



GEUS

De geologiske undersøgelser for Danmark og Grønland

Klima Energi og Bygningsministeriet

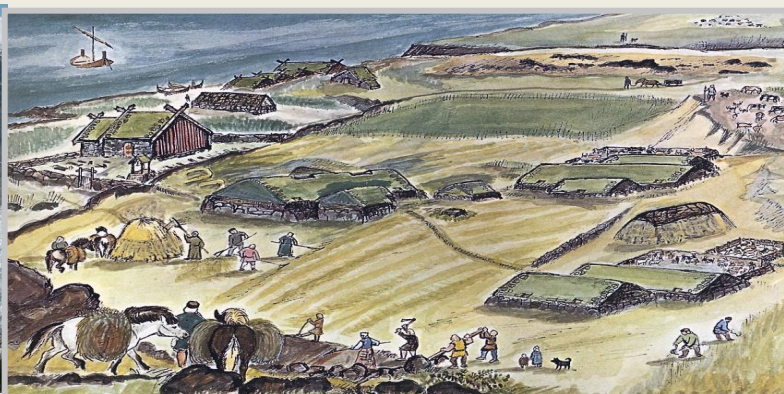
Arktisk forskning



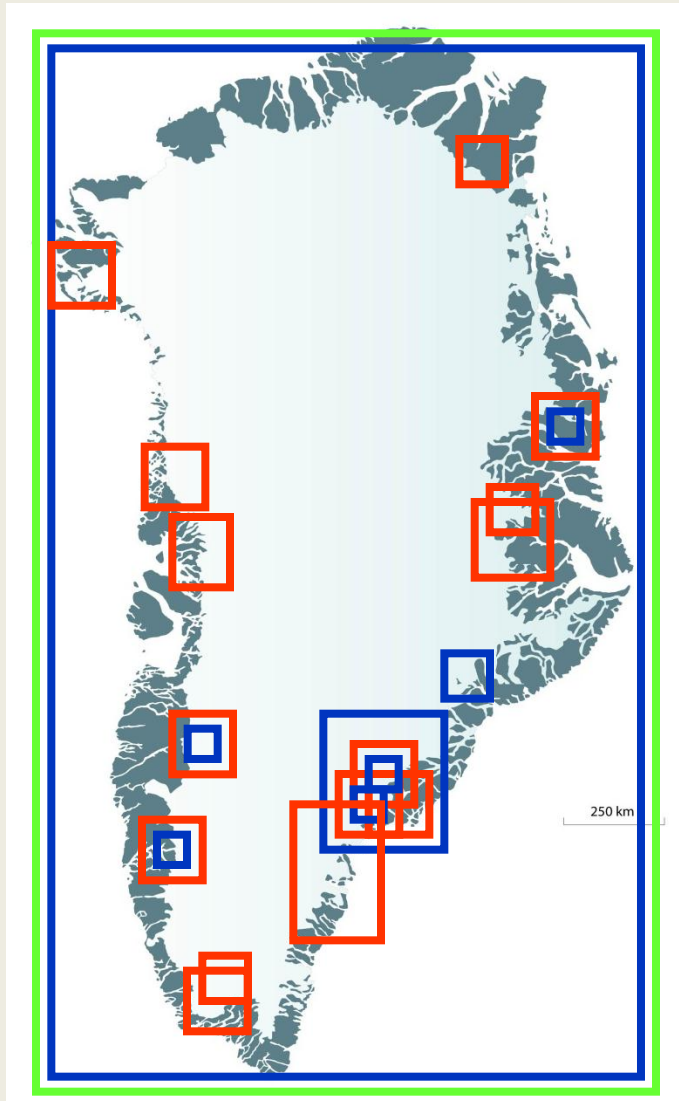
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Fagområder på miljøområdet

- Glaciologi: Indlandsisen, gletsjere
- Maringeologi: fjordsedimenter, habitater
- Palæoklima: havstrømme, Nordboere
- Permagas



Glaciologi 2012 aktiviteter



- Fieldwork
- Modelling
- Remote Sensing

<u>Projects 2012</u>	<u>PhD projects</u>
PROMICE	SVALI
SVALI	
GAP	<u>MSc project</u>
SEDIMICE	Glaciobasis
ice2sea	
GlacioBasis	
ImGlaCo	
REFREEZE	
ESA CCI Ice Sheets	

