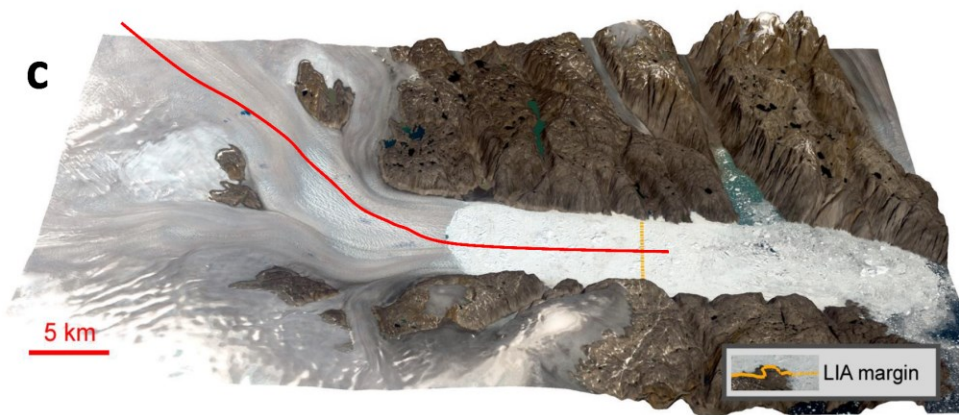
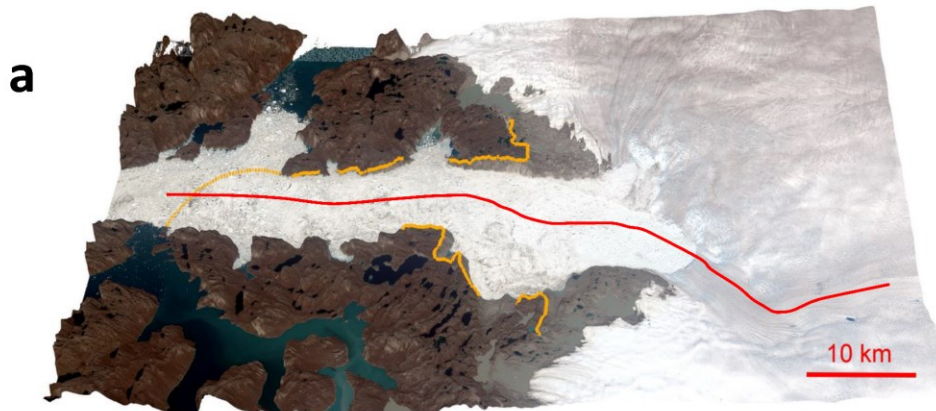


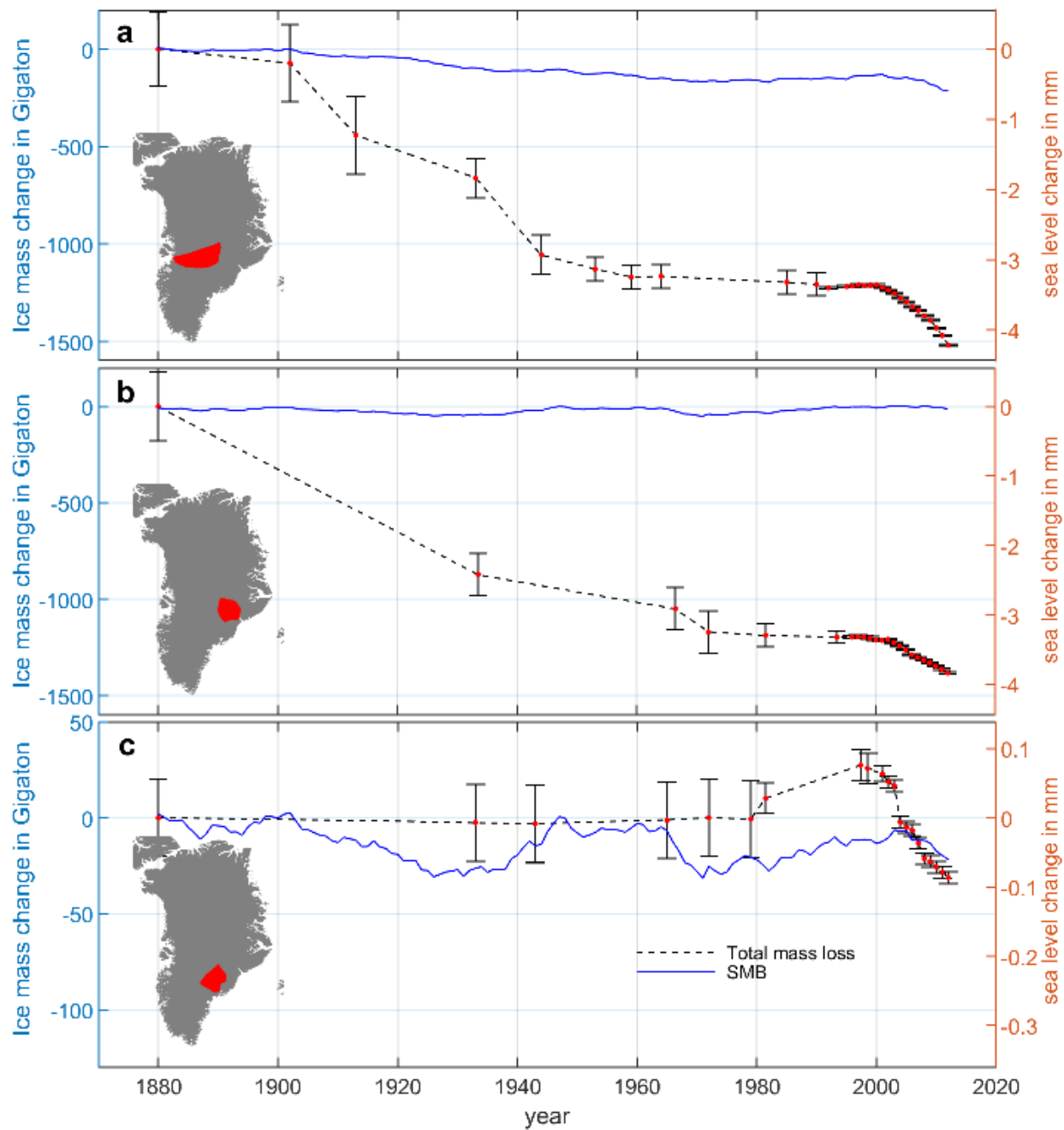
Example:
Digital Elevation Model over
Jakobshavn Isbræ - 1964

