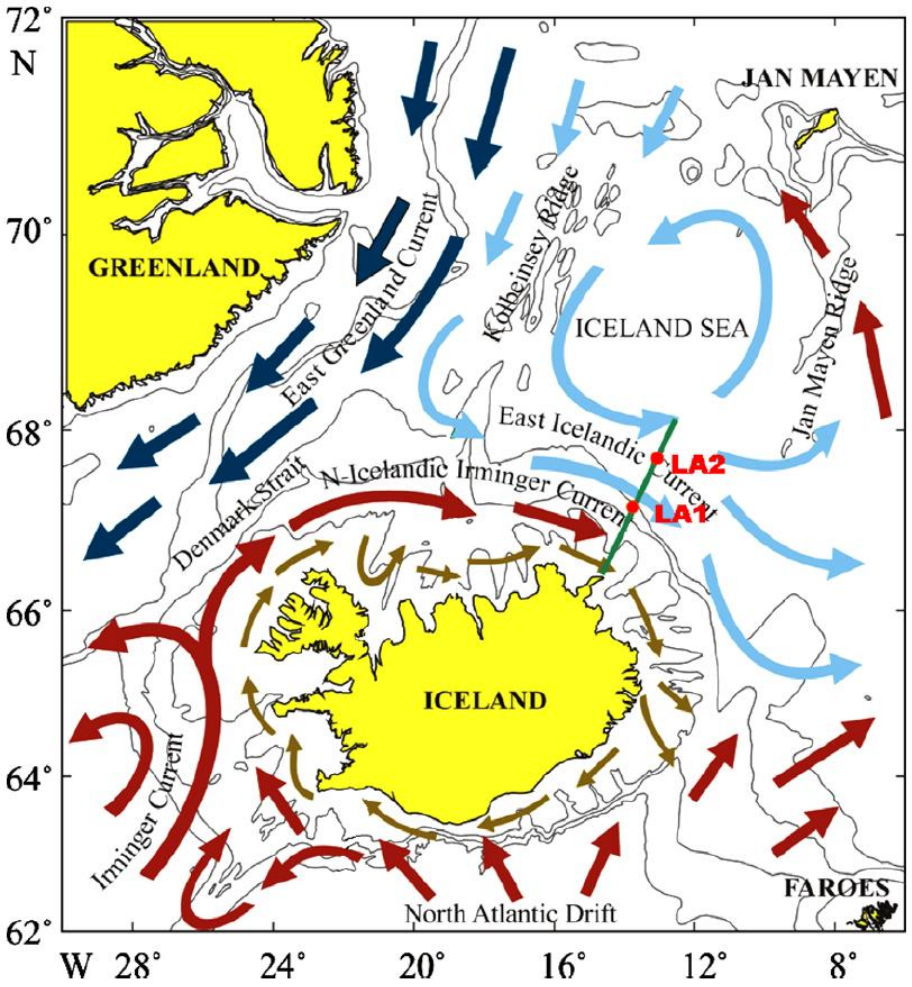
Iceland Sea Project

Bob Pickart, Kent Moore, Ian Renfrew,
Tom Bracegirdle, Kjetil Vage, Hedin Valdimarsson, Steingrumur Jonsson, Nina Petersen, Haraldur Olafsson
Marius Jonassen

Surface circulation



Jónsson (2007)

- Iceland Sea convection sensitive to influx of surface fresh water
- Magnitude of wind stress curl is important
- Typical mixed layer depths about 200 m

