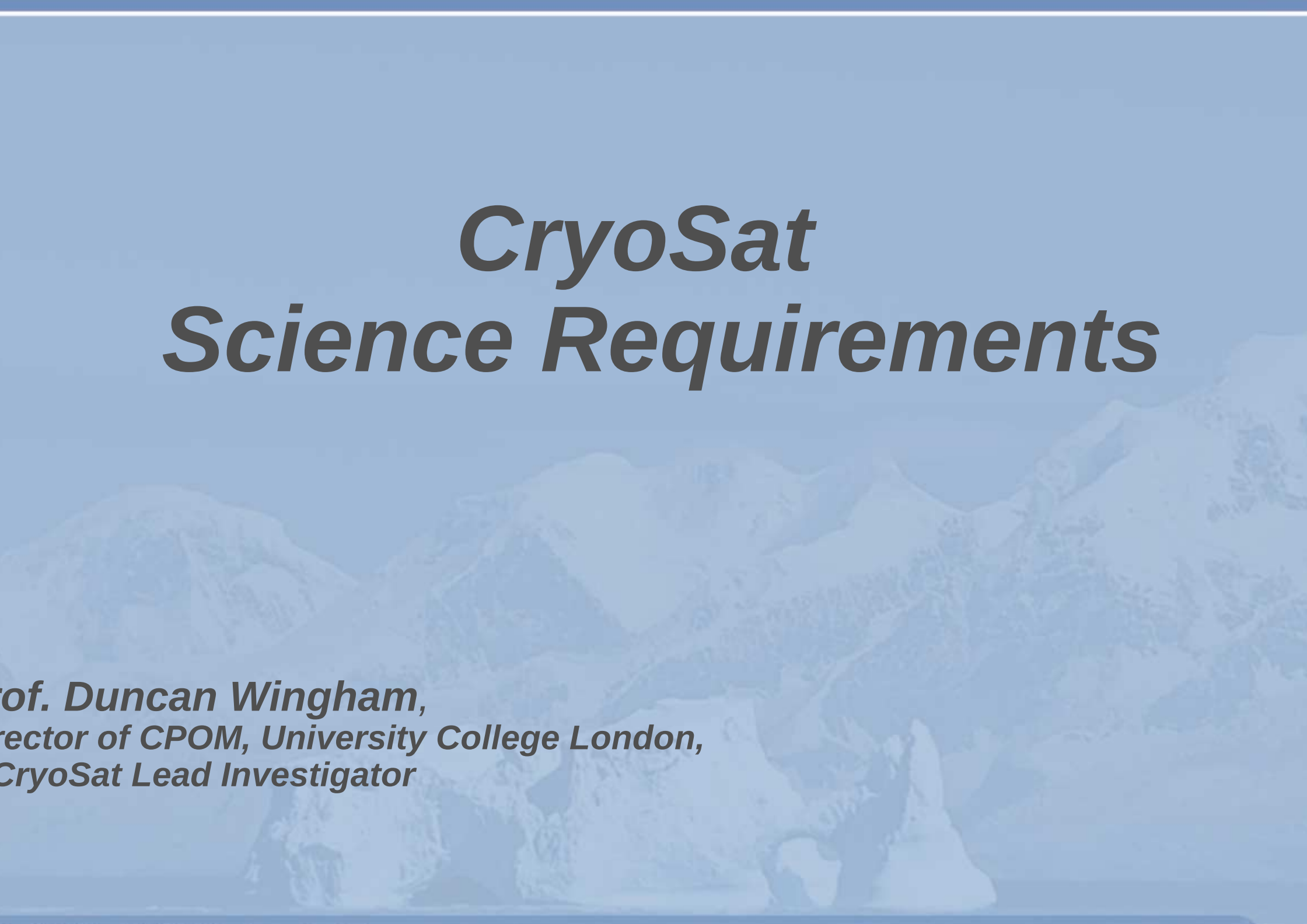