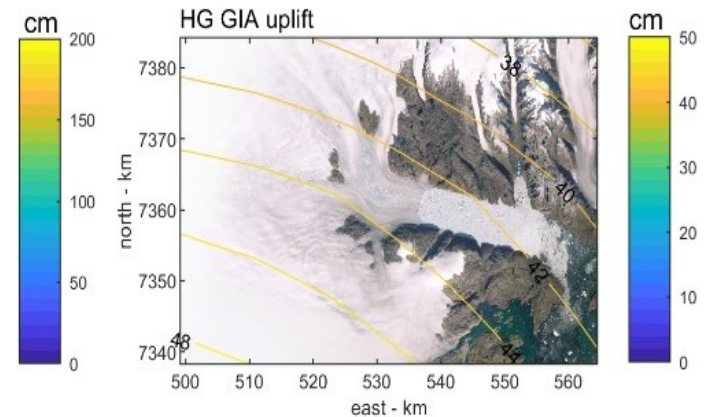
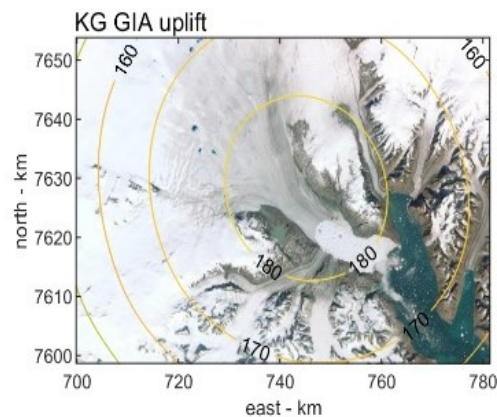
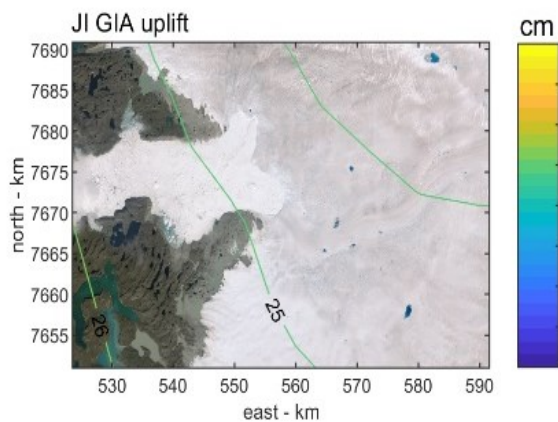
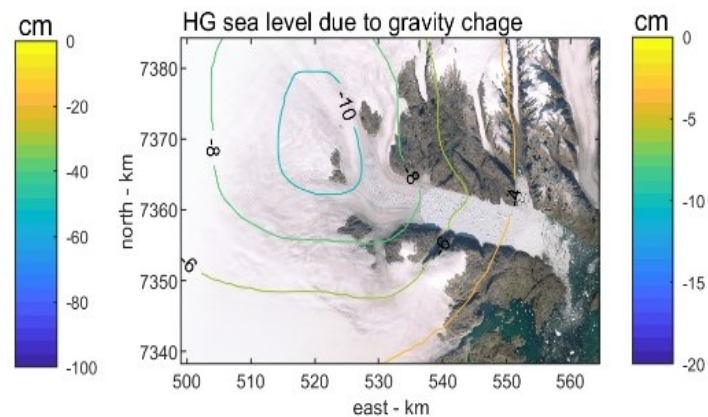
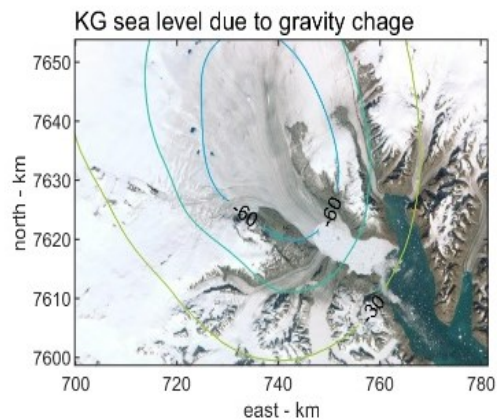
