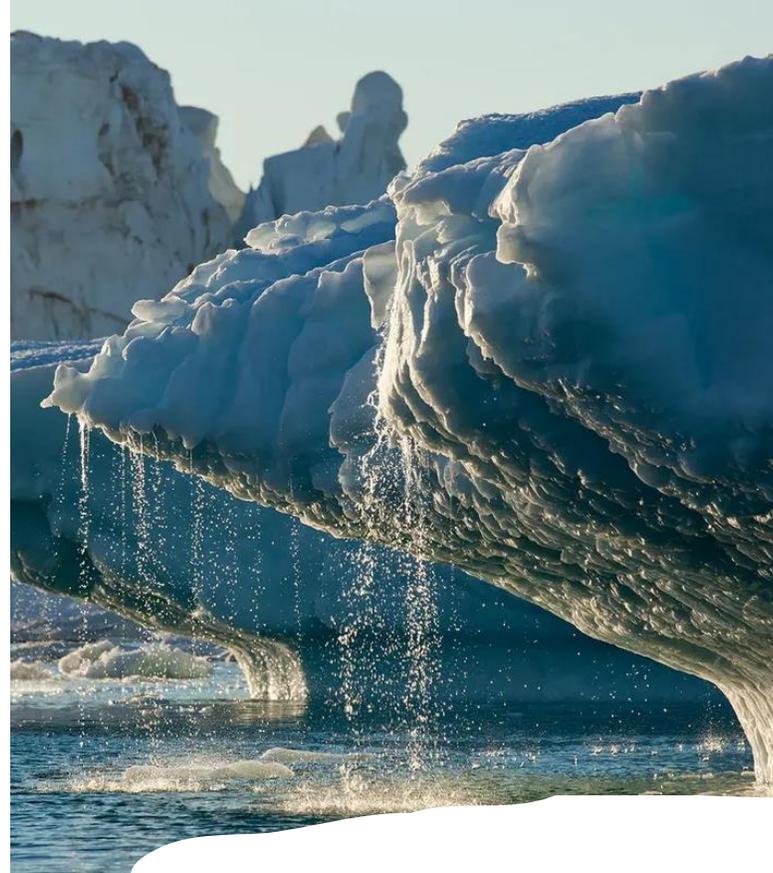


# *In situ* monitoring of Greenlandic waters

*Thomas Juul-Pedersen, Tobias Vonnahme, John Mortensen and many more...*



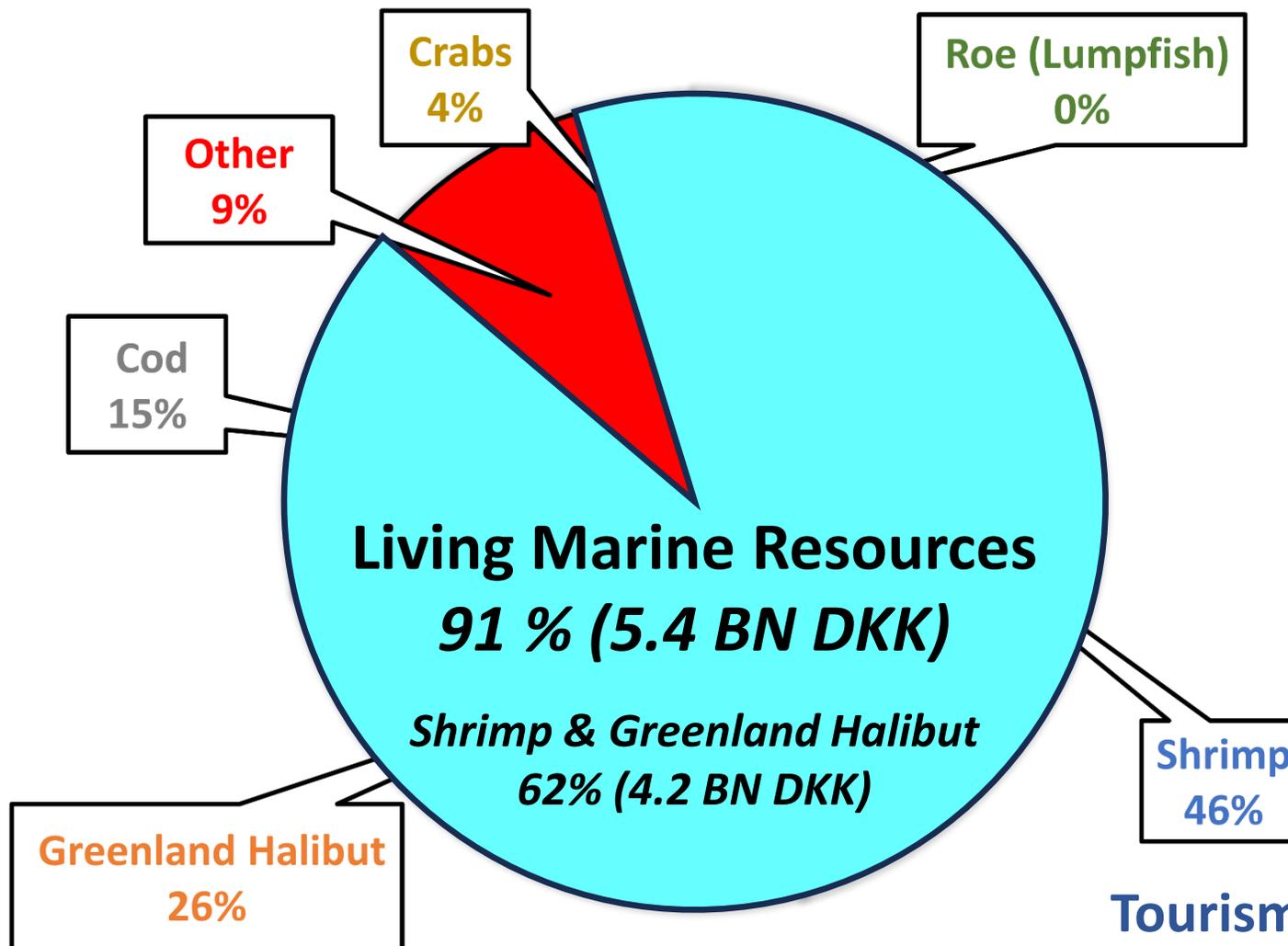


# Climate change and effects

# The importance of marine ecosystems in Greenland



**EXPORT