PROMICE

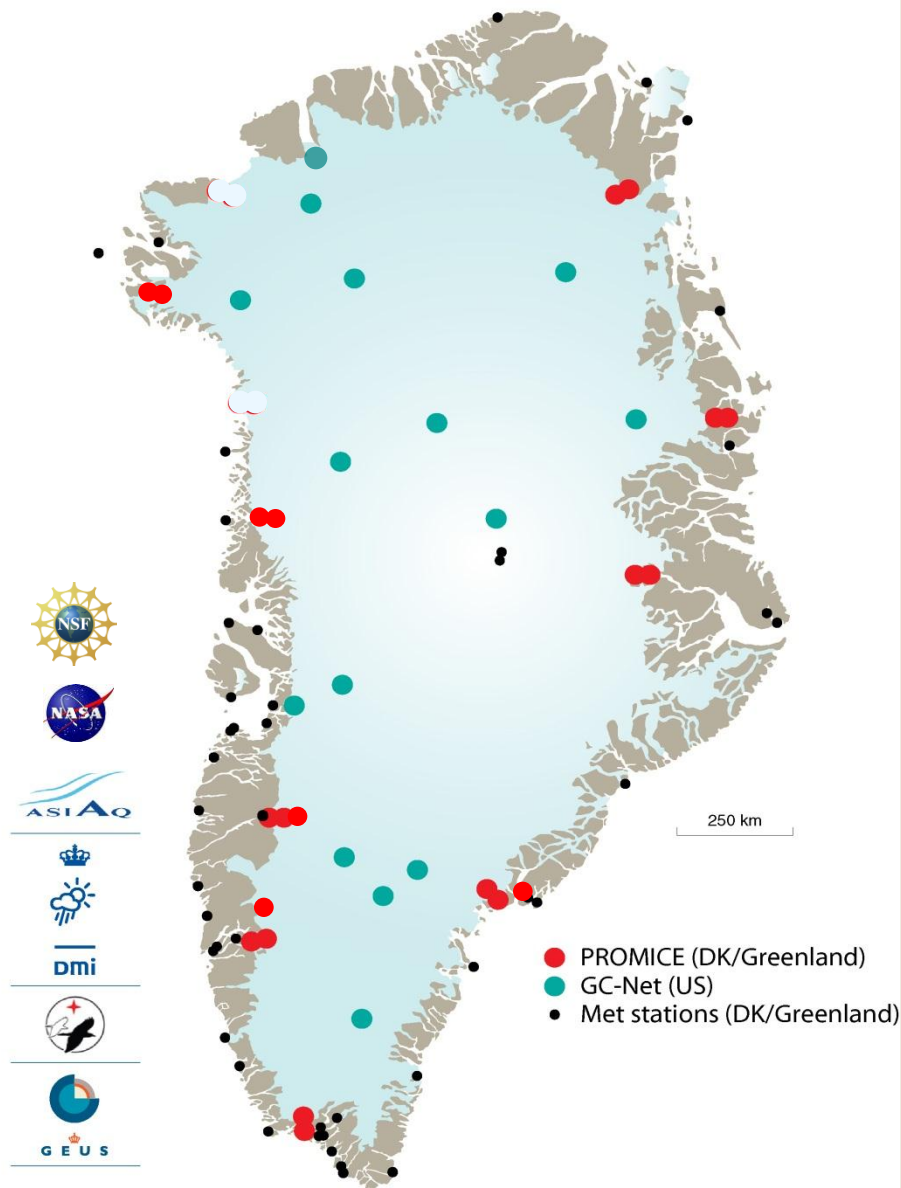
Programme for Monitoring of the Greenland Ice Sheet