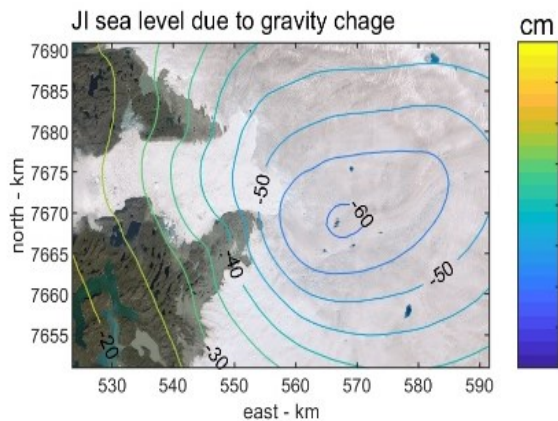
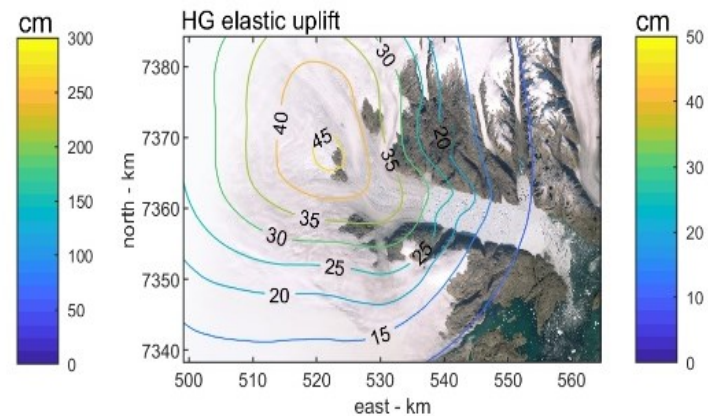
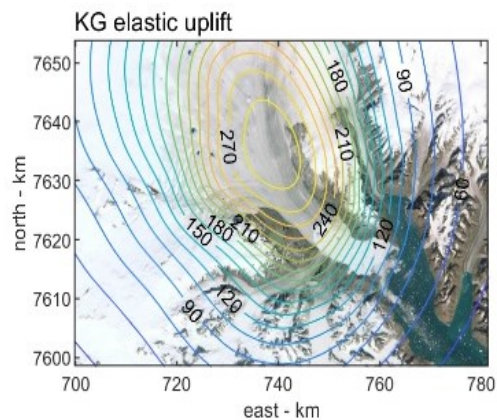
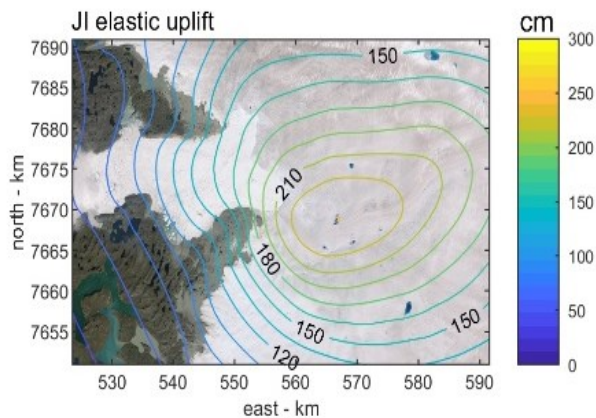




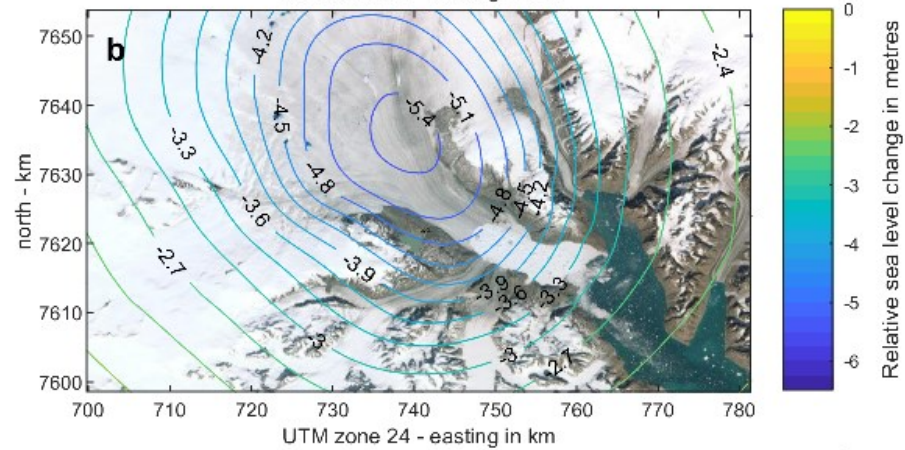
