



Challenges in the Arctic as seen from the Arctic

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The un-conquerable Ocean



- It was just a lifetime ago.

Trends of the Arctic: Global warming

- The high Arctic is an early warning region for climate change.
- The natural variations are of equal interest.
- Scientists arrive from all over the world to study the processes.





Trends of the Arctic: Economic interests

- 22 % of the world's undiscovered petroleum resources. (USGS).
- Valuable mineral resources in remote regions that become accessible.
- Marine resources that are potentially growing.



Trends of the Arctic: Economic interests

- The first commercial carrier has sailed through the Northeast passage.
- Cruise ships follow the ice as it retreats into the Polar Basin.
- Search and rescue organizations are being established.

Trends of the Arctic: Politics

- 5 Arctic countries try to settle their differences.
- EU and Southeast Asia demonstrate their interests.
- The Russian flag has been planted on the North Pole sea floor.
- What next?



The Arctic as a hot spot again?

- Hardly; the countries seek peaceful ways.
- The Arctic countries have common interests in reaching agreements.
- The Grey Zone agreement was reached after 40 years of negotiation.



Photo: Marte L. Kopstad/ Utenriksdepartementet

Svalbard – it's right there

- The world's northernmost settlements.
- 62.000 square km.
- 60 % covered by glaciers.
- The gateway to the Arctic Ocean.



International research communities

- Researchers from 20 countries have stations or regular excursions.
- Growing presence from Asian countries.



Extensive infrastructure in place

KHO

ESR

SPEAR

Extensive infrastructure in place



The University Centre in Svalbard



- The world's northernmost institution for research and higher education.
- 80 scientists and support personnel living and working in Longyearbyen.
- 150 adjunct professors and guest lecturers from all over the world.
- 400 students from 32 countries attended UNIS courses in 2010.

UNIS mission

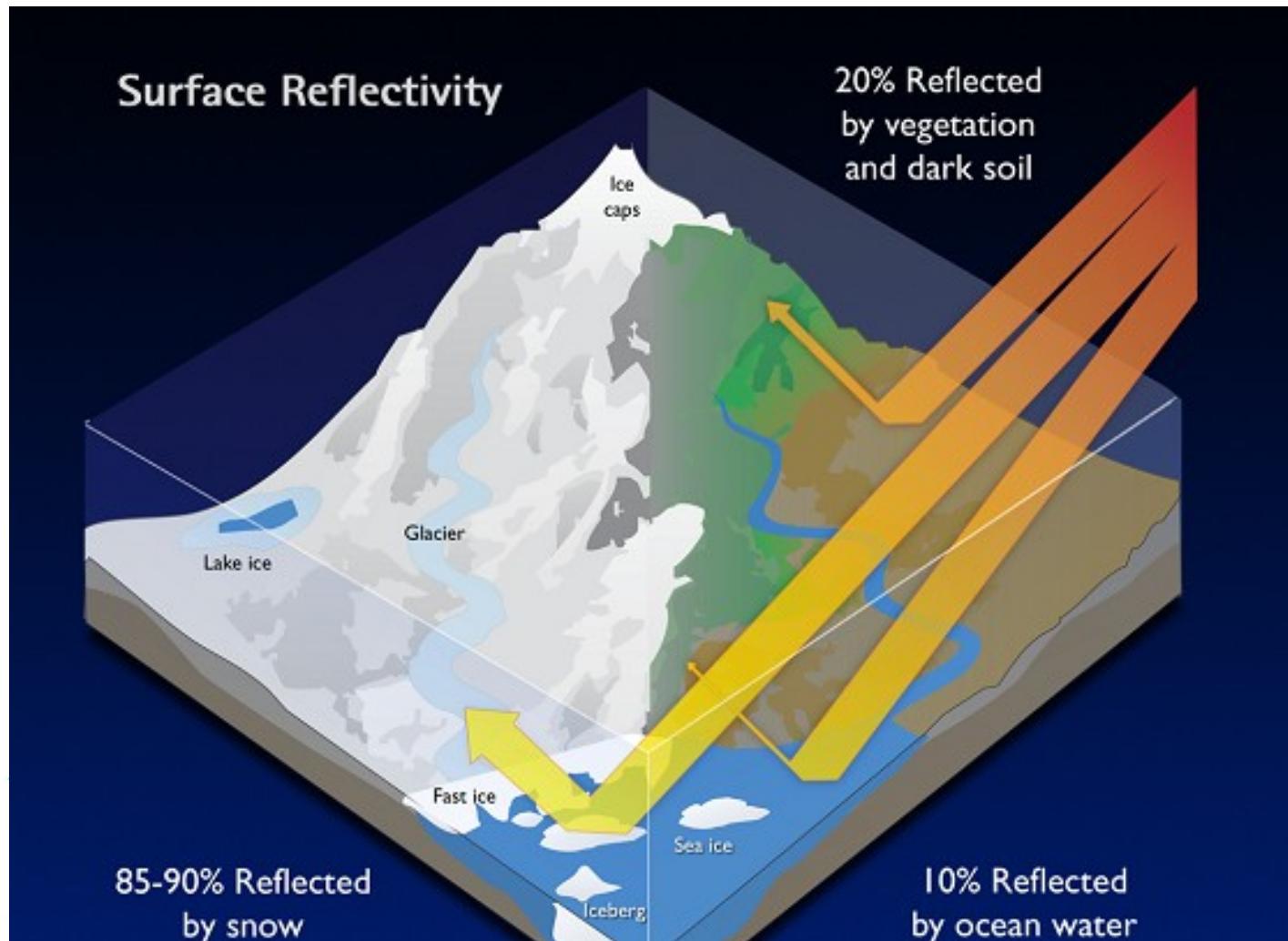
- UNIS offers education and performs research based on Svalbard's location in the High Arctic and the advantages this represents.
- UNIS is the Arctic extension of the Norwegian mainland universities. UNIS courses are offered as part of the universities' course portfolios.
- UNIS plays a major role in building an international research platform in Svalbard and in representing and securing Norwegian polar interests.
- UNIS is an institution in line with the Svalbard treaty. Half of our students are international. English is the official language.