Monitoring

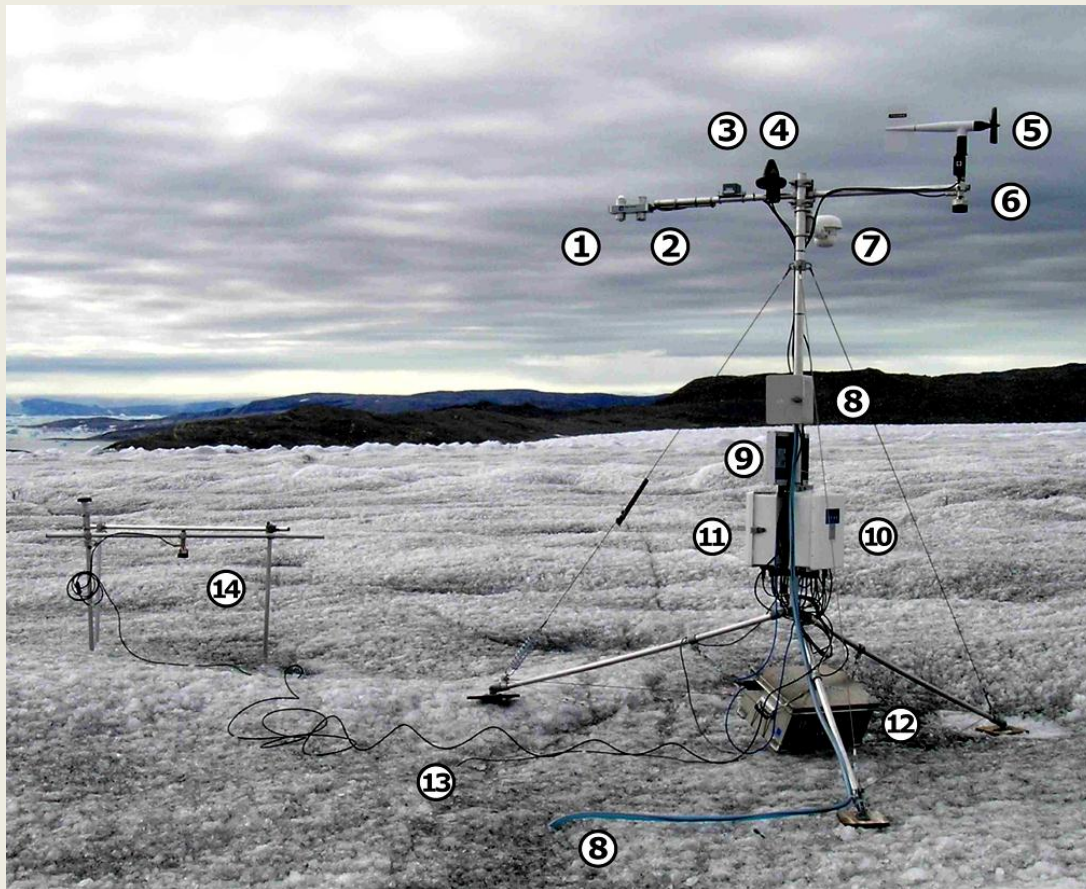


23
klimastationer
langs
Indlandsisen

Automatic weather stations in Greenland



Automatic mass-balance stations

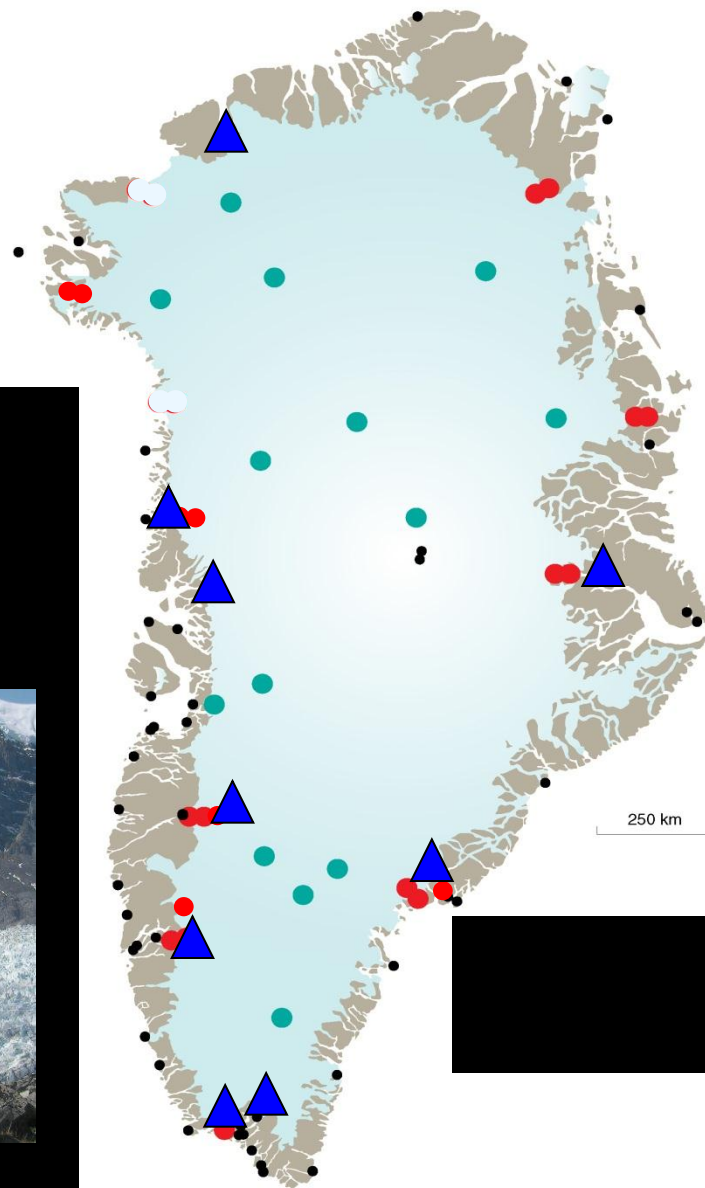
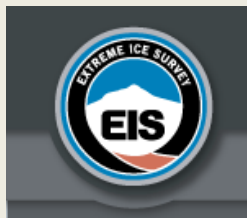


