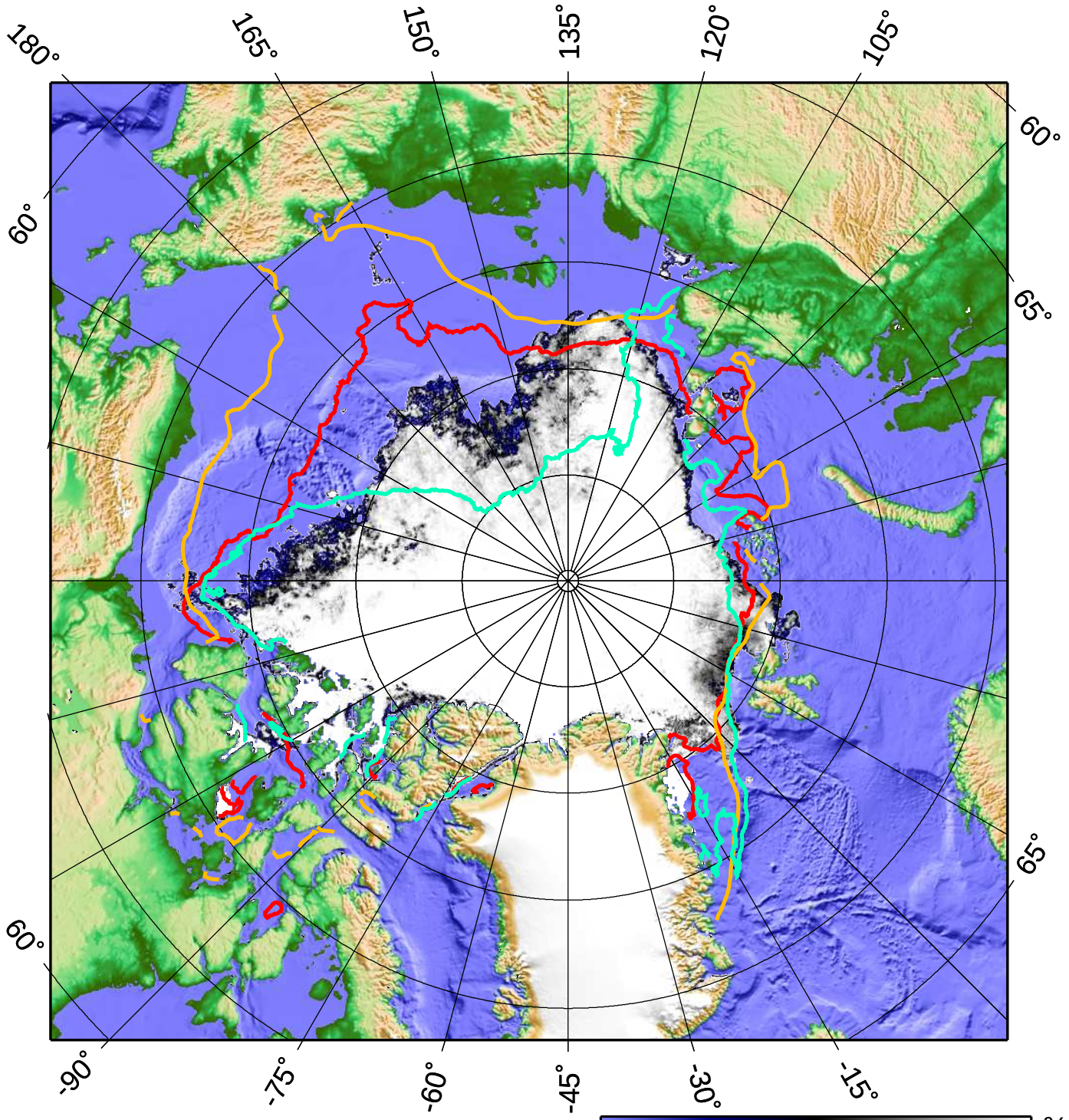
Lars Kaleschke
2008 Sea Ice Minimum Summary Report

The preconditioning—very likely, a thinner sea ice cover—was the reason for the false statistical prediction of the sea ice minimum. The last two years clearly fall out of the statistical cluster of the years before. The anomalous rapid retreat of the ice area in August could not be explained by the summer—nor by the wintertime atmospheric forcing. In September 2008, the sea ice area minimum was less than 5% larger than the September 2007 sea ice area minimum as derived from AMSR-E 89 GHz data. The absolute difference is so small that only a few days with different forcing could have put 2008 for another record. Passive microwave observations of the sea ice area are well validated and reliable. The largest uncertainties arise from the melted ice surface and research should be prompted in the investigation and quantification of this error source. The greatest unknown is sea ice thickness. More ice mass balance buoys should be deployed and extensive EM measurements should be conducted. The new satellite altimeter systems such as ICESAT and CRYOSAT offer the possibility of ice thickness measurement from space. The development of a fully coupled ocean-ice-atmosphere prediction system is a key issue for a better outlook and for climate predictions on a decadal time scale. The problem of the initialization is only one of the fundamental challenges towards such a system.

2008 Minimum Sea Ice Extent

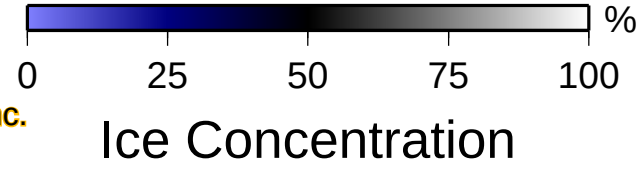


AMSR-E ASI 2008-09-18

orange: Sep 1979-1983 SMMR Bootstrap 50% ice conc.

red: Sep 2002-2006 AMSR-E ASI 50% ice conc.

green: Sep 2007 AMSR-E ASI 50% ice conc.



Ice Concentration