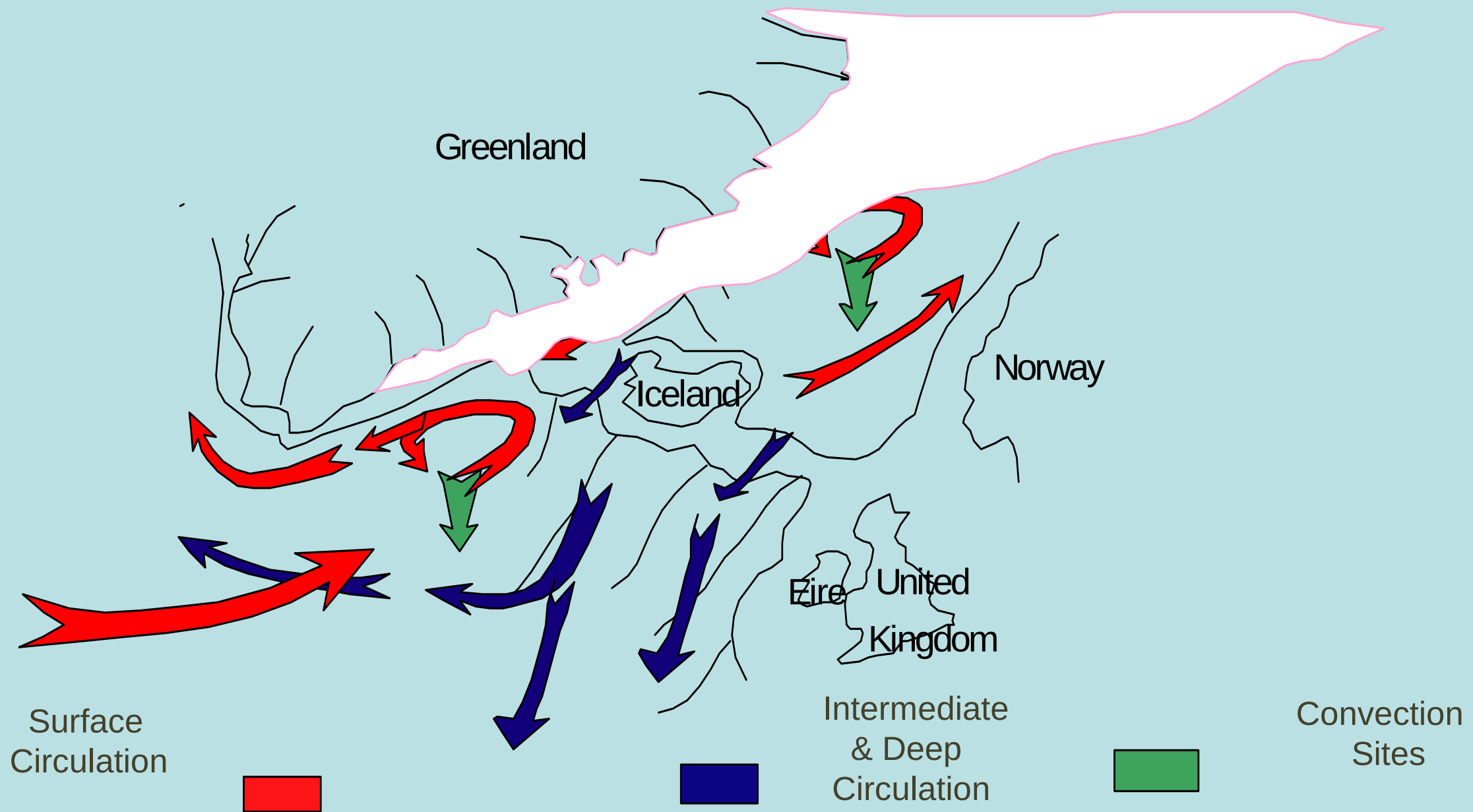