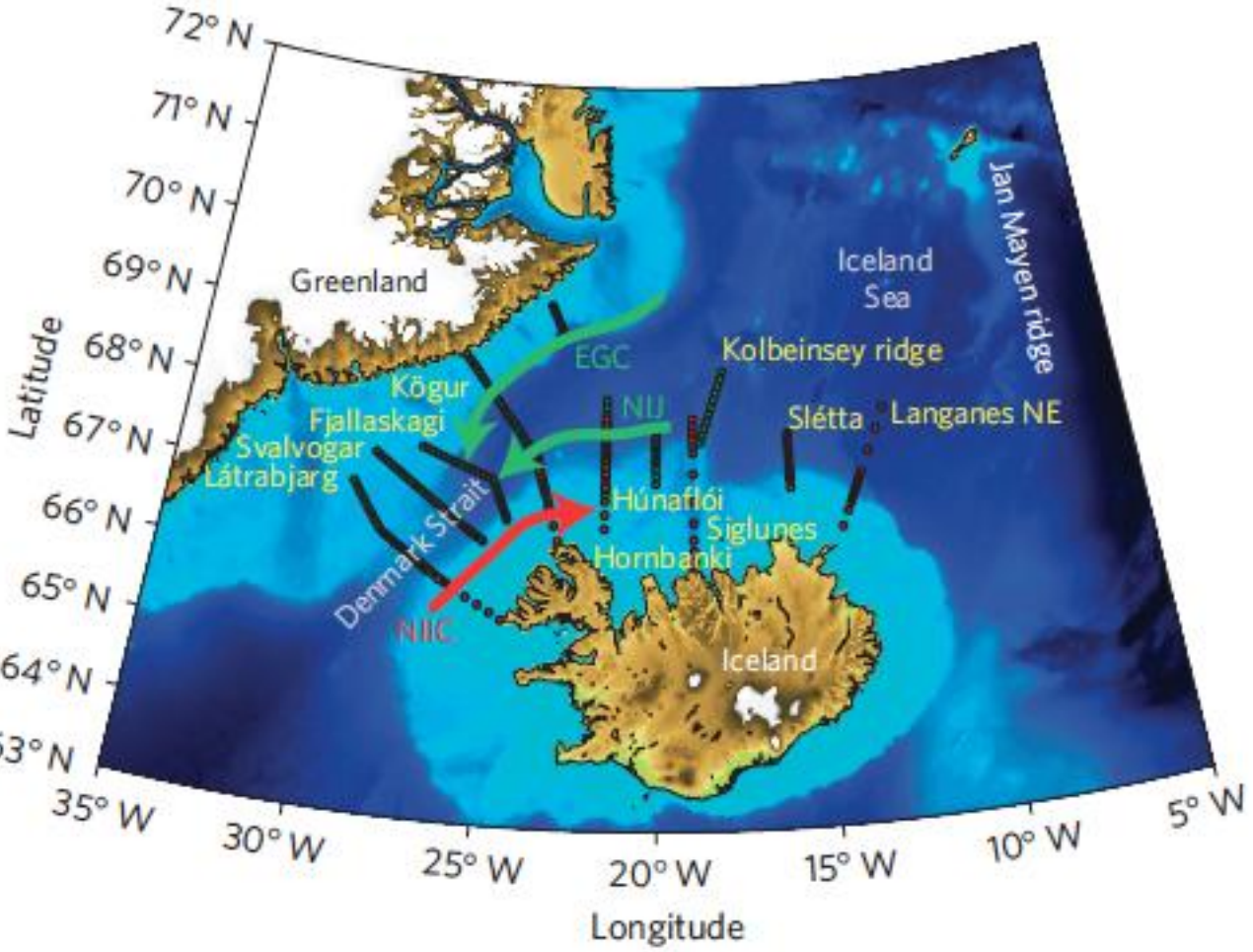
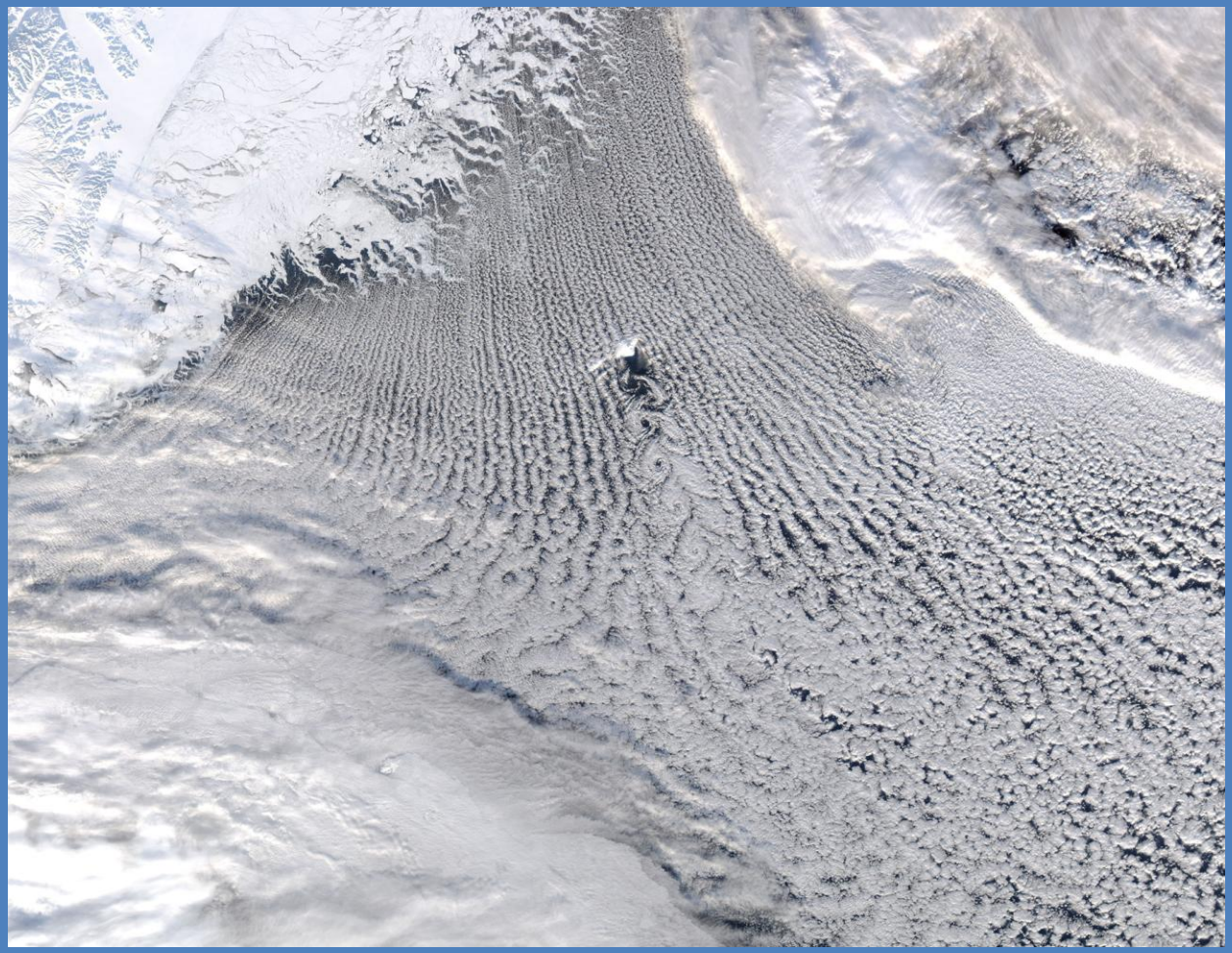