Field based education at UNIS



Climate change sets the agenda

Global warming comes here first.

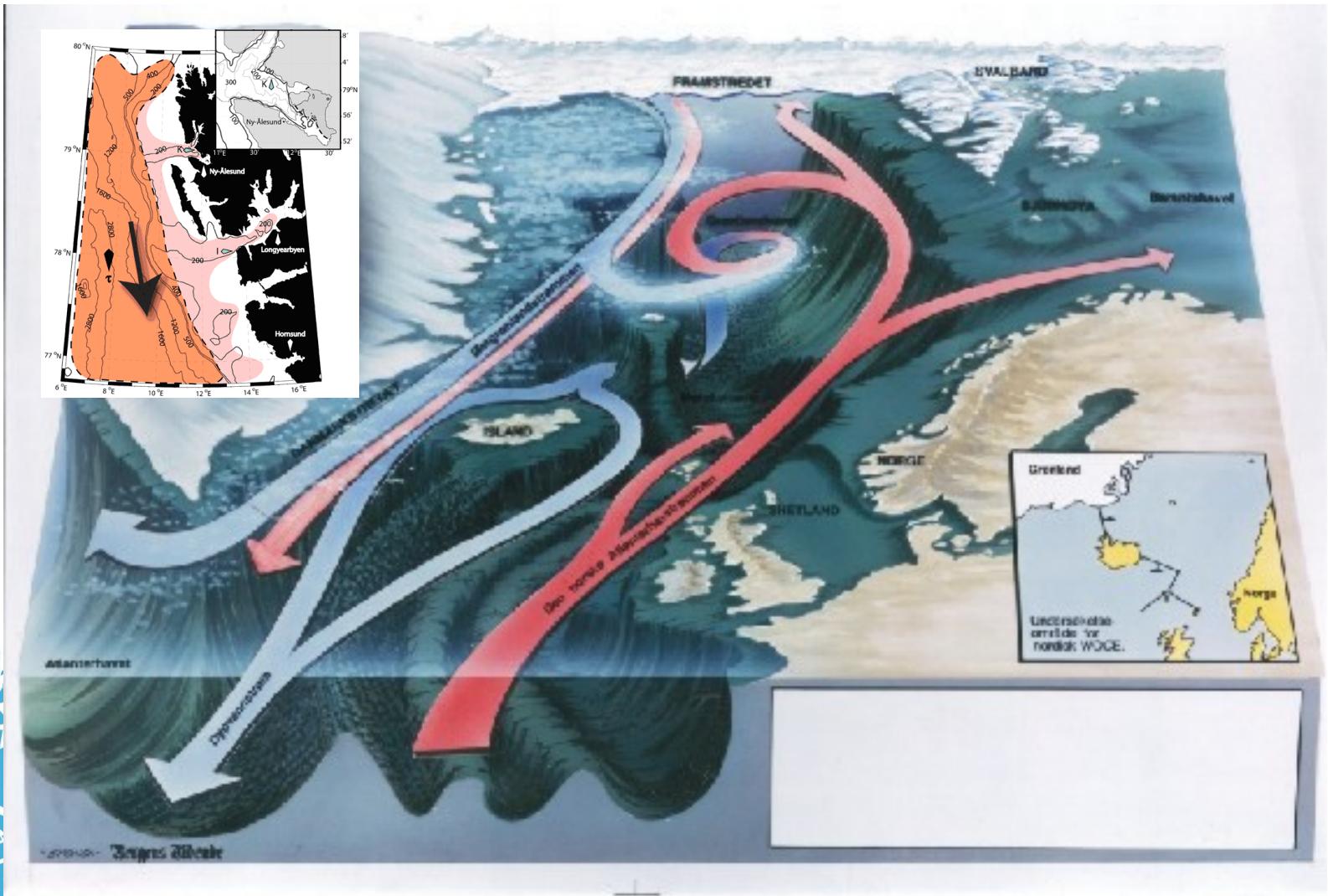




Warming seems to be real

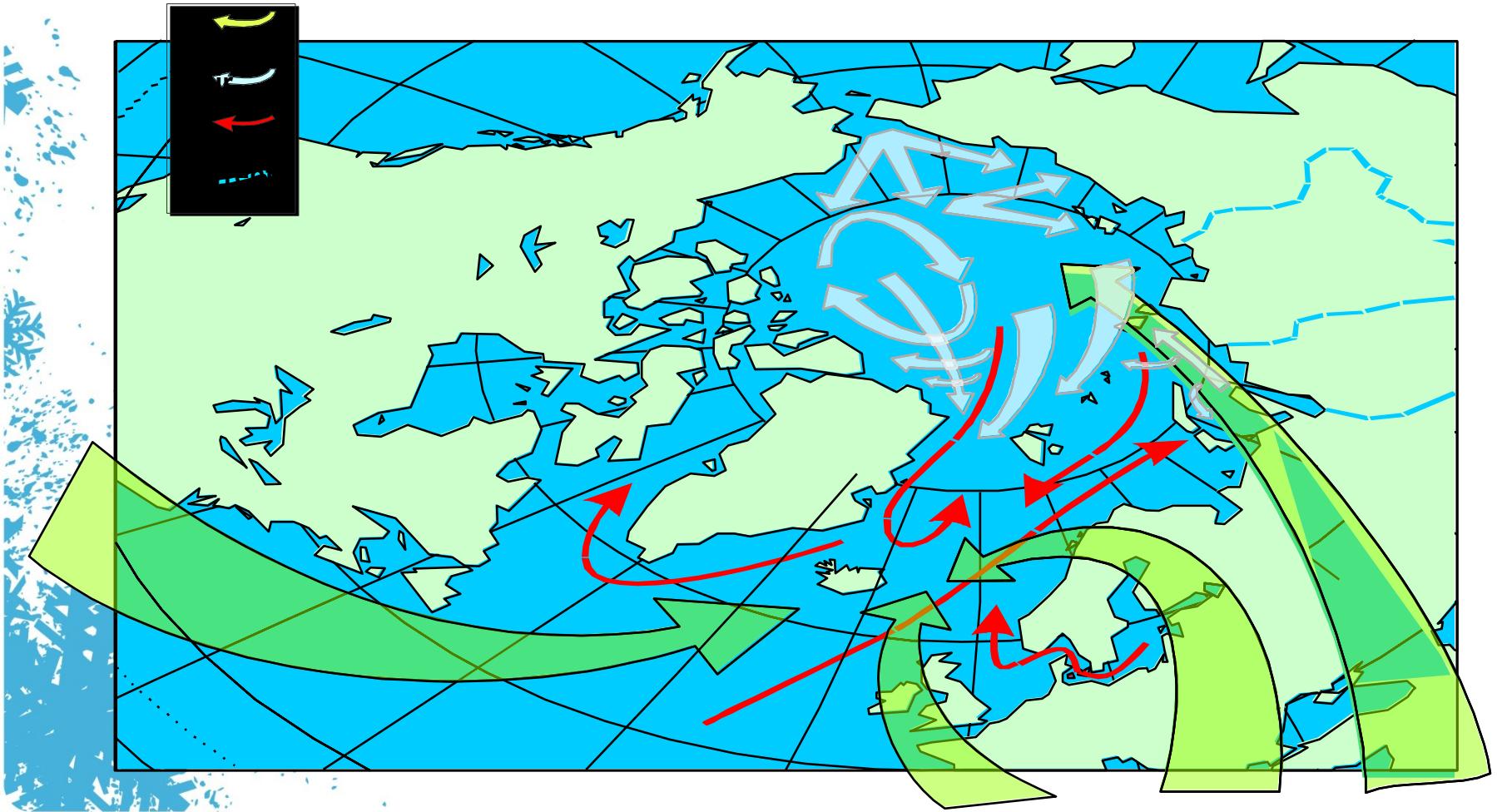
- Longyearbyen temperatures increasing.
- Glaciers melting – less ice on the fjords.
- Alarming reductions of the polar ice cap.
- ... but there are many unanswered questions.