- ① Shortwave radiation (in/out)
- ② Longwave radiation (in/out)
- ③ Station tilt
- ④ Satellite transmitter
- ⑤ Wind speed & direction
- ⑥ Snow height (sonar)
- ⑦ Air temp. & relative humidity
- ⑧ Ablation (pressure sensor)
- ⑨ Solar panel
- ⑩ Data logger enclosure
- ⑪ GPS & multiplexer enclosure
- ⑫ Battery box
- ⑬ Ice temp. 0–10 m (thermistors)
- ⑭ Ablation (sonar & stakes)

PROMICE
 SVALI
 GAP
 SEDIMICE
 Ice2sea
 IVEL
 GlacioBasis
 ImGlaCo
 REFREEZE
 ESA CCI

Sæsonvariationen i hastigheden på gletsjere

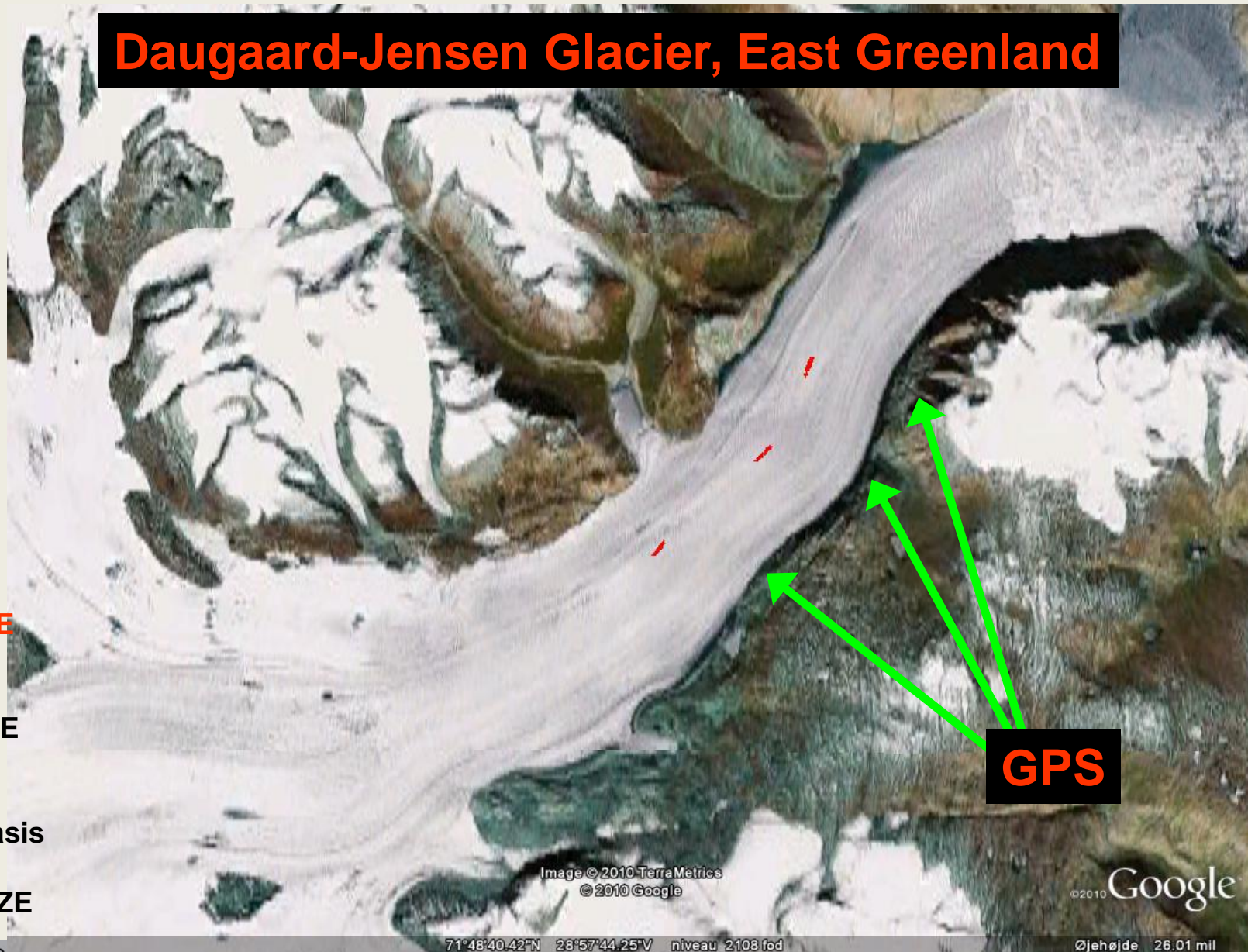
▲ Outlet glacier monitored



- PROMICE**
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- GAP**
- SEDIMICE**
- Ice2sea**
- IVEL**
- GlacioBasis**
- ImGlaCo**
- REFREEZE**
- ESA CCI**