Figure 1 | Flow through the Denmark Strait. Stations from the October 2008 and August 2009 surveys are marked in green and red, respectively. The sections are referred to by names (the names originate from nearby features along the Icelandic coast). EGC, East Greenland Current; NIJ, North Icelandic Jet; NIIC, North Icelandic Irminger Current.

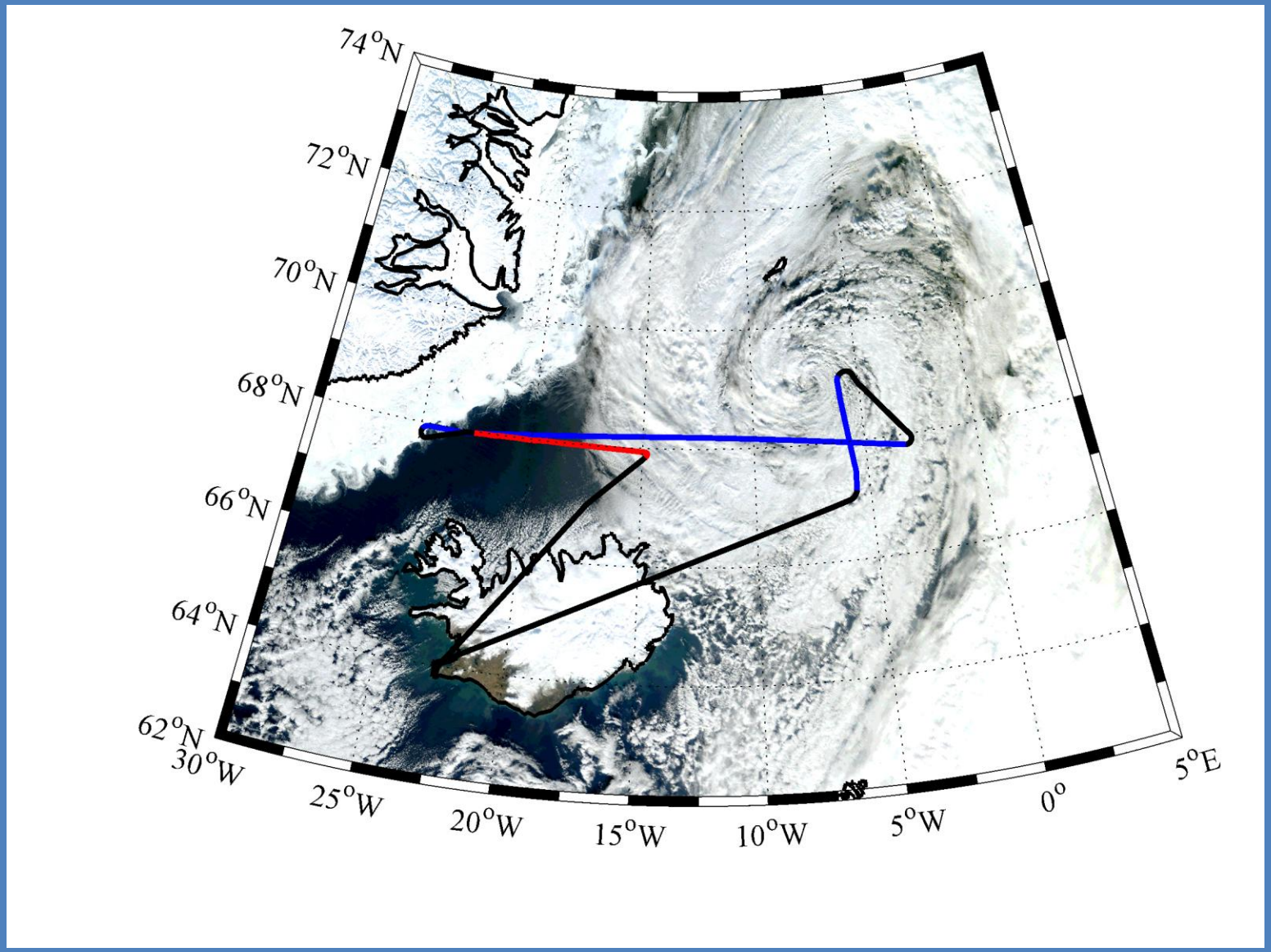
From Vage et al. 2010, Nature Geoscience