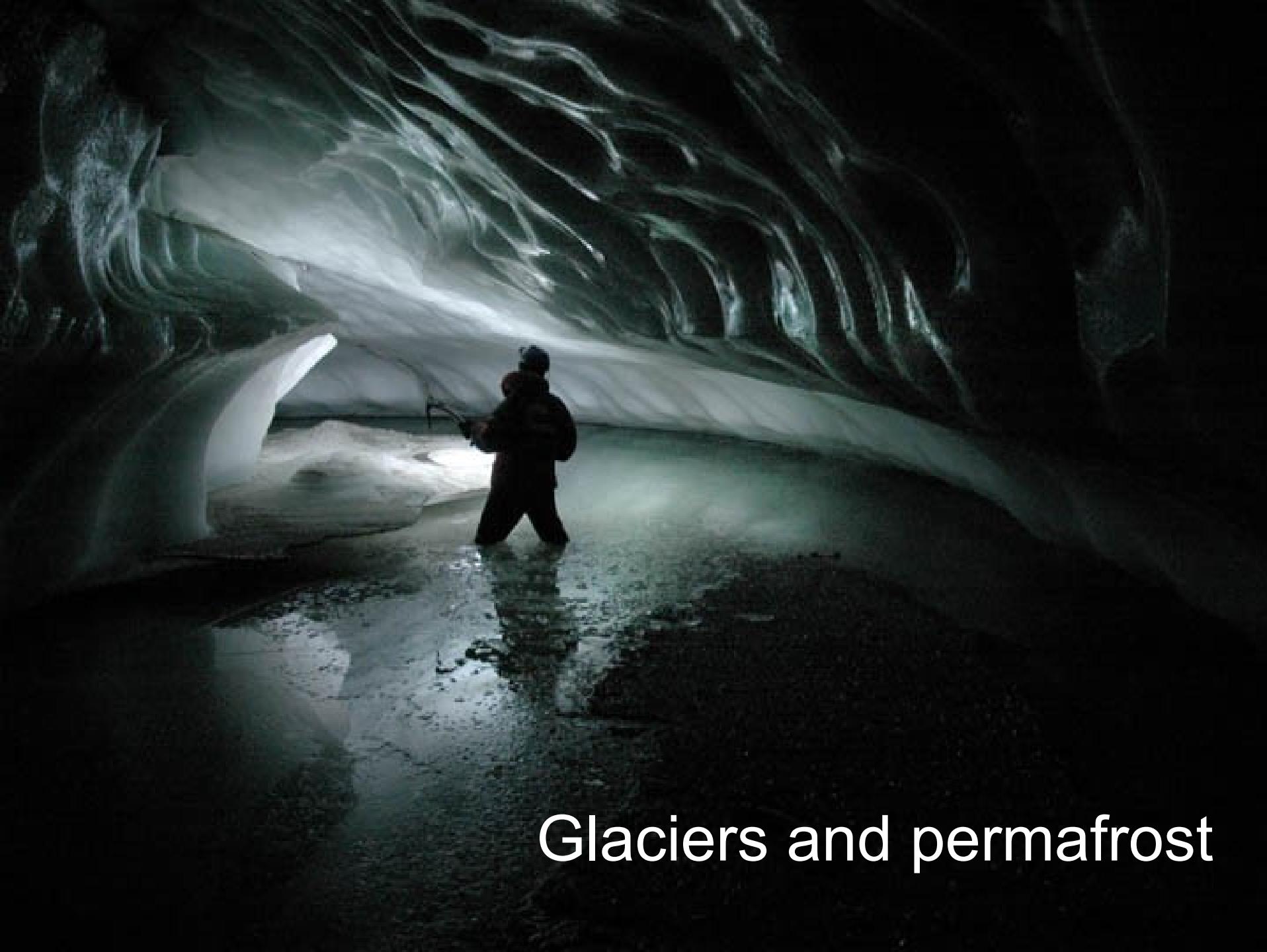
Changes of the Gulf stream



The sewer of Europe

Winds and sea currents carry pollutants into the Arctic.