CryoSat Science Requirements

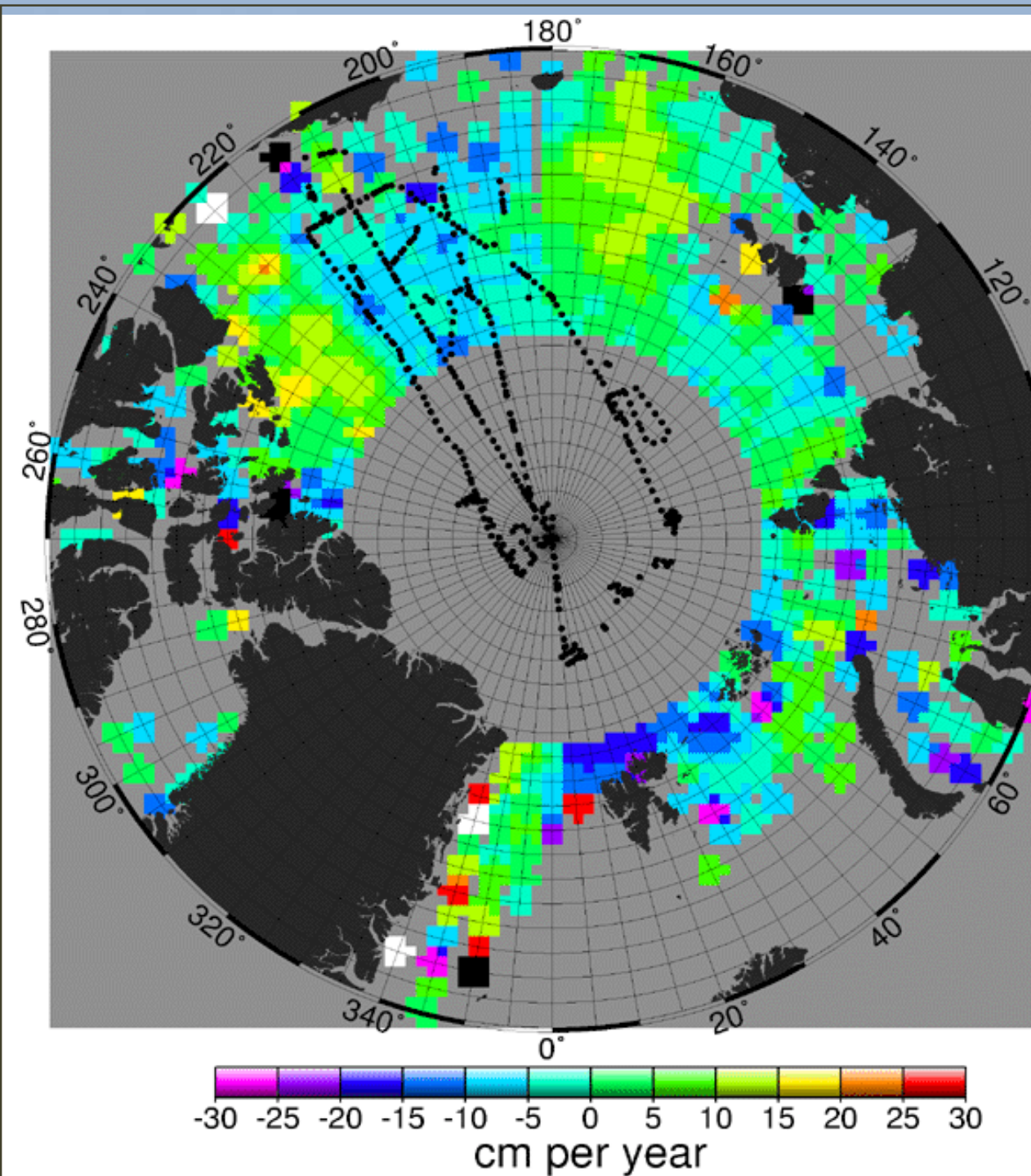
***Prof. Duncan Wingham,
Director of CPOM, University College London,
CryoSat Lead Investigator***

