

Sea Ice Outlook Meeting: *What We Learned from 2009 and Future Plans*

Jim Overland and Hajo Eicken

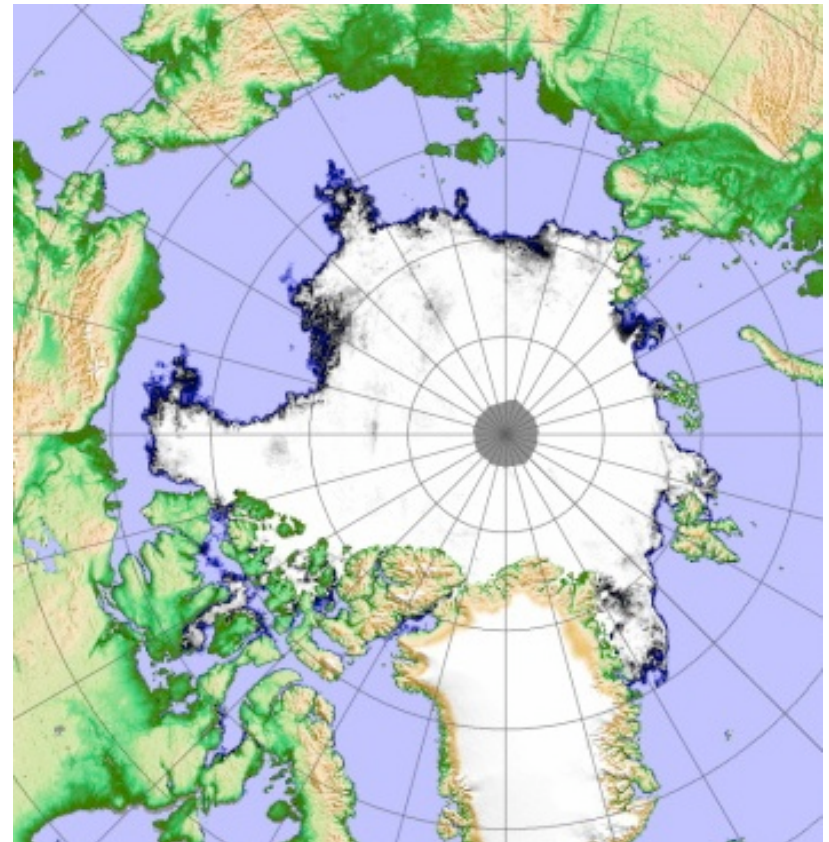
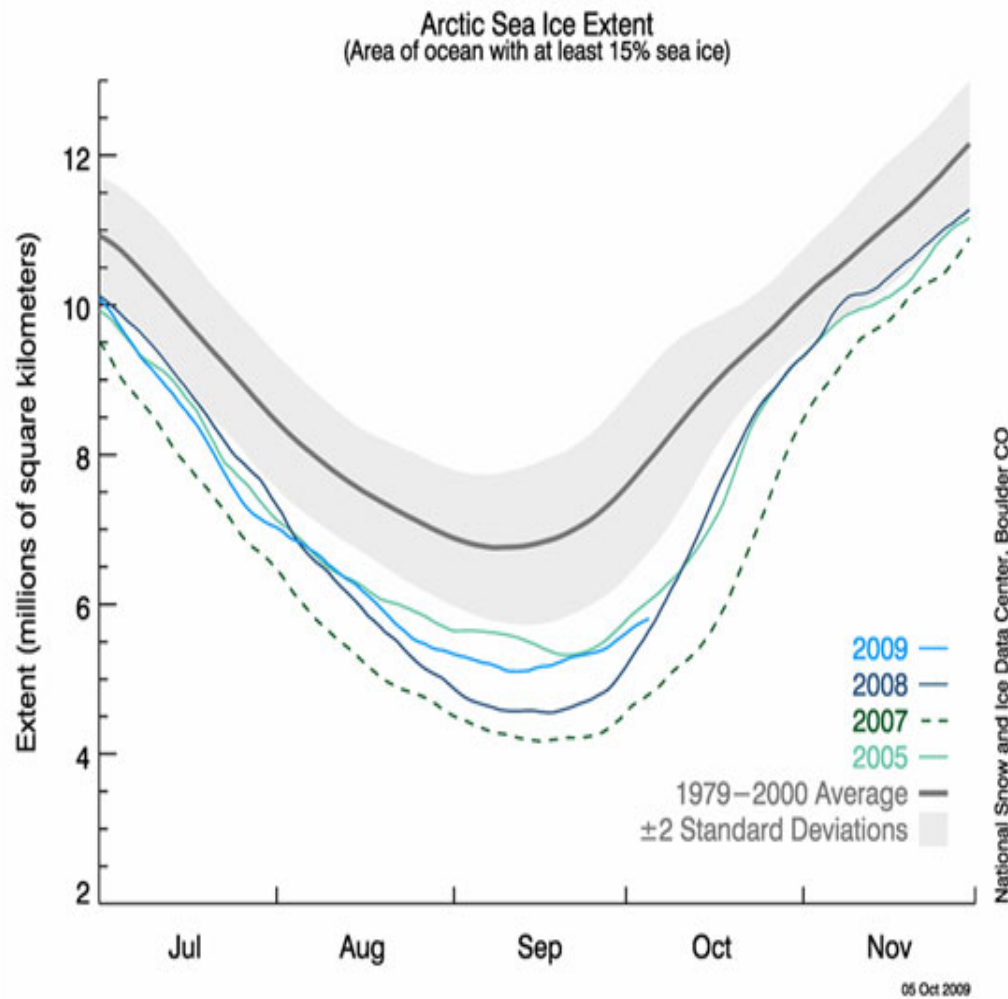
16 December 2009