Glaciers and permafrost

Marin biology during polar night



Kjell Henriksen Observatory



Foto: Olli Jokiaho



Longyearbyen CO₂-lab

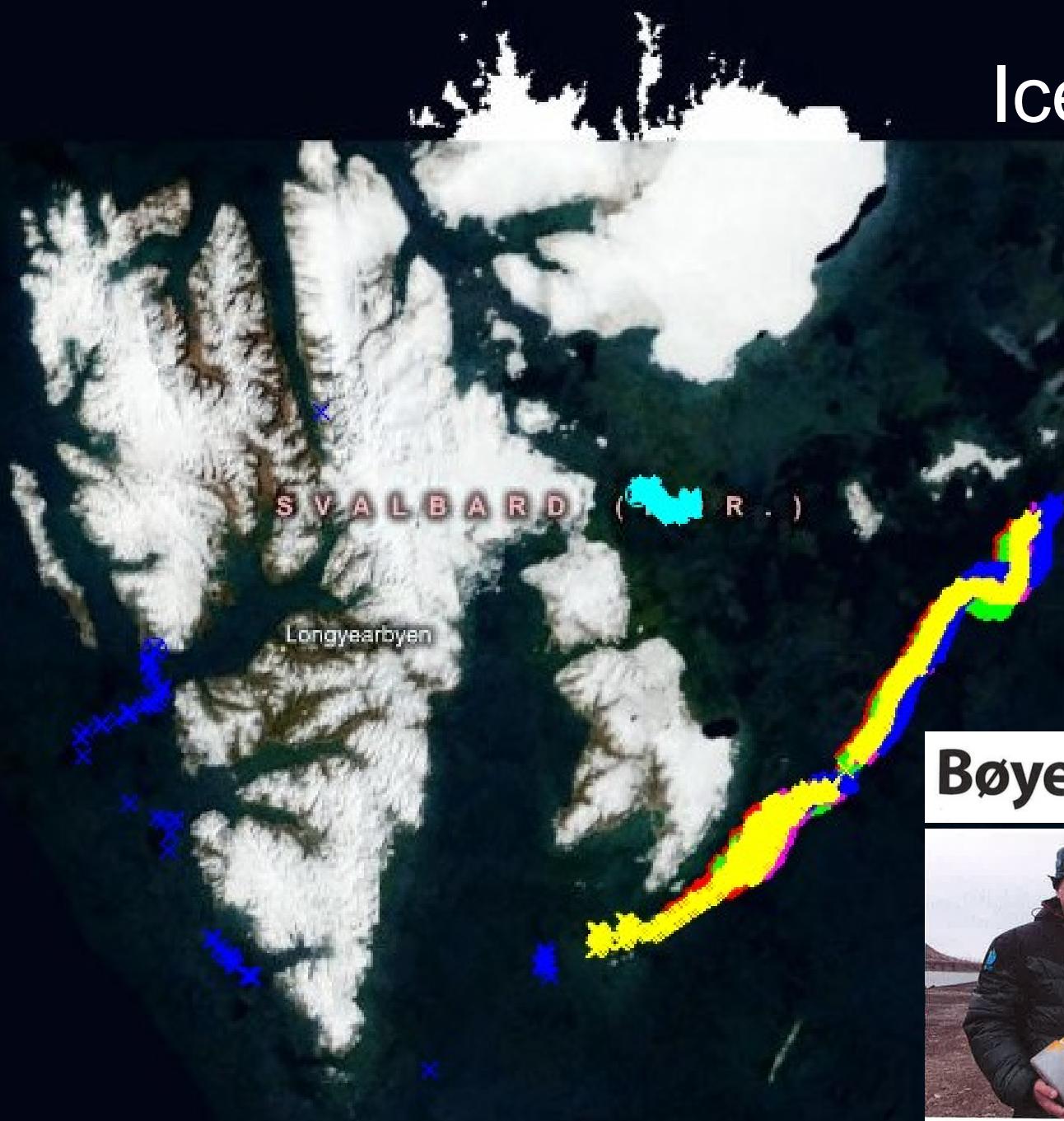
An integrated research and education laboratory



Oil spills in Arctic waters



Ice drift in Barents Sea



Bøye kom hjem



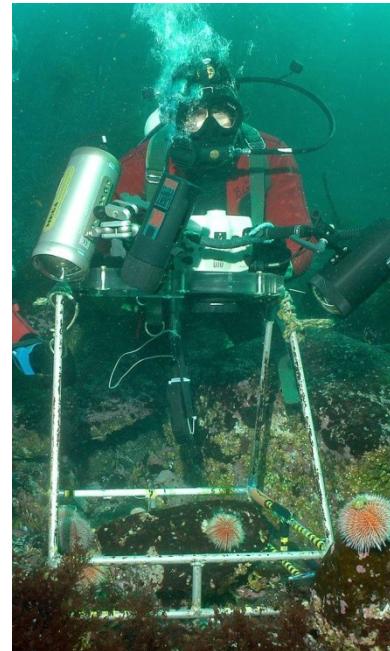
Svalbard Integrated Arctic Earth Observing System

Establish an Arctic Earth Observing System in and around Svalbard that integrates the studies of geophysical, chemical and biological processes from all research and monitoring platforms, for the purpose of climatic and environmental monitoring.



Creation of field laboratories

- The main UNIS laboratory is Svalbard itself, it's surrounding waters, and the atmosphere above.
- We are in the process of developing a number of field laboratories related to glaciers, permafrost, marine and terrestrial ecology.



So; is the ice really melting (1)

- Yes it is – though there are still many uncertainties.
- We encourage the students to pursue the unanswered questions.