A Climatology of the Surface Meteorology of the Iceland Sea



G.W.K. Moore
University of Toronto

Motivation



MODIS Image of Feb 15 2007 with the Norwegian Sea

"Research aircraft measurements of a polar low over the Norwegian Sea" by Shapiro et al Tellus 1987

Cold air outbreak climatology

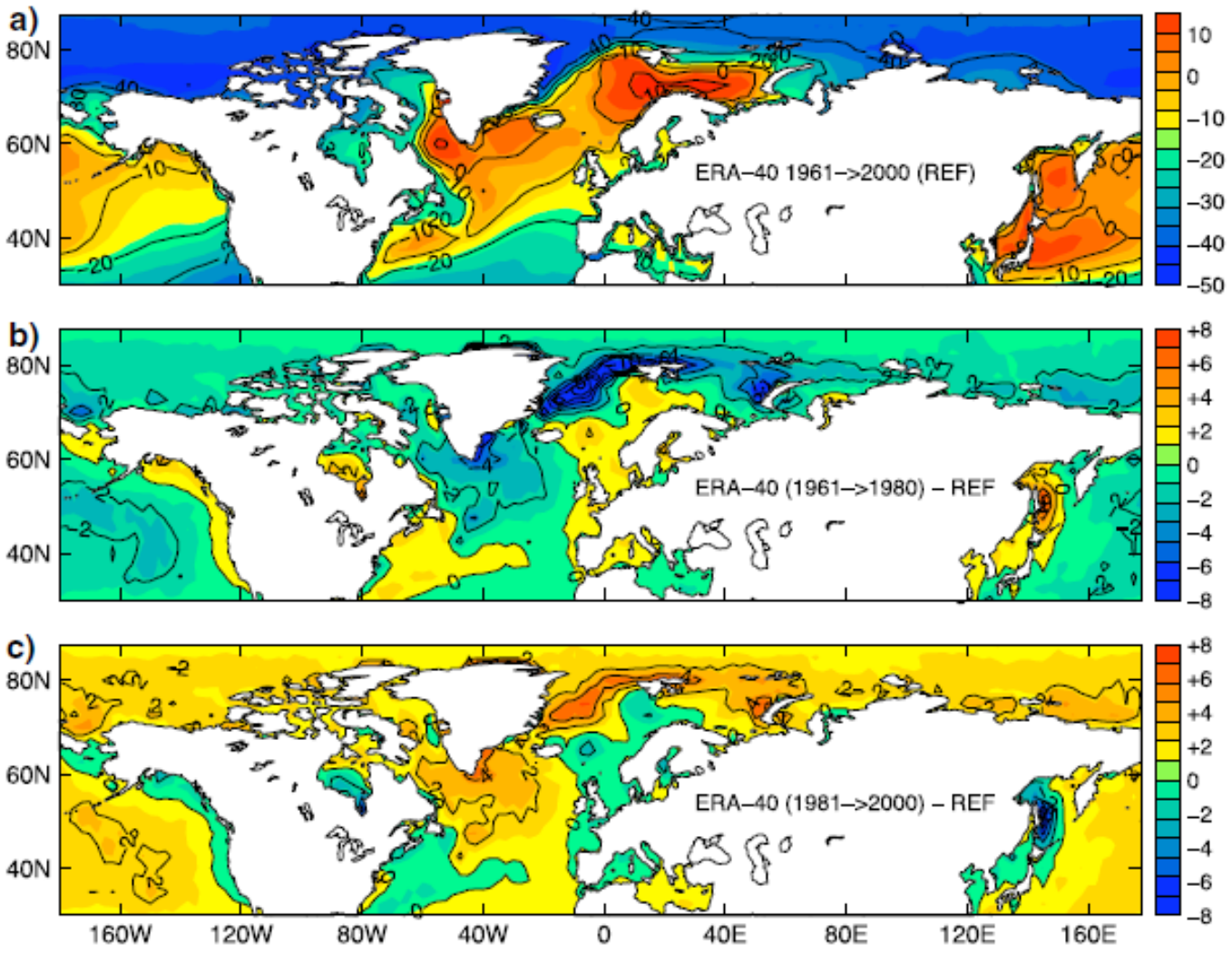


Fig. 2 The MCAO indicator 0.95 quantiles based on ERA-40; **a** for