ARCUS Community Meeting Room at AGU

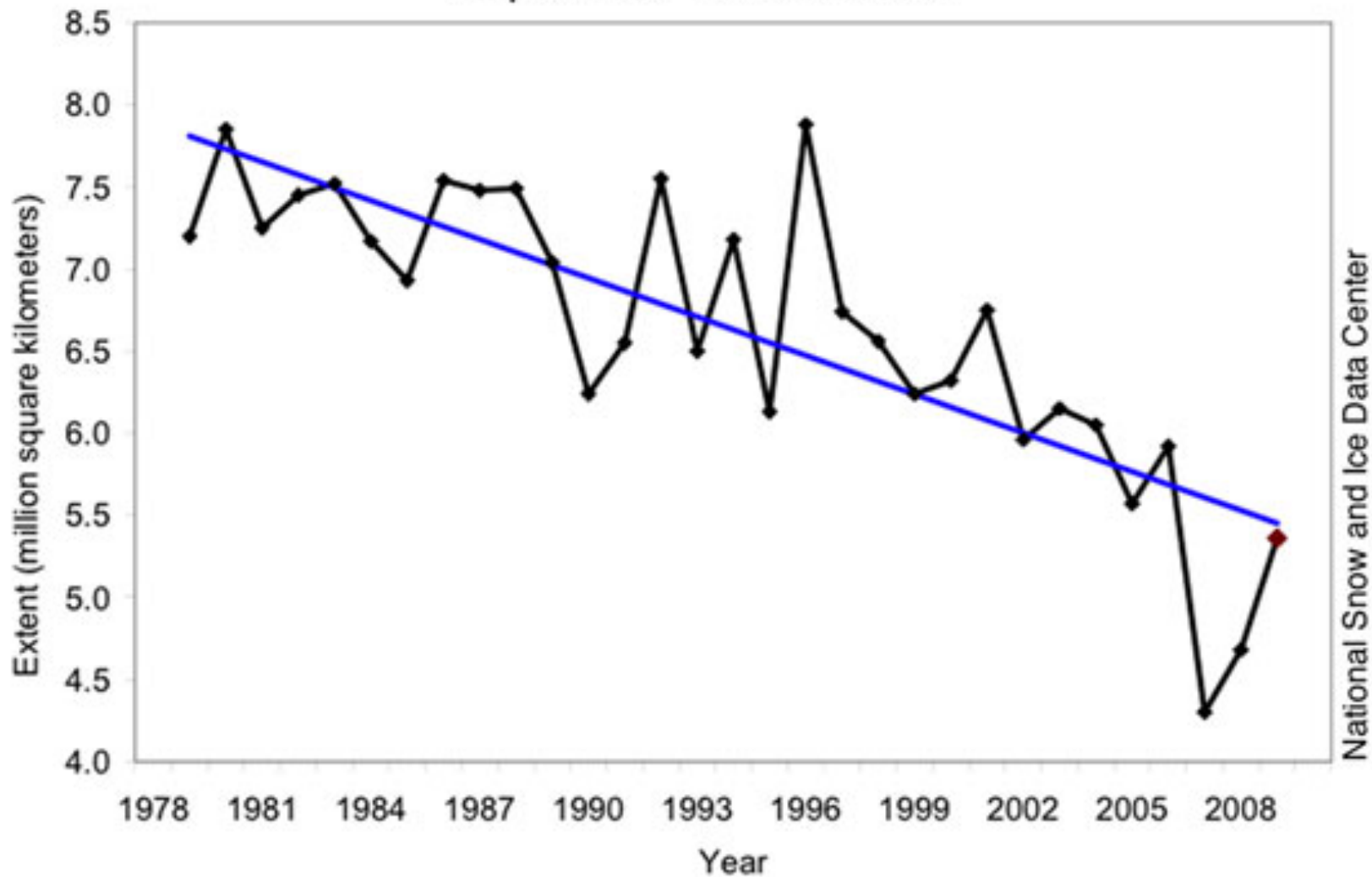
San Francisco, California



Sea Ice 16 Sept 2009

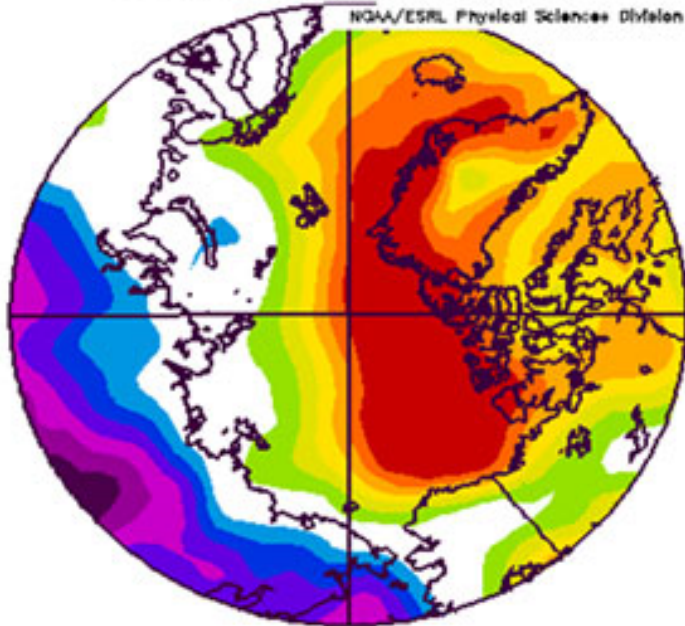


Average Monthly Arctic Sea Ice Extent
September 1979 to 2009



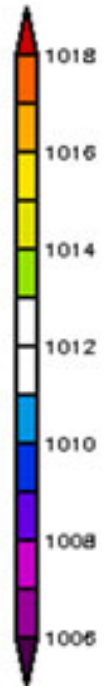
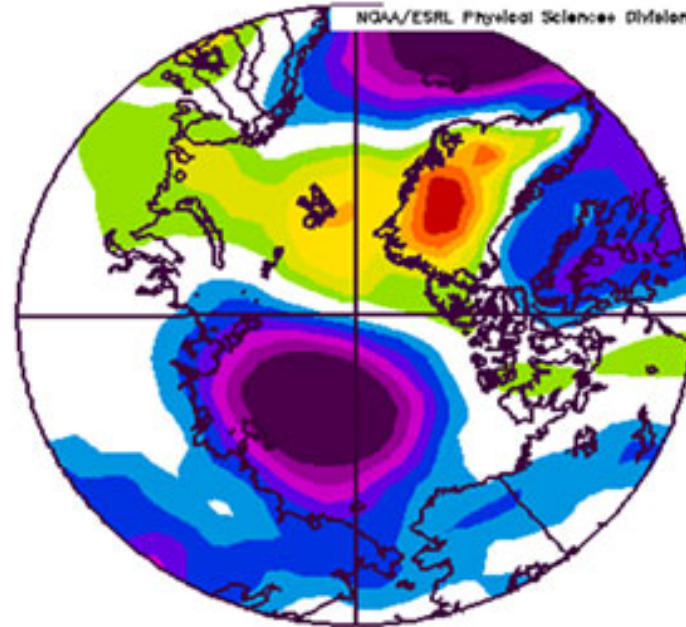
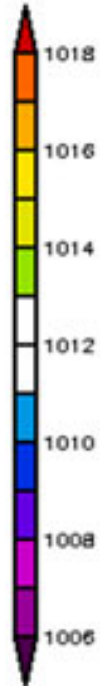
National Snow and Ice Data Center

NCEP/NCAR Reanalysis
Sea Level Pressure (mb) Composite Mean
NOAA/ESRL Physical Sciences Division



Jun to Jul: 2009

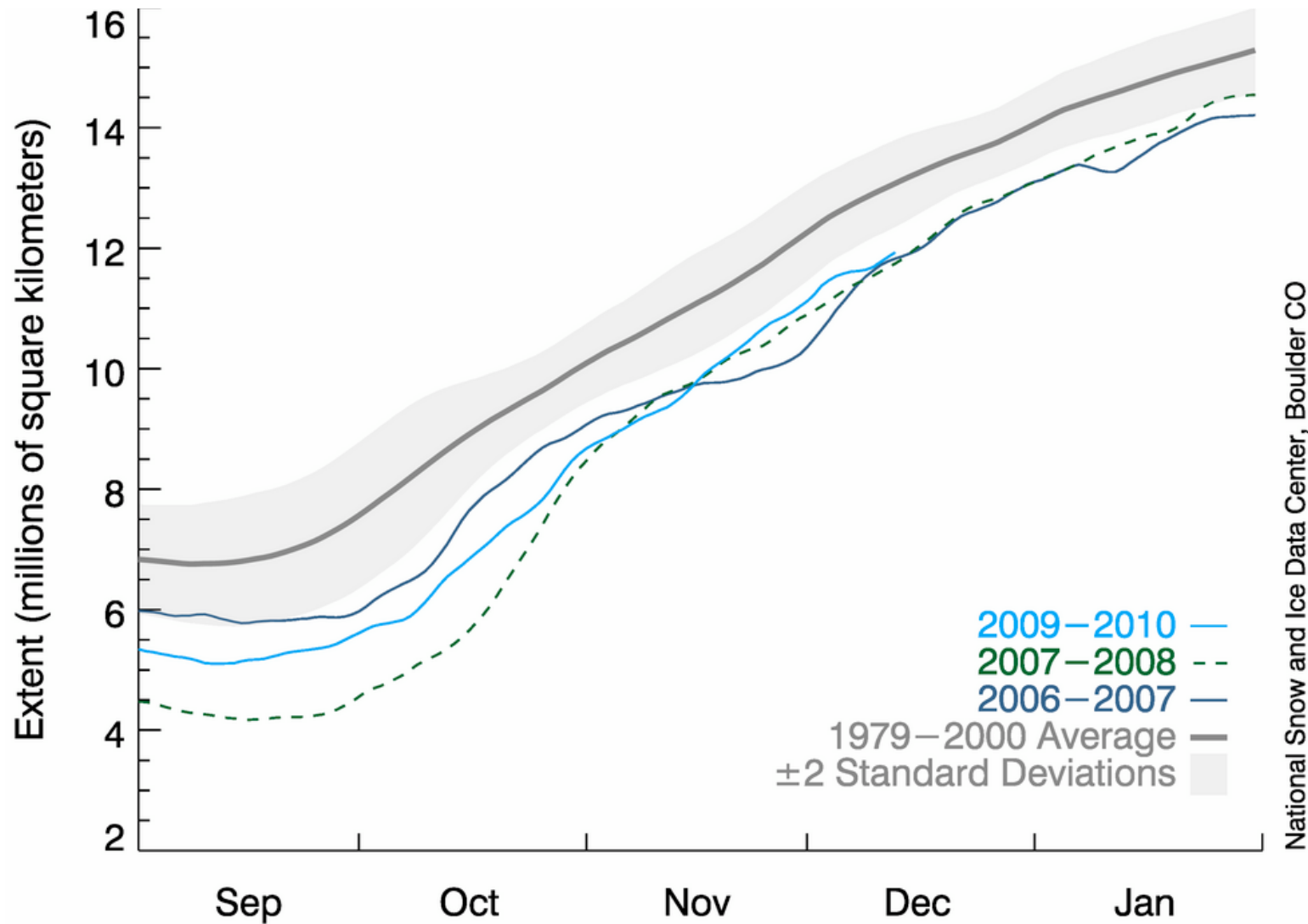
NCEP/NCAR Reanalysis
Sea Level Pressure (mb) Composite Mean
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Aug 2009

ARCTIC DIPOLE SLP in JUNE-JULY

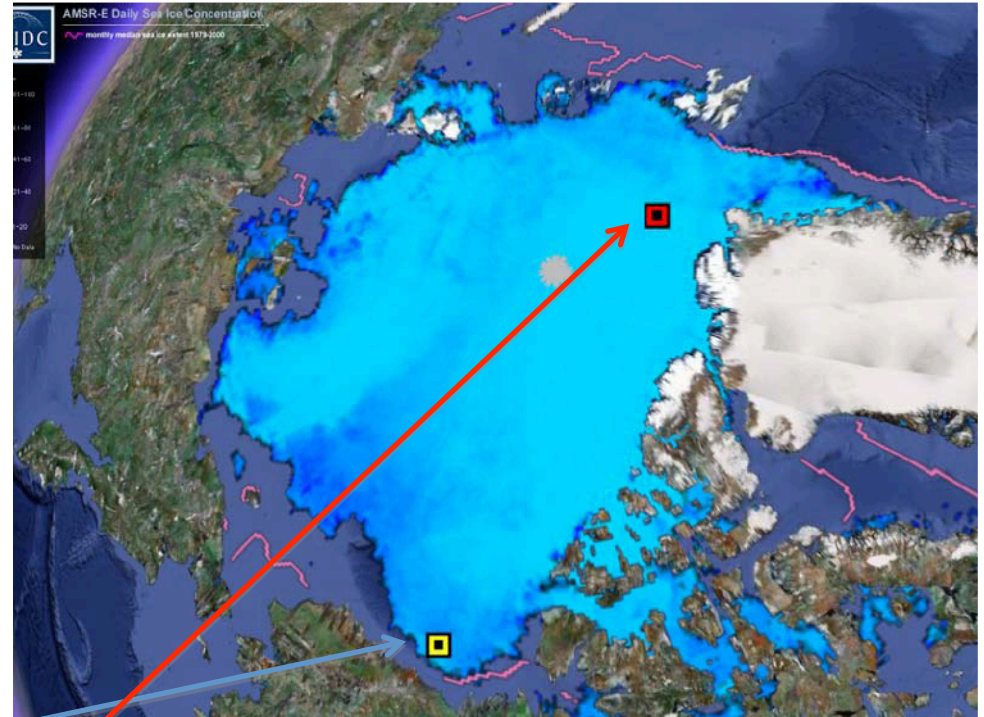