INCOME (2022) - TOTAL 5.9 BN DKK**



**Tourism (2019): ca. 1 BN DKK**

*Statistics Greenland & Visit Greenland*



# Challenges of *in situ* marine monitoring in Greenland

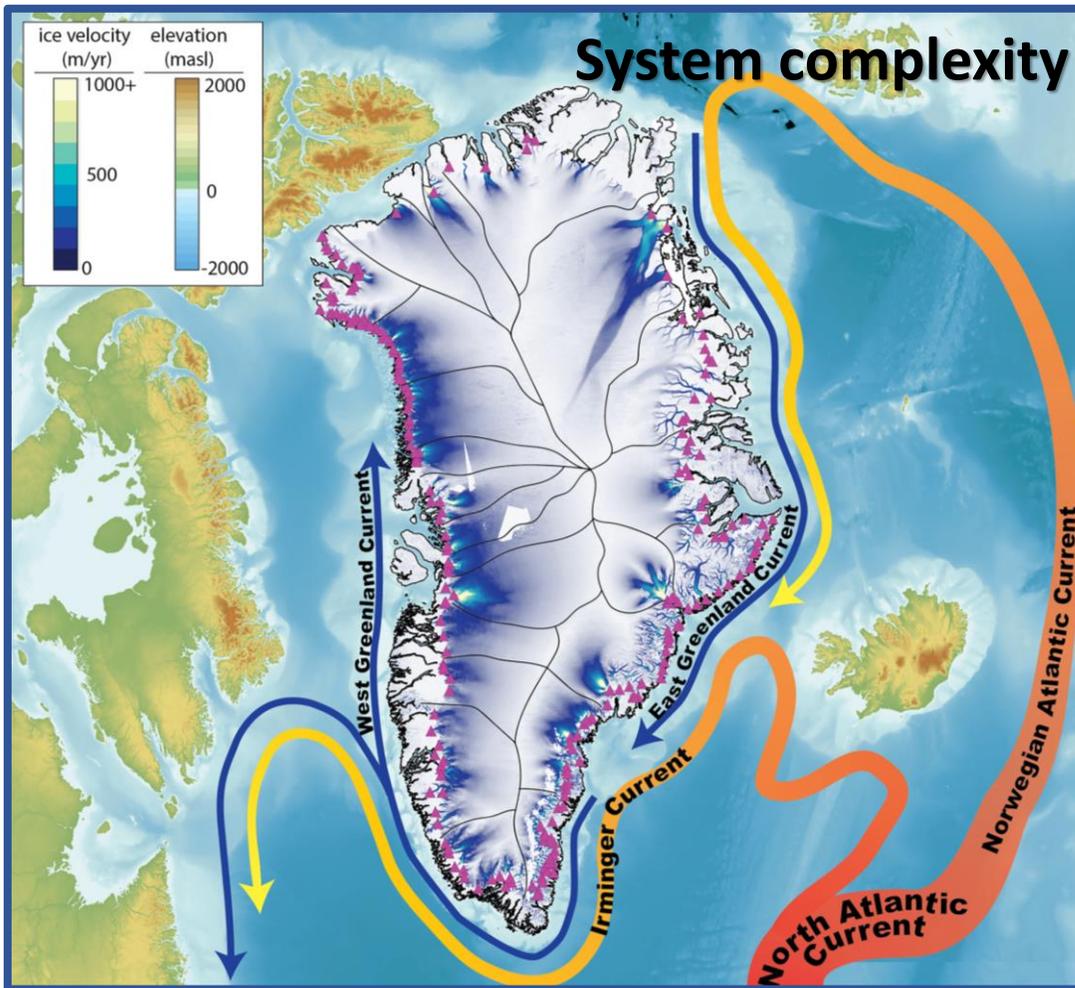


## Geographical scale



[www.thetruesize.com](http://www.thetruesize.com)