September 1979



September 2003

Observed Sea Ice Extent (Month of September)

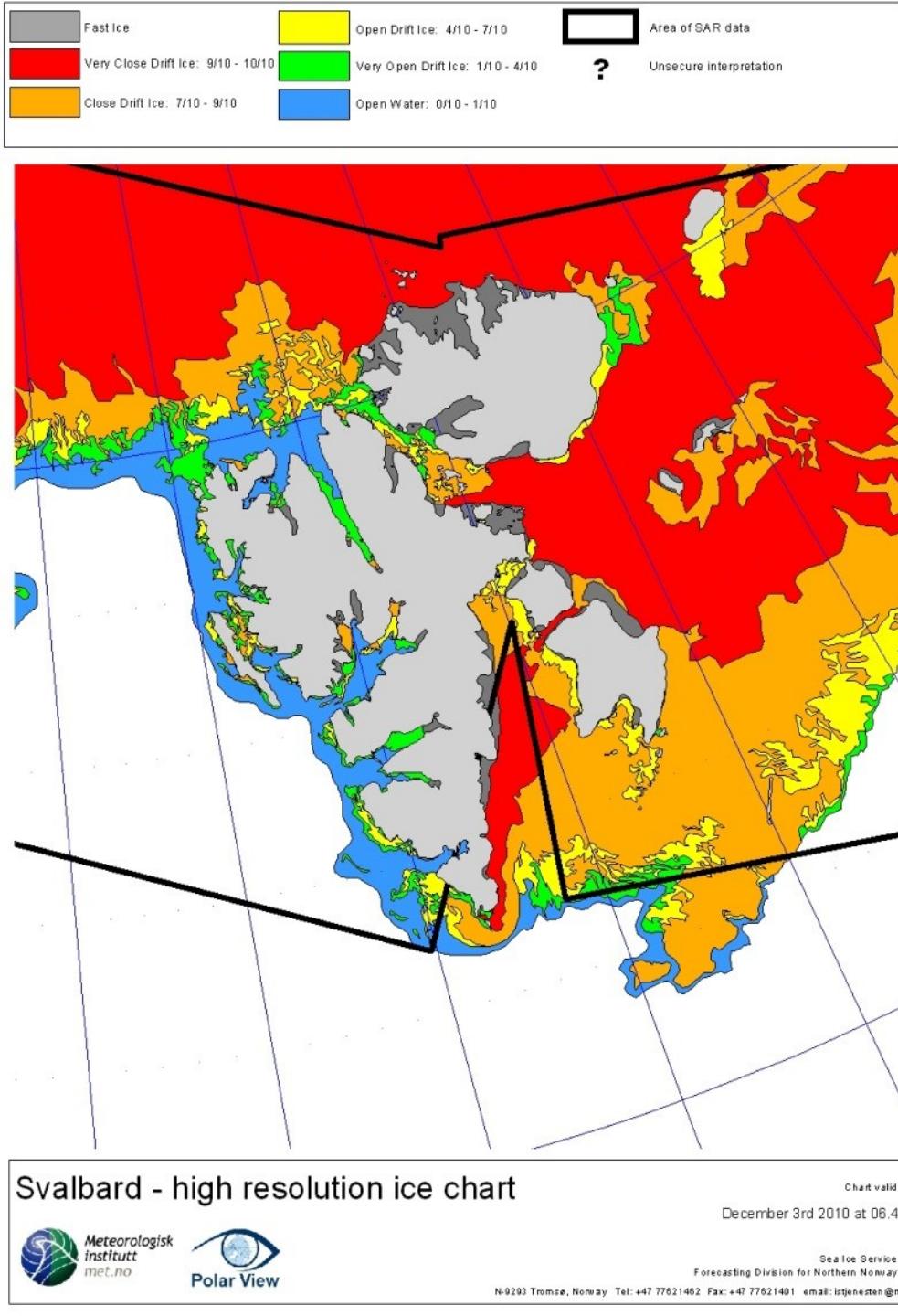
Is the ice really melting (2)