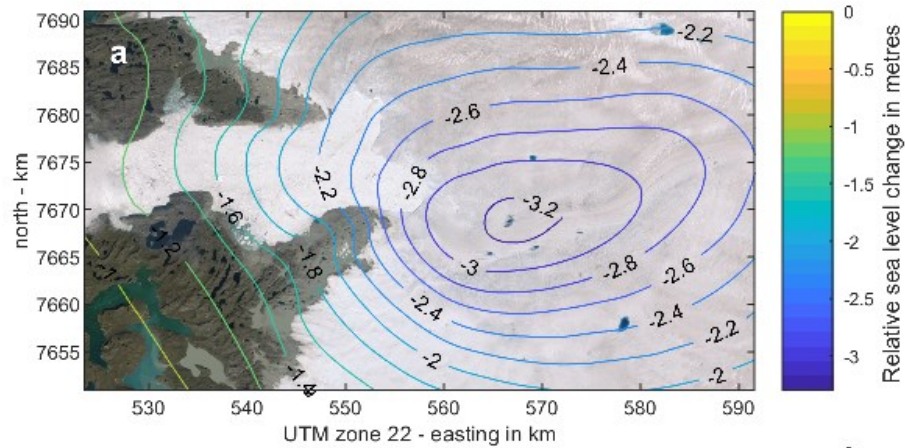
Khan et al., 2020 (Nature Communication)



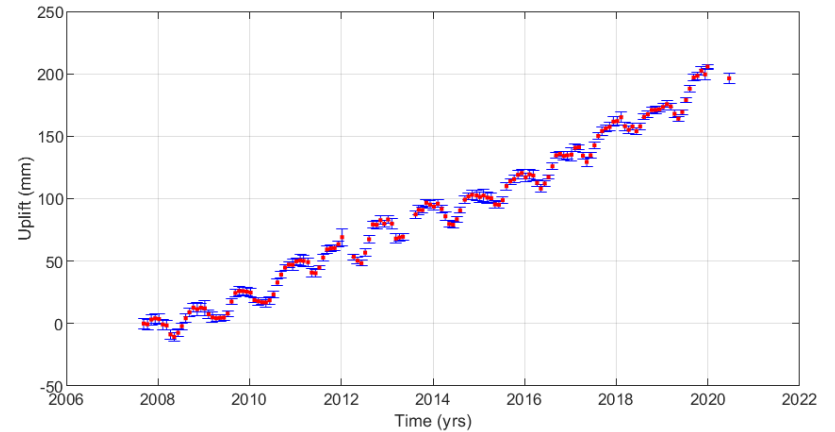
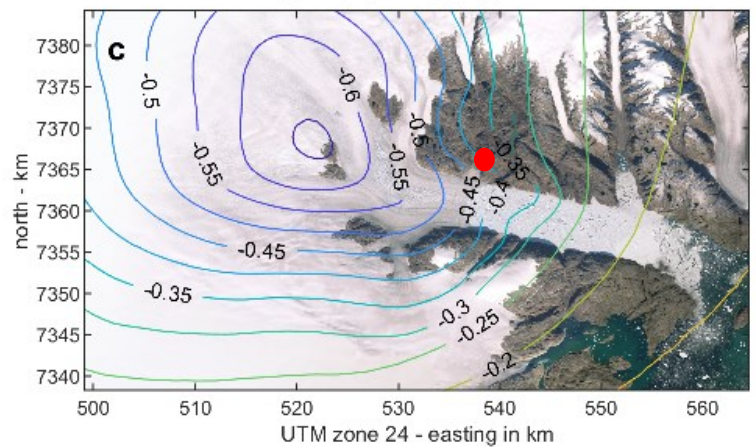
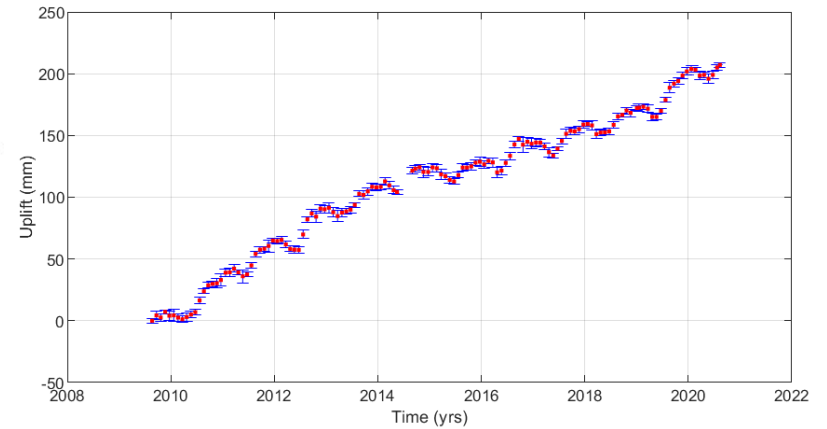