## System complexity



Catania et al. 2020, *JGR Earth Surface*, Volume: 125-2

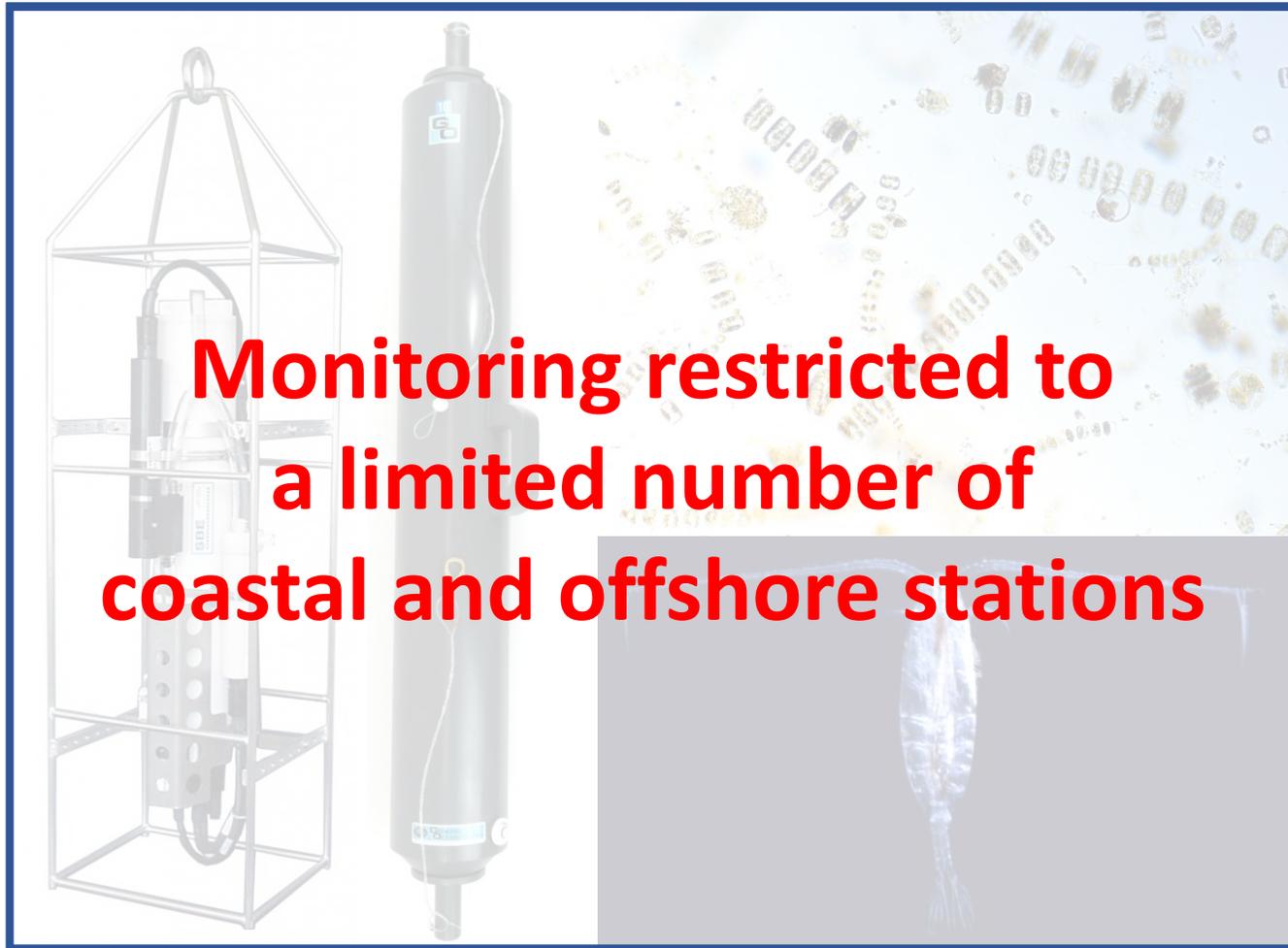
## Logistics



# Monitoring of marine ecosystems in Greenland



## Physical, chemical and low trophic levels



## Higher trophic levels



# Marine monitoring programmes in Greenland



Greenland Institute  
of Natural Resources

**Greenland Institute of Natural Resources (GINR)** Time series are basis for marine research and scientific advice to the Government of Greenland on the sustainable management of living resources.



**Greenland Ecosystem Monitoring (GEM)** An integrated monitoring and research programme on atmospheric, terrestrial, limnic, glacier and marine ecosystem components, climate change effects and feed-backs (since 2002).



**Greenland Integrated Observing System (GIOS)** A coordinated network of sustainable long-term research infrastructures in and around Greenland observing the changing air, ice, land, and ocean conditions (2021-2025).



**Davis Strait Observing System (DSOS)** A sustained observational network for Davis Strait - Understanding exchanges through and interactions in the physical, chemical and biological system of the Arctic gateway (since 2004).