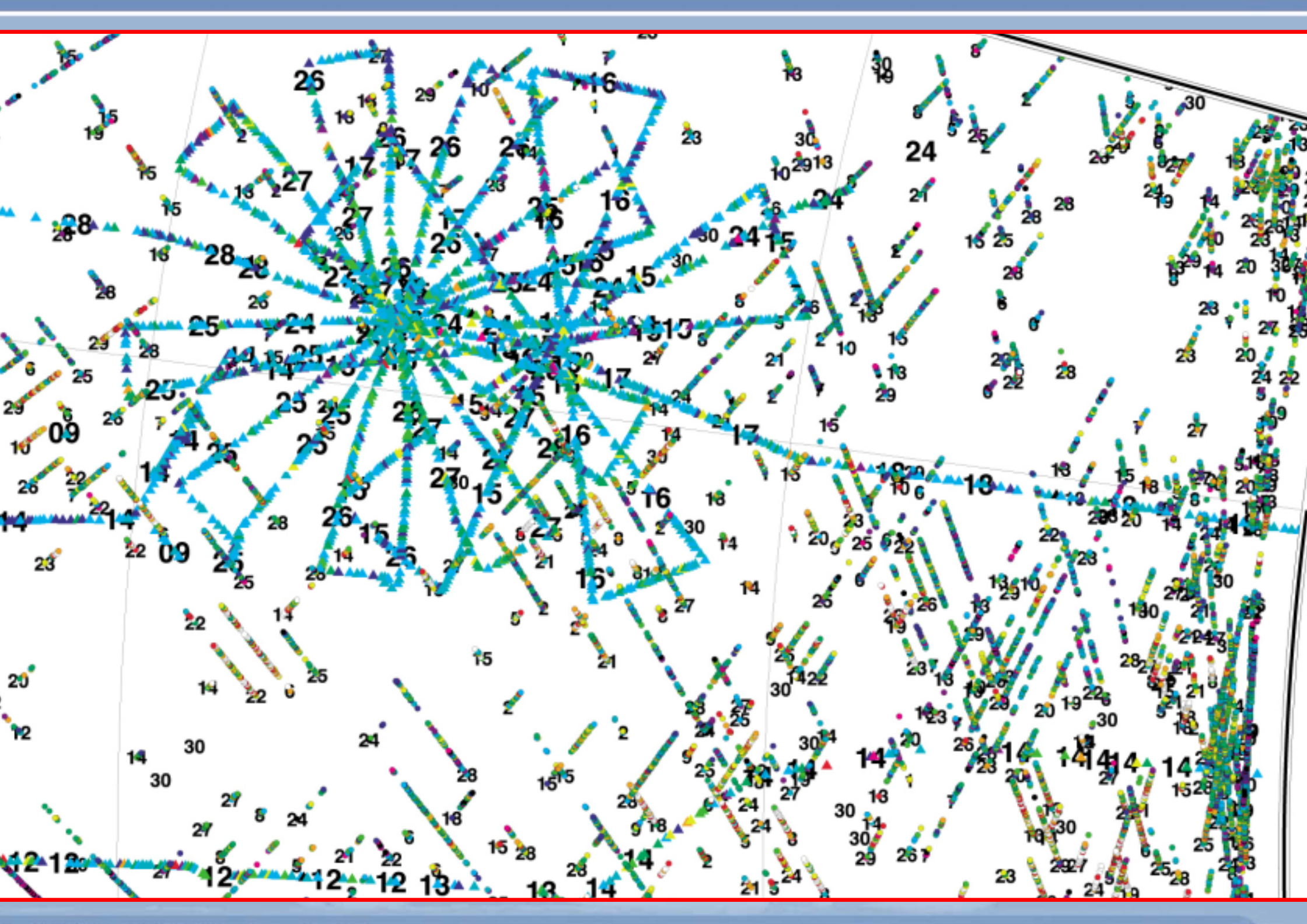
Arctic Ice and the Ocean Conveyor



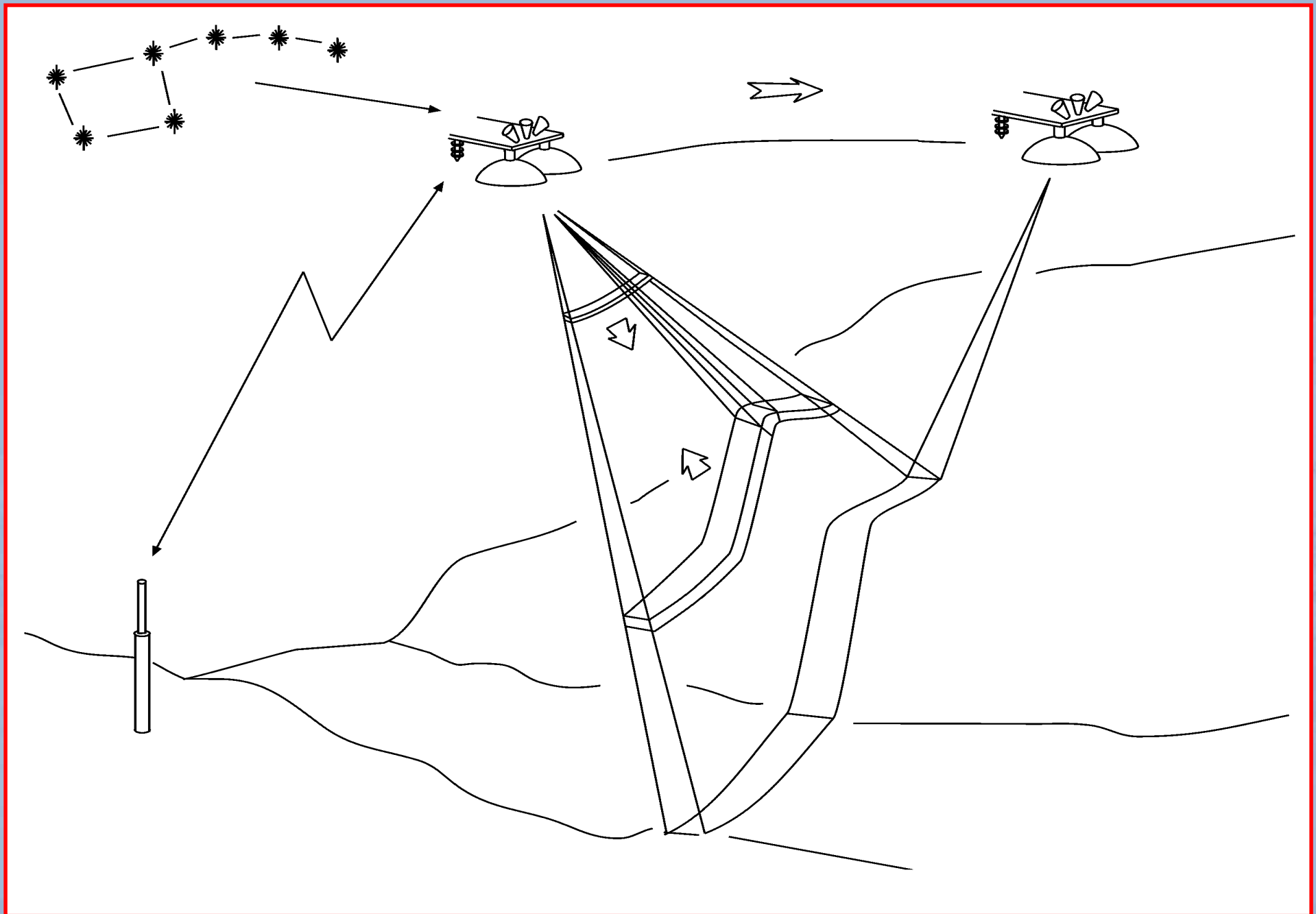
Arctic Ice Thinning?

Change in Ice Thickness 1958-76/1993-97
[Rothrock, 1999]





High Resolution Radar Altimetry



Science Requirement

$$\overline{\sigma}_r^2 = \overline{\sigma}_n^2 + \overline{\sigma}_m^2$$

The CryoSat Science and Measurement Requirements.

Requirement	Arctic Sea Ice 10^5 km^2	Ice Sheets 10^4 km^2	Ice Sheets $13.8 \times 10^6 \text{ km}^2$
$\overline{\sigma}_r (\eta_r)$	3.5 cm yr ⁻¹ i.e.	8.3 cm yr ⁻¹ i.e.	0.76 cm yr ⁻¹ i.e. (92 Gt yr ⁻¹)
$\overline{\sigma}_m$	1.6 cm yr ⁻¹	3.3 cm yr ⁻¹	0.17 cm ⁻¹

CryoSat will, in its own lifetime

determine whether the present observed changes in sea ice signal important changes in Arctic climate or merely the ephemera of interannual variability at short spatial scales;

and reduce the uncertainty in the ice sheet contribution to sea level to a magnitude similar to that associated with other sources of sea level rise”