GPS-tracking of outlet glaciers

Daugaard-Jensen Glacier, East Greenland



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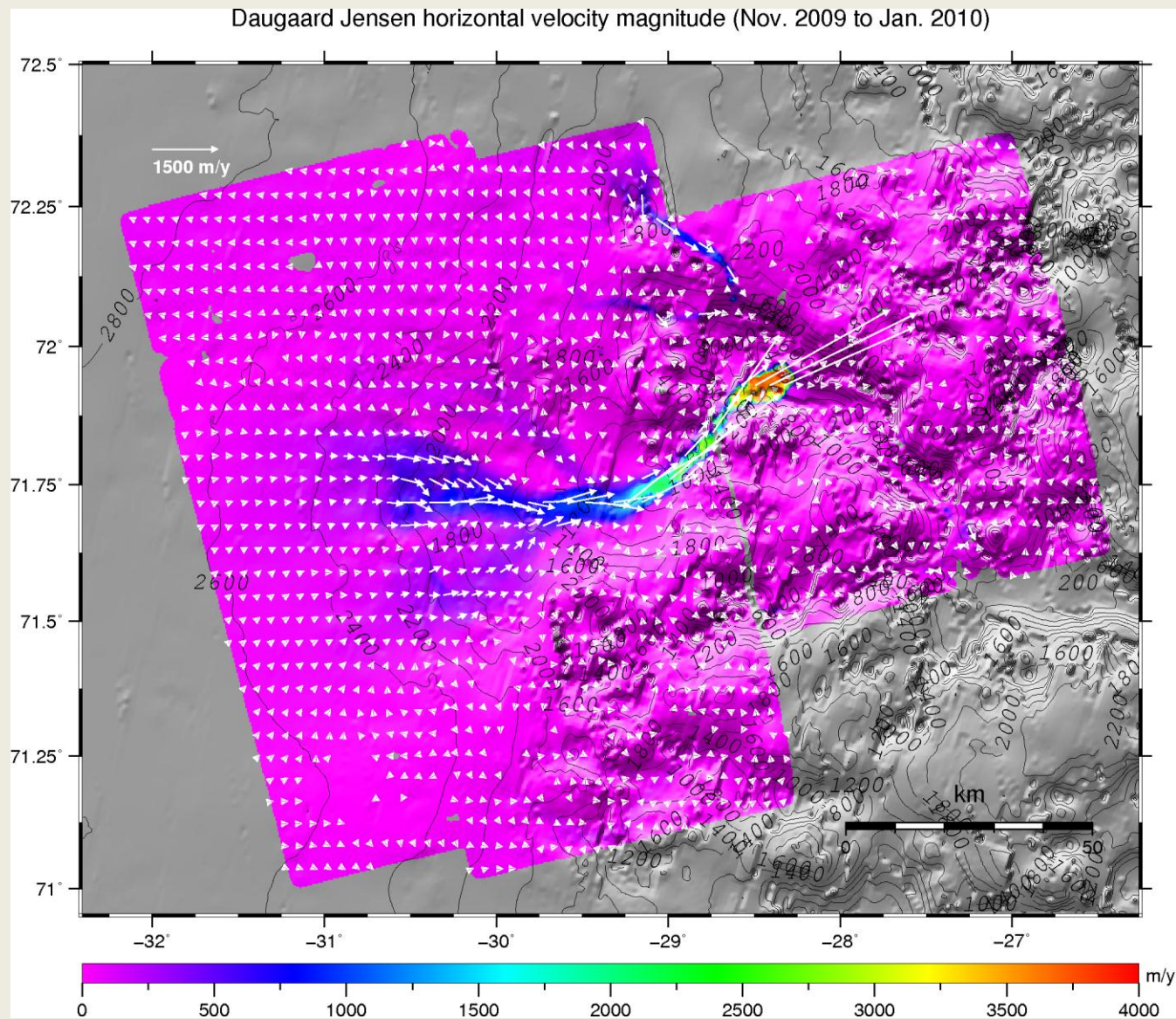
Image © 2010 TerraMetrics
© 2010 Google