# Physical, chemical and biological monthly marine monitoring



GEM

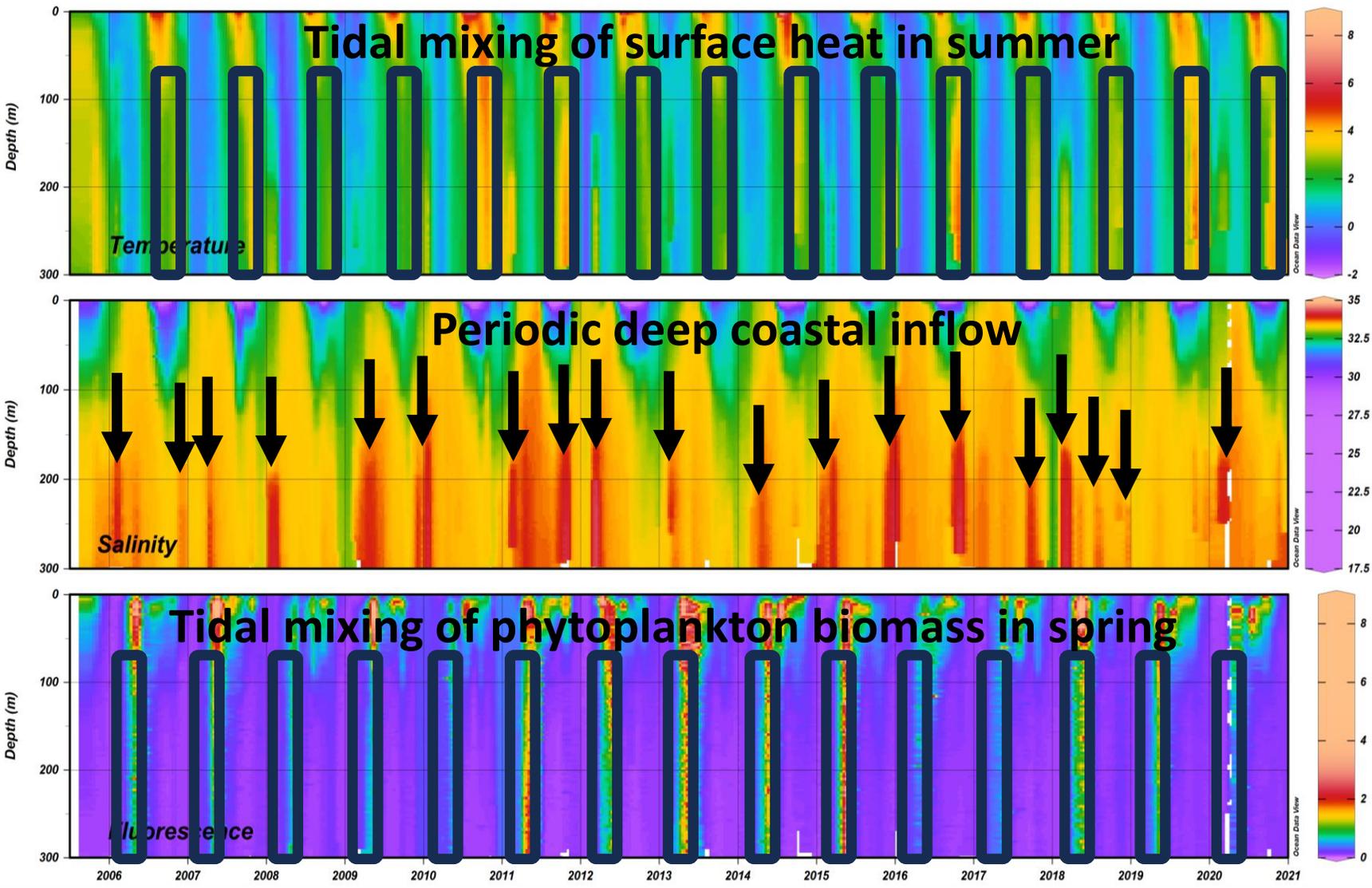


Greenland Ecosystem Monitoring