the reference period 1961–2000; **b** the difference between the quantiles for the period 1961–1980 and the reference period; **c** the difference between the quantiles for the period 1981–2000 and the reference period. The unit is K/bar

CAO – climate predictions

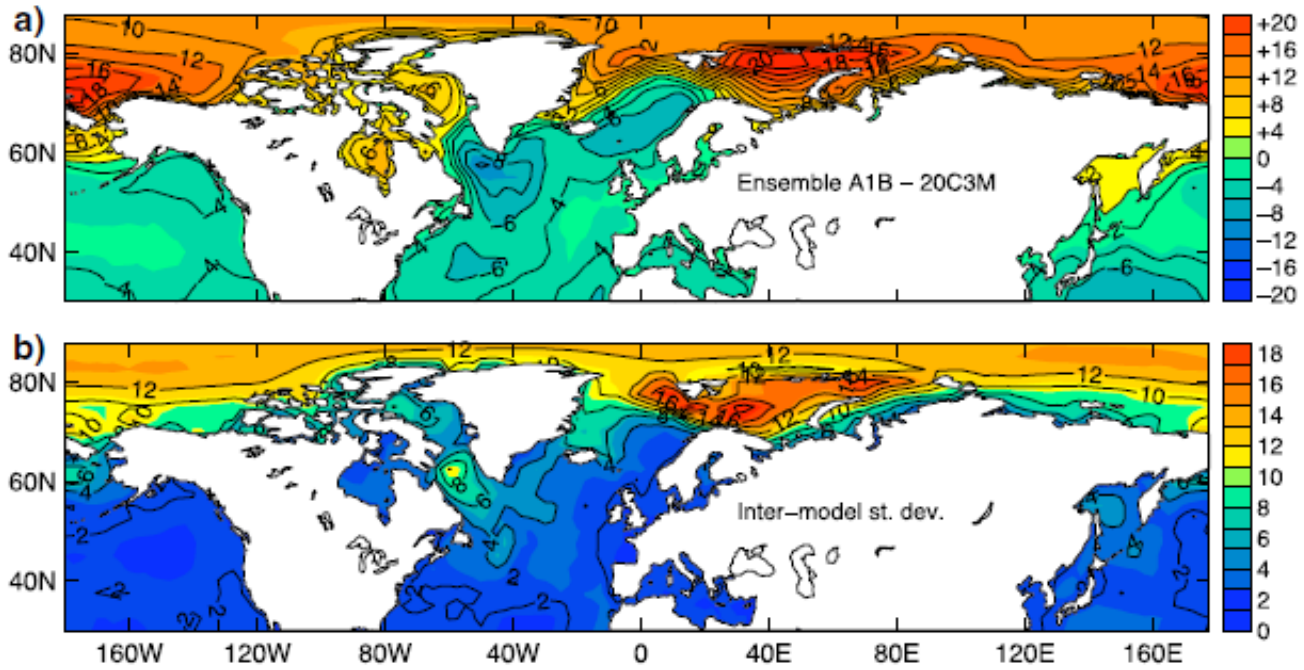
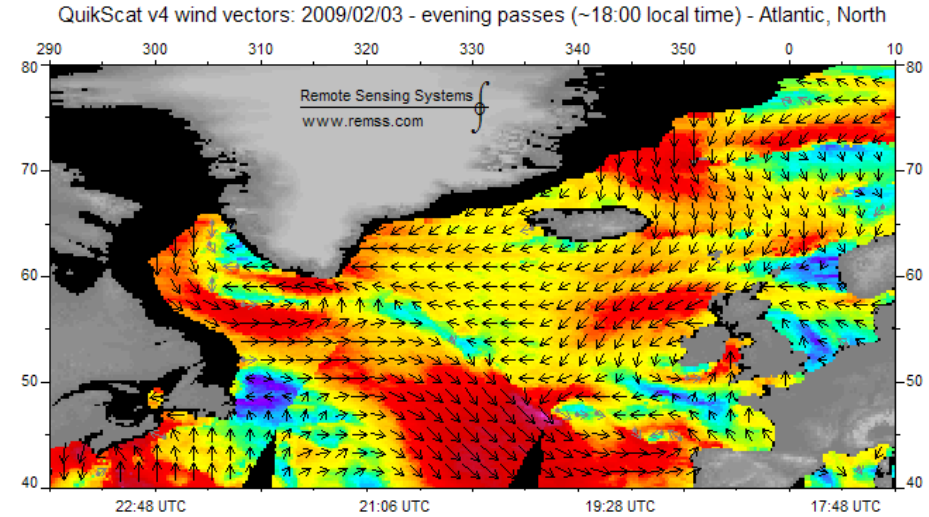
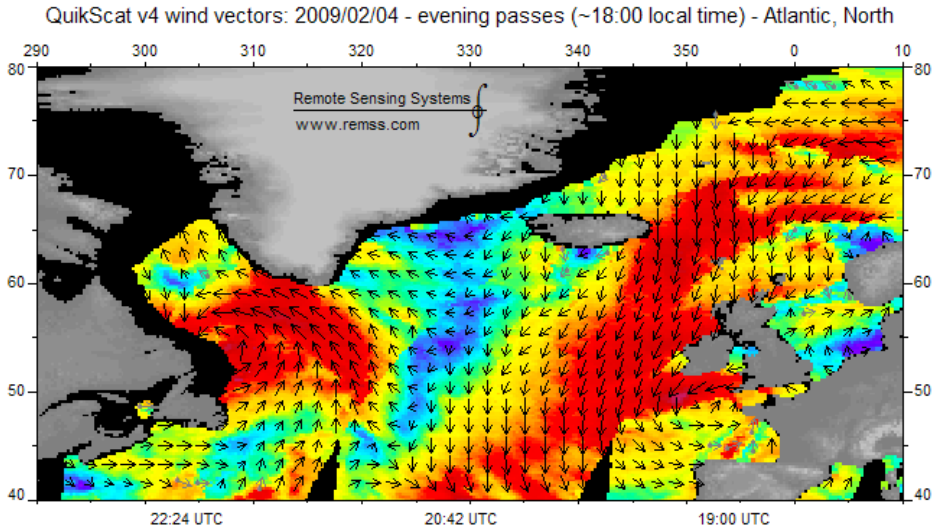