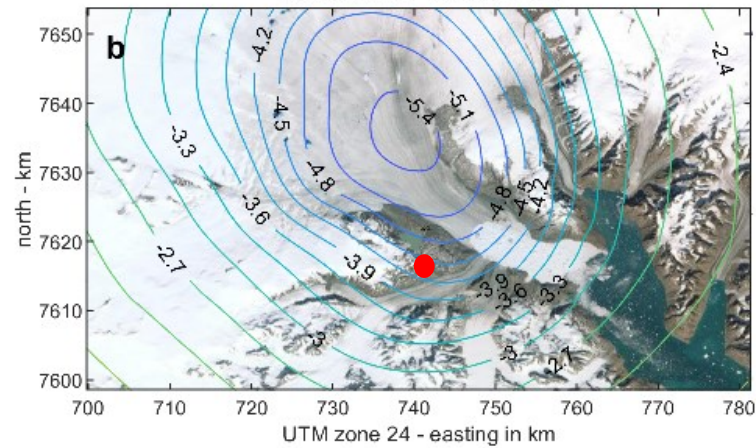
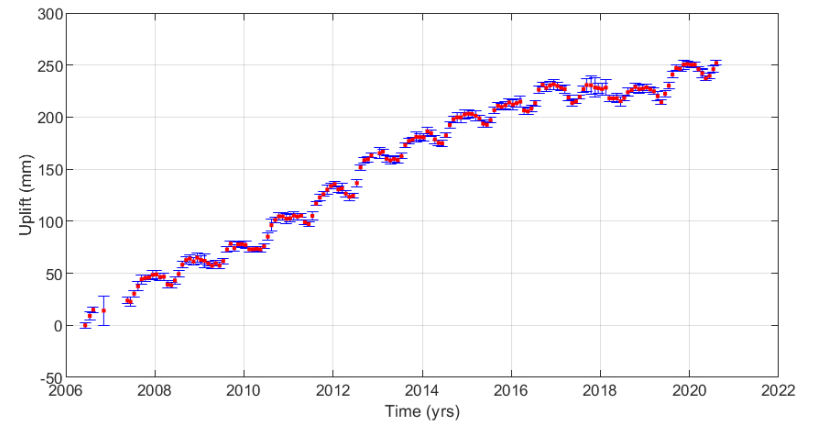
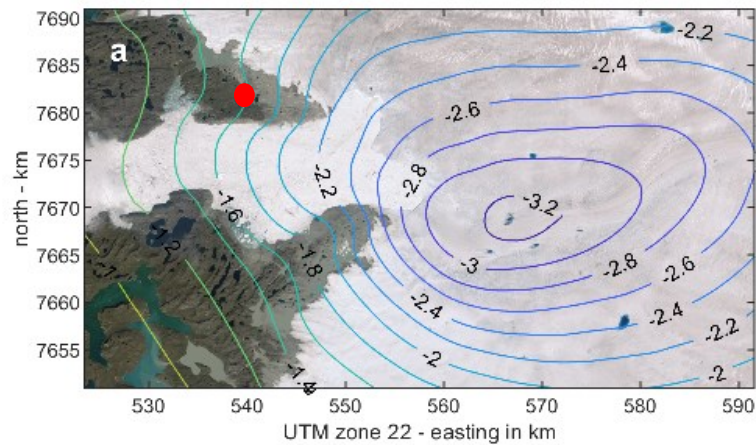




1900-2019



1900-2019



23 november 2016



July 2007



Conclusions

- We estimate ice loss corresponding to a sea level rise of 8.1 ± 1.1 millimetres from these three glaciers (27.0 mm from entire Greenland 1900-2019)
- We estimate meter level (up to 5.4 m) local sea level fall