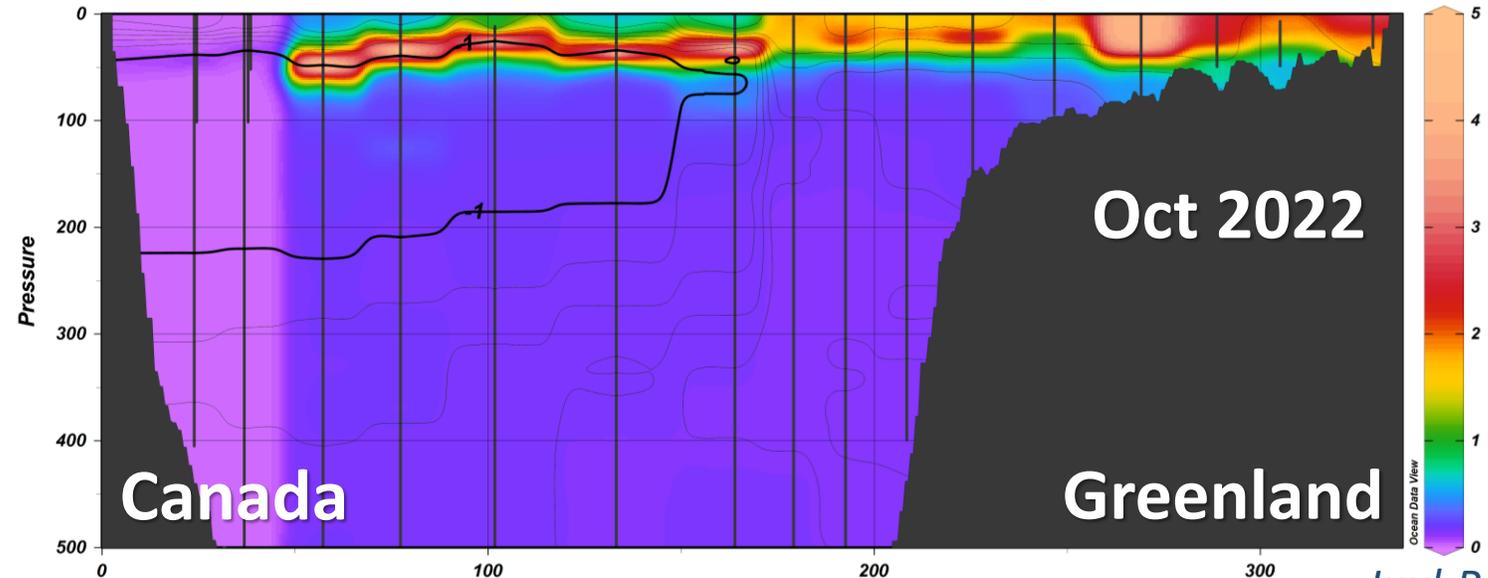
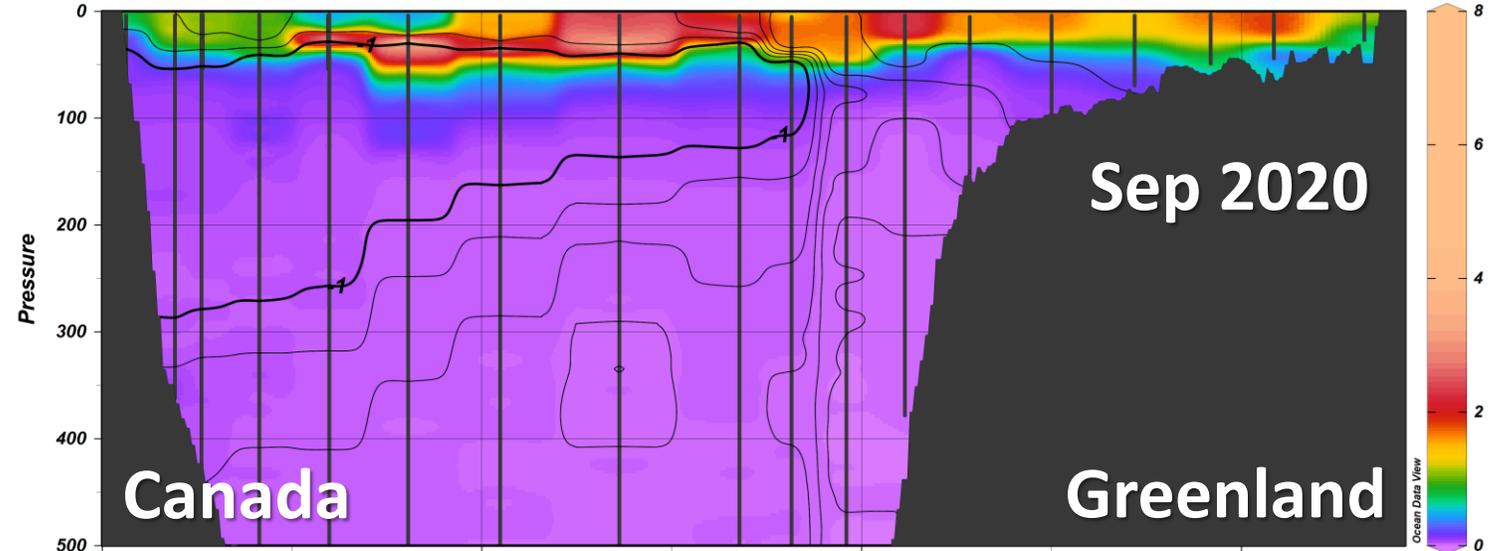
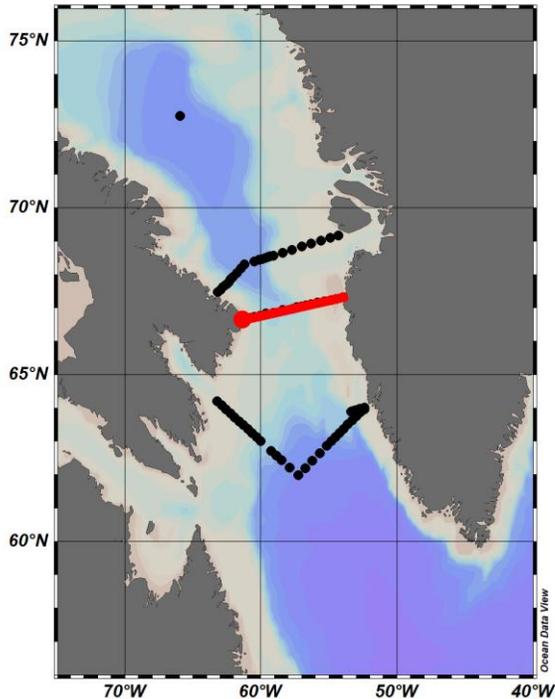
## Nuup Kangerlua (SW Greenland)

- Station depth: 355 m
- Fjord depth (max): 620 m
- Fjord area: 2.013 km<sup>2</sup>
- Tidewater glaciers: 3
- Land-term. glaciers: 3

[www.g-e-m.dk](http://www.g-e-m.dk)