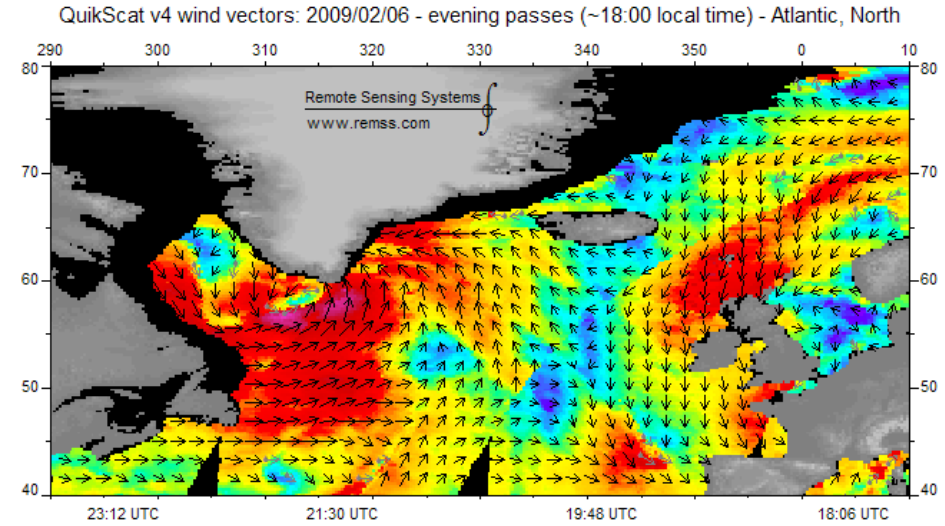
Fig. 7 **a** The 13-member model ensemble mean of the MCAO indicator 0.95 quantiles for the period 2081–2100 (A1B scenario) minus the mean of the 1981–2000 (20C3M scenario) 0.95 quantiles; **b** the inter-model standard deviation of the differences. The unit is K/bar