©2010 Google

71°48'40.42"N 28°57'44.25"E niveau 2108 fod

Øjehøjde 26.01 mil

Daugaard-Jensen Glacier velocity



ALOS
PALSAR

Intensity tracking

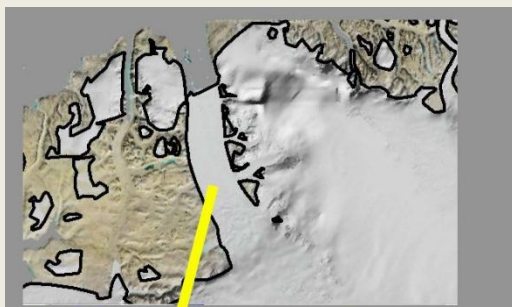
PROMICE Mapping of the ice margin and local glaciers

1980's glacier extent snapshot: high detail dataset

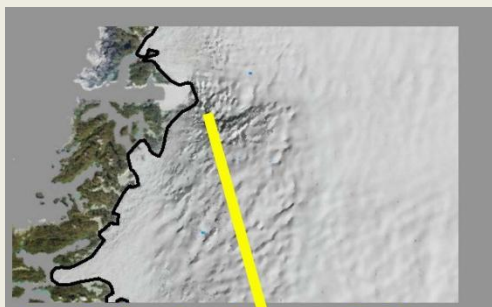
- Based on the 1:100,000 and 1:250,000 maps
- Manually checked and corrected for surface moraine, known surge events, ...
- Conterminous but independent local glaciers and ice caps manually separated from the ice sheet

2011 glacier extent update: moderate detail dataset

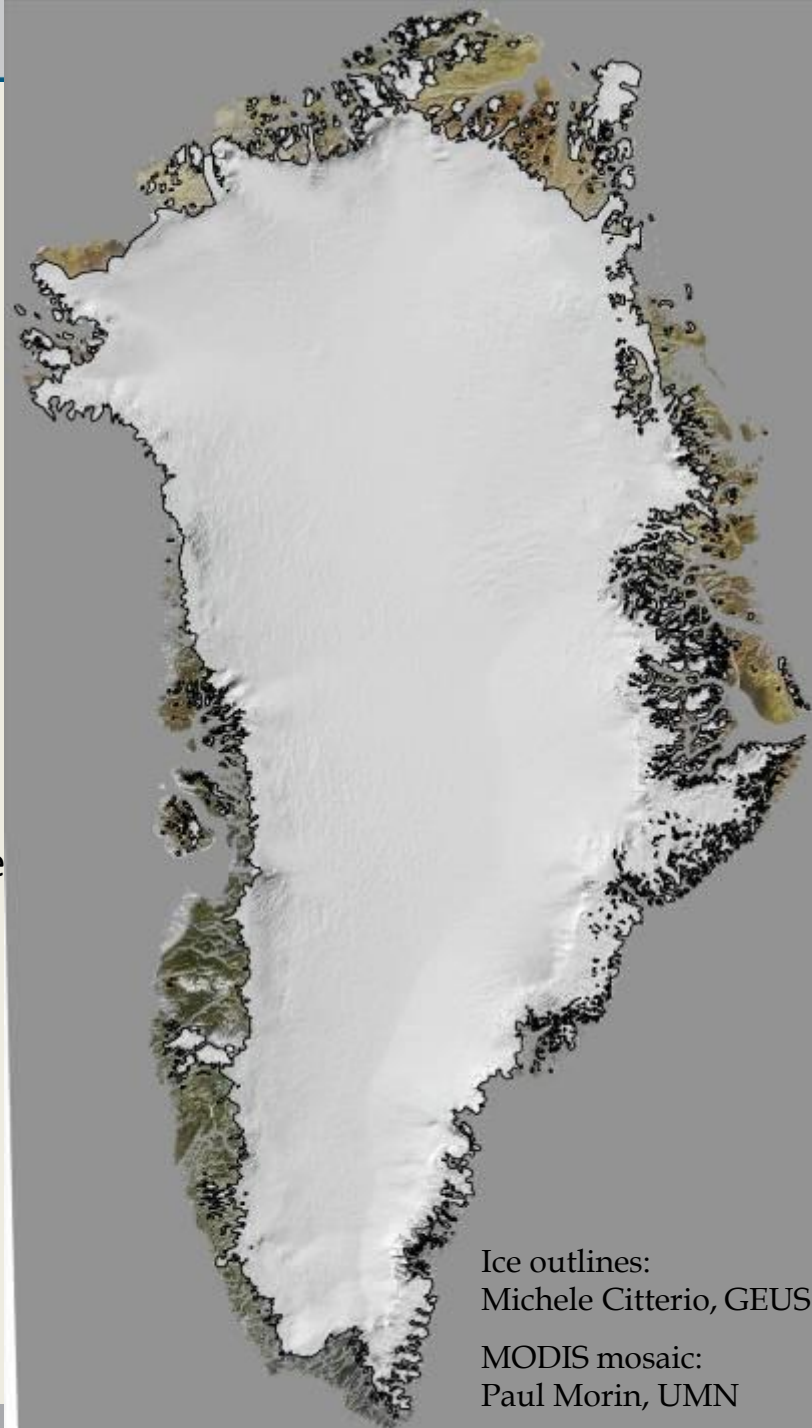
- Generalized version of the high detail dataset
- Updated to summer 2011 MODIS ad ca. 120 sites where large changes occurred since the 80's



4: Petermann Gletcher



6: Jakobshavn Isbrae



Ice outlines:
Michele Citterio, GEUS

MODIS mosaic:
Paul Morin, UMN

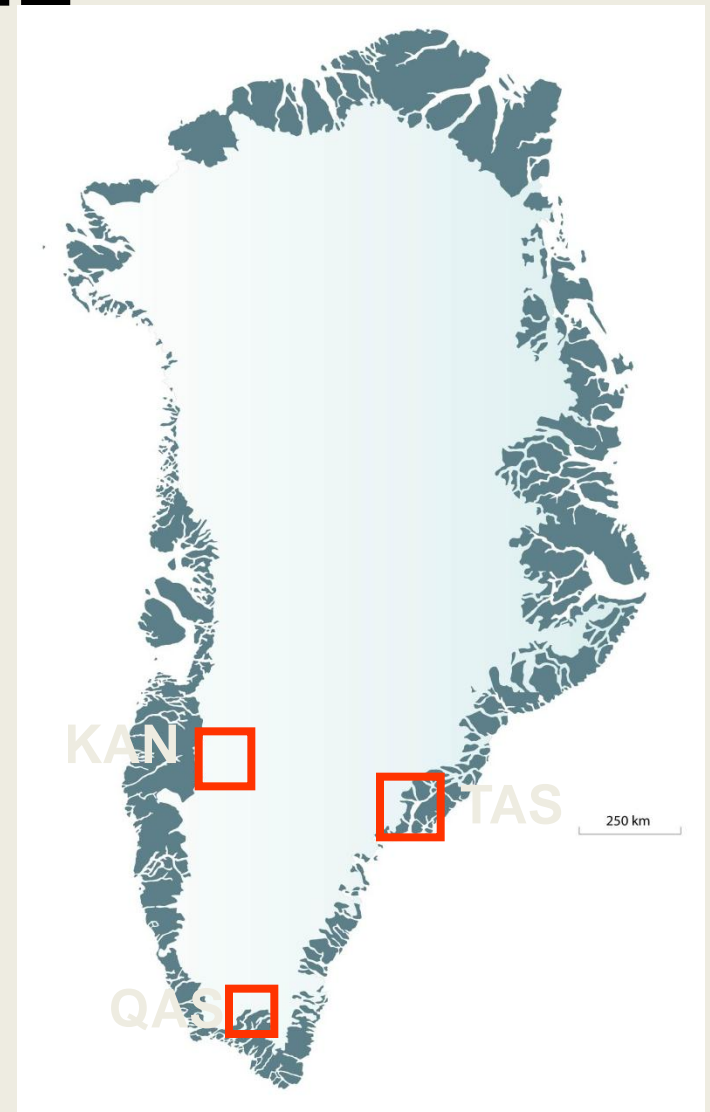
REFREEZE

Quantification of the melt water ree-freezing in the GRIS.

- Field work at three locations
- Stable isotope analysis
- Process studies

Model
paramtrizations

PROMICE
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GAP
SEDIMICE
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Greenland Ice sheet reconstructions

Upernavik Isfjord

Paakitsoq

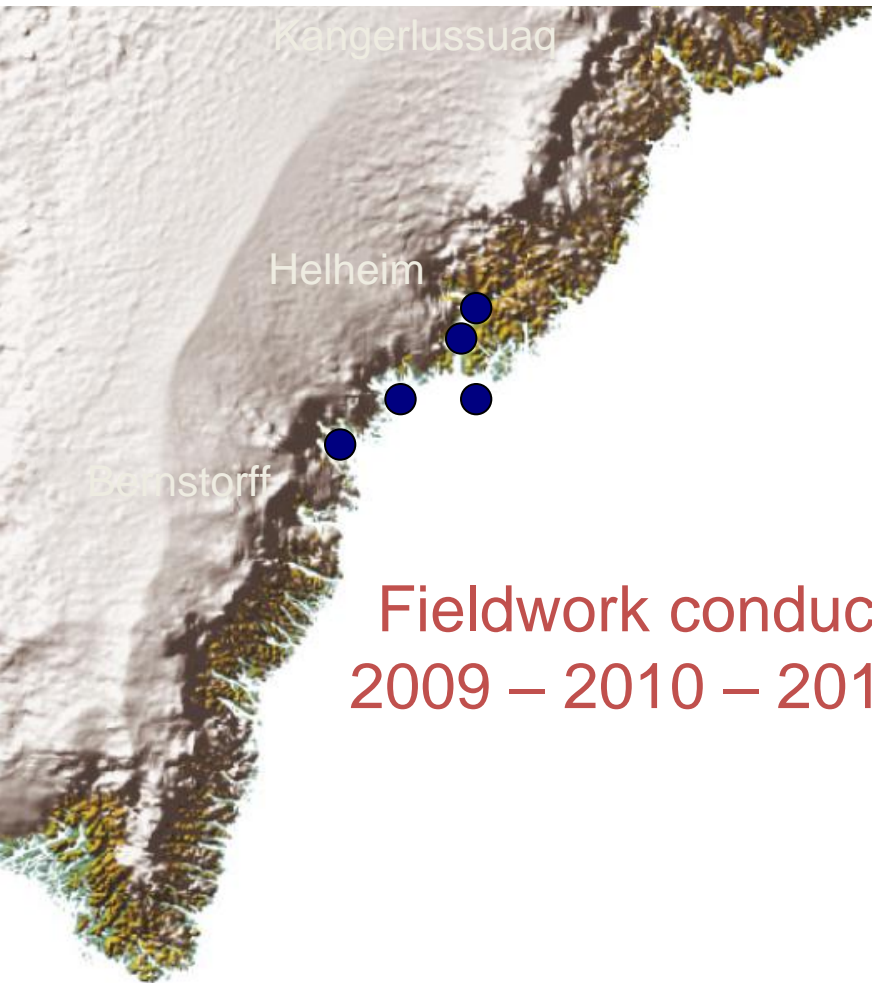
KANGERSUNEQ
Sedimentation history of
Kangersuneq ice-fjord
– an ice-dynamic laboratory



SEDIMICE
Sermilik fjord

SEDIMICE

'Linking sediments with ice sheet retreat'



Fieldwork conducted in
2009 – 2010 – 2011-2012

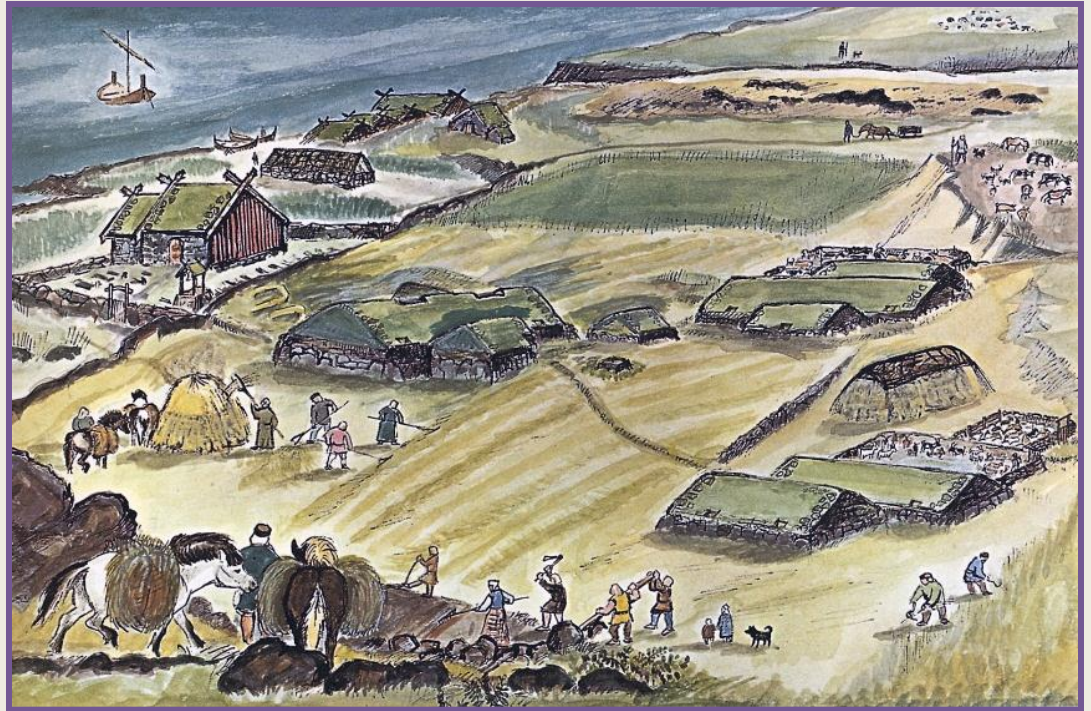
Reconstruction of past fluctuations in marine-terminating outlet glacier dynamics and the interaction with oceanographic changes on the basis of sediment cores.



Havis og gashydrater



Palæoklima og nordboerne



TAK for opmærksomheden