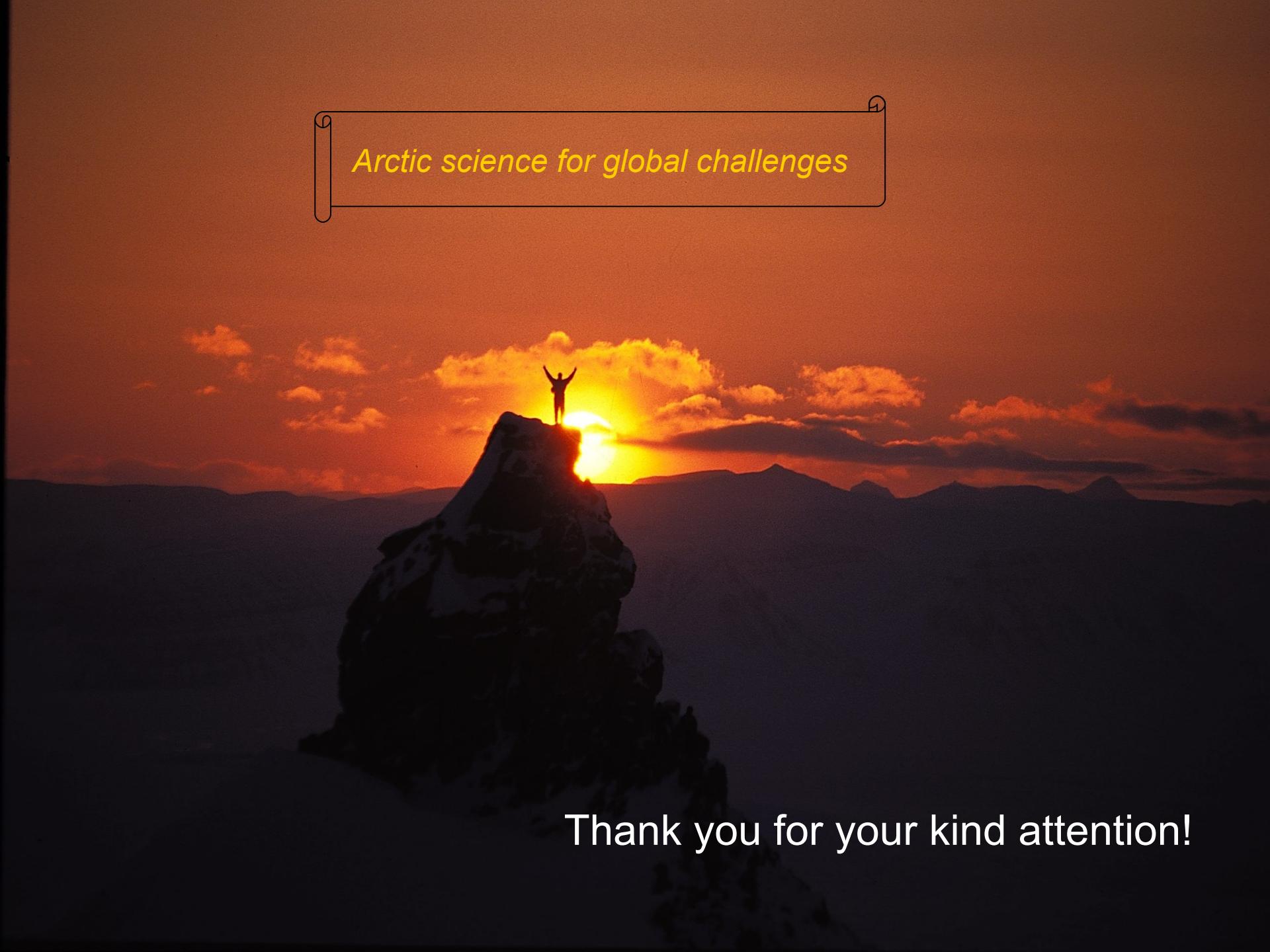
- Yes, Tara beat Nansen by almost 2 years.



Is the ice really melting (3)

- No, if you arrive on the scene this year.





Arctic science for global challenges

1

Thank you for your kind attention!