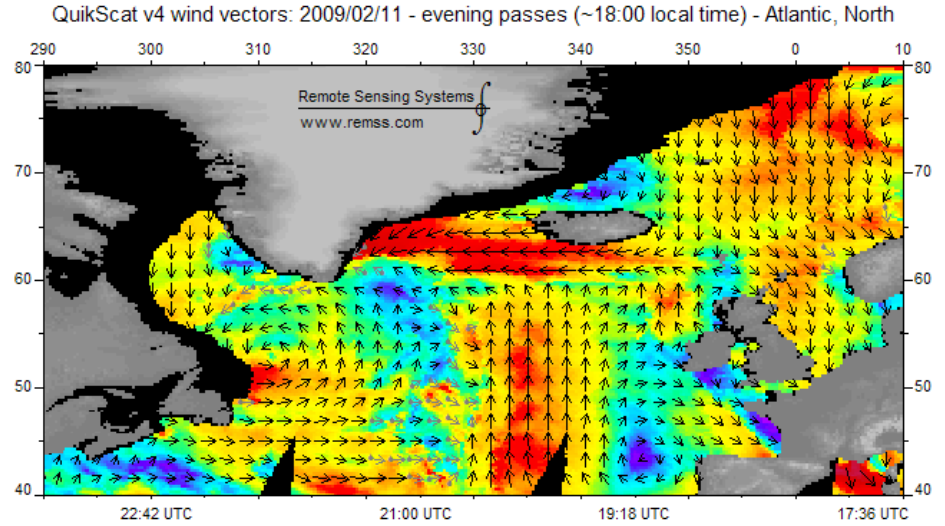
Cold-air outbreak cases

- This CAO lasts around 8-9 days (based on quikscat winds)
- Influenced by static low development over Norway (later in period)



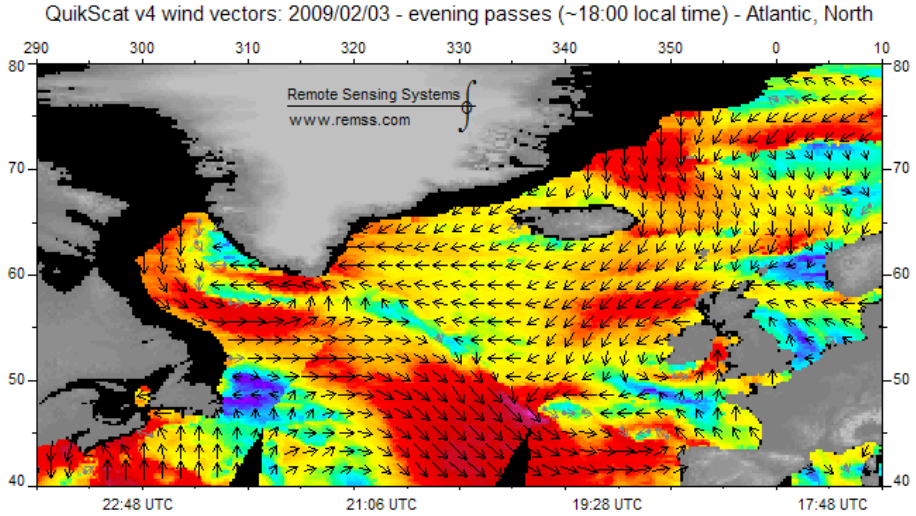


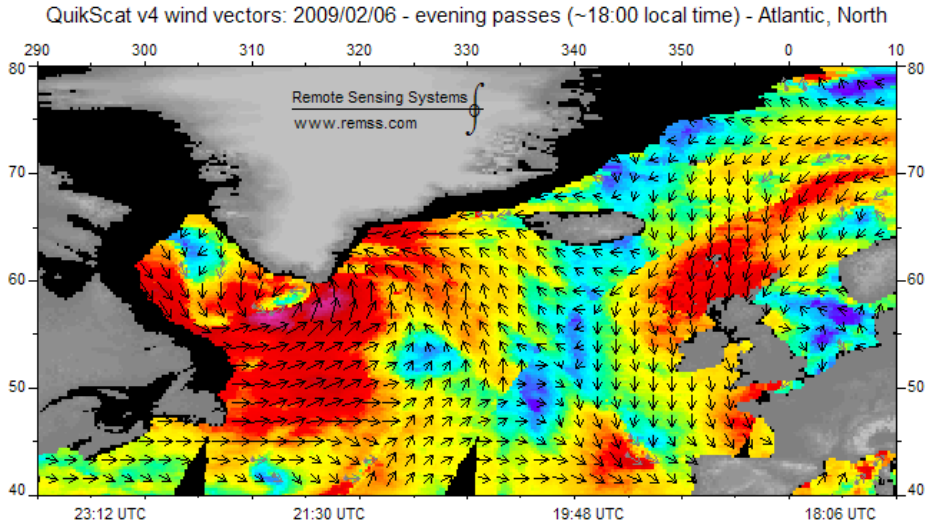


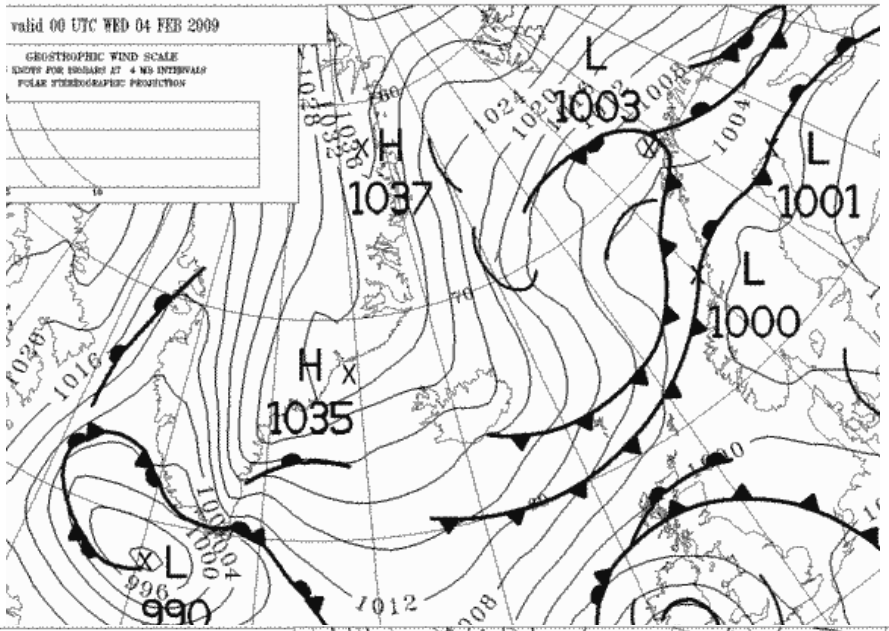


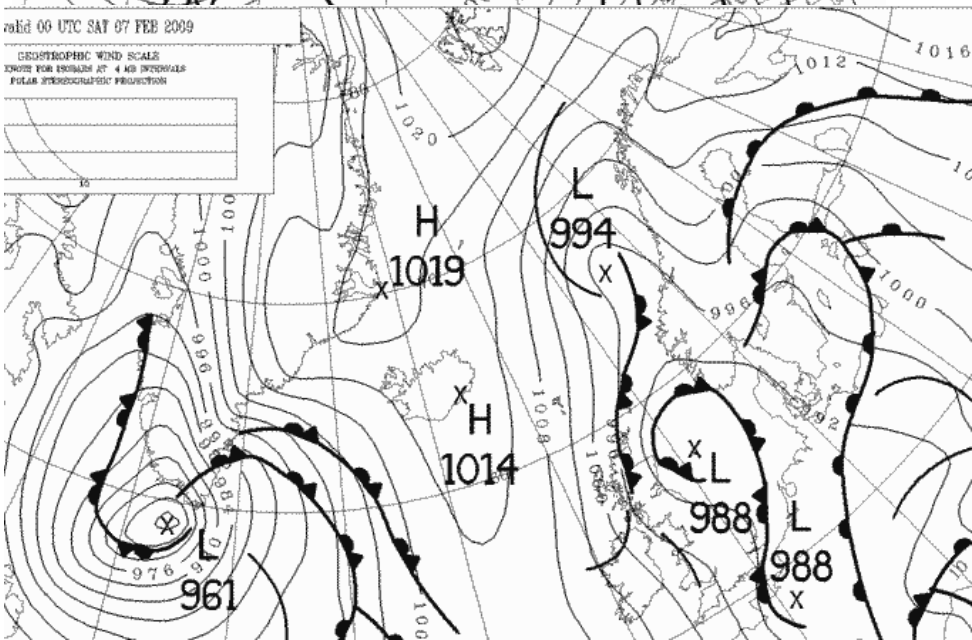
Cold-air outbreak cases

- This CAO lasts around 8-9 days (based on quikscat winds)
- Probably PL embedded in CAO









Iceland Sea – FAAM Logistics

- Operators: Joint NERC & Met. Office
- Altitude: 100 ft (level over sea) to ~35,000 ft
- Range: ~3700 km
- Endurance: ~6 hours (5.5 more realistic)

Plans

- Field campaign in Jan-Mar 2015
- Please get in touch