# Phytoplankton biomass (fluorescence) offshore

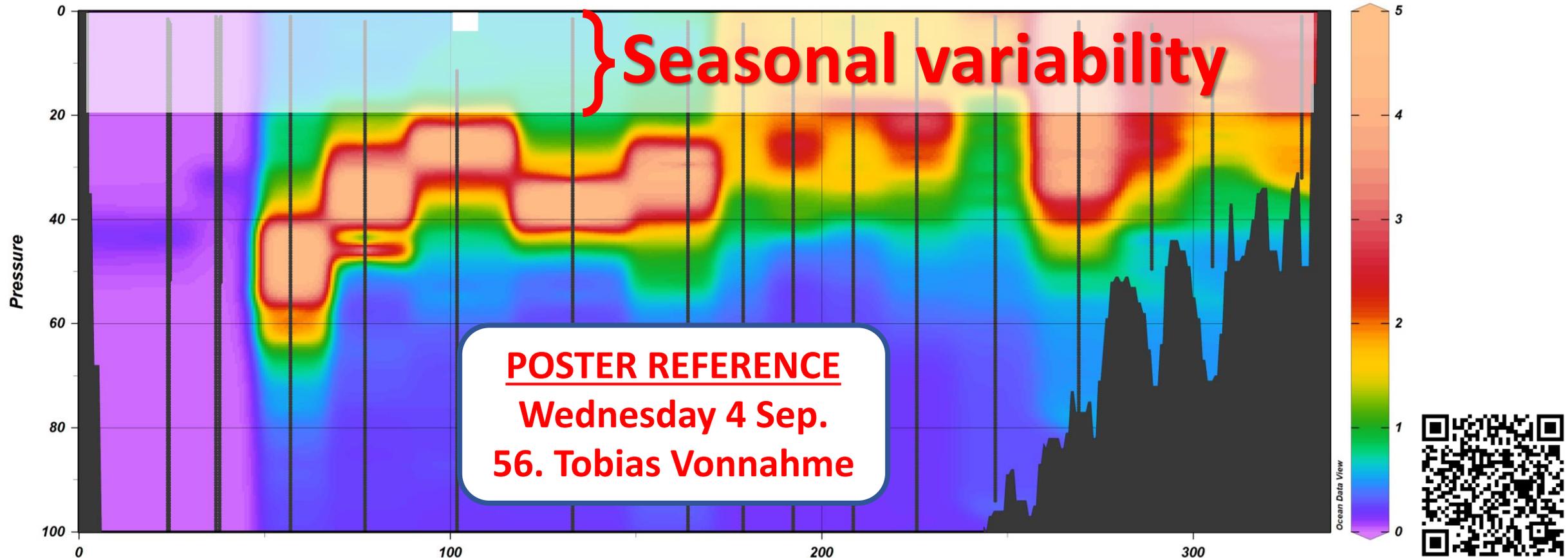


# Phytoplankton biomass (fluorescence) offshore

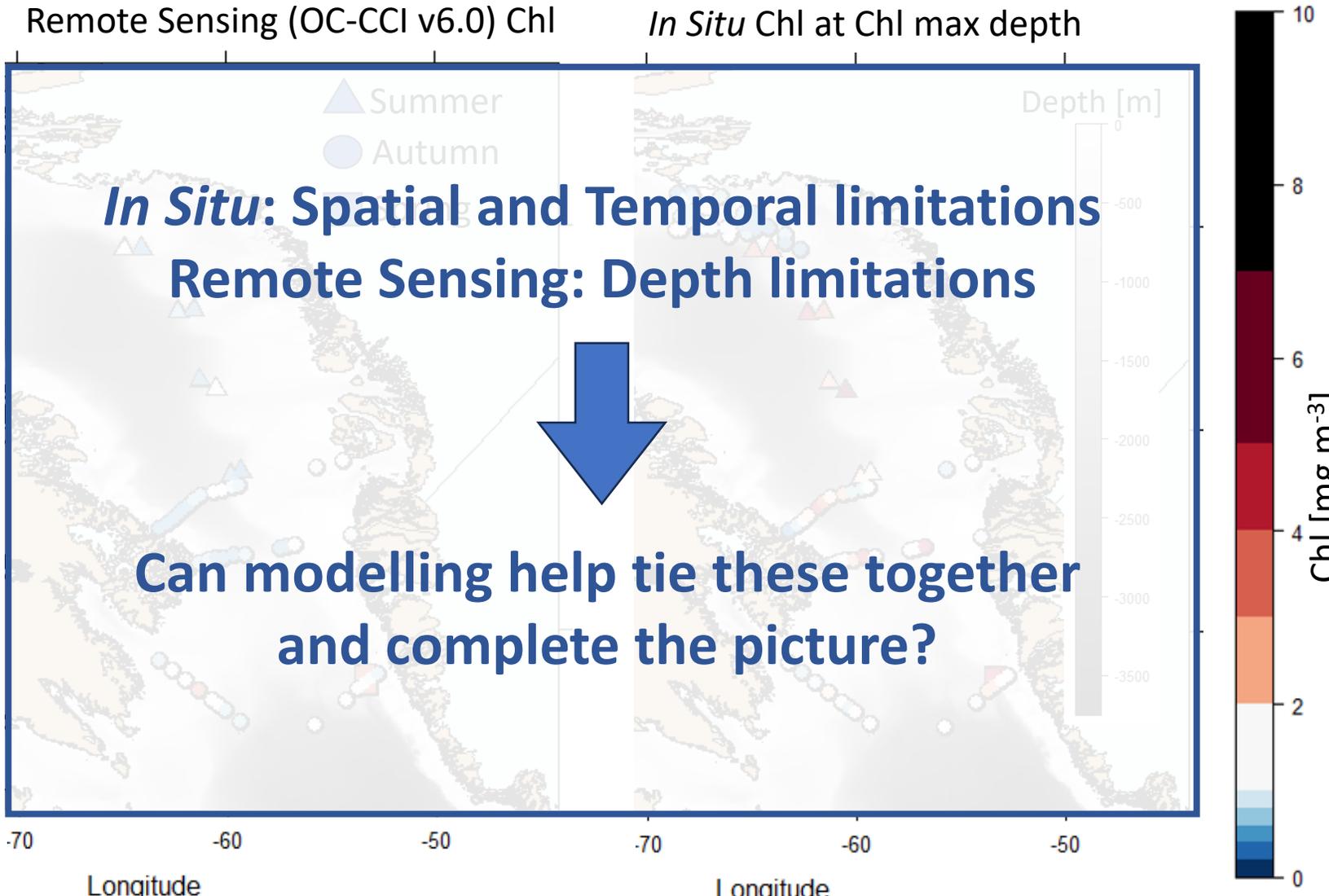


Depth limitations

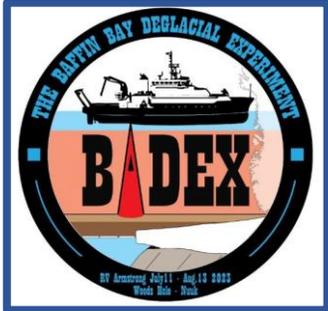
Underestimating the phytoplankton biomass



# Remote sensing and *in situ* chlorophyll *a* estimates



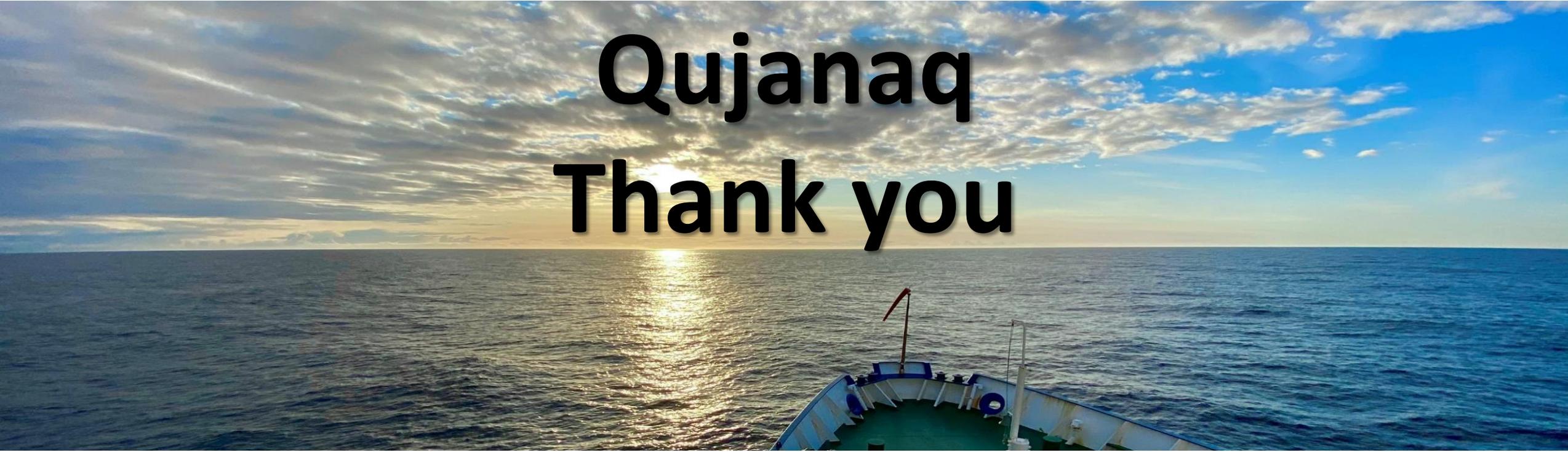
**POSTER REFERENCE**  
**Wednesday 4 Sep.**  
**56. Tobias Vonnahme**



OC-CCI: Sathyendranath et al. (2019). Sensors: 19, 4285



# Qujanaq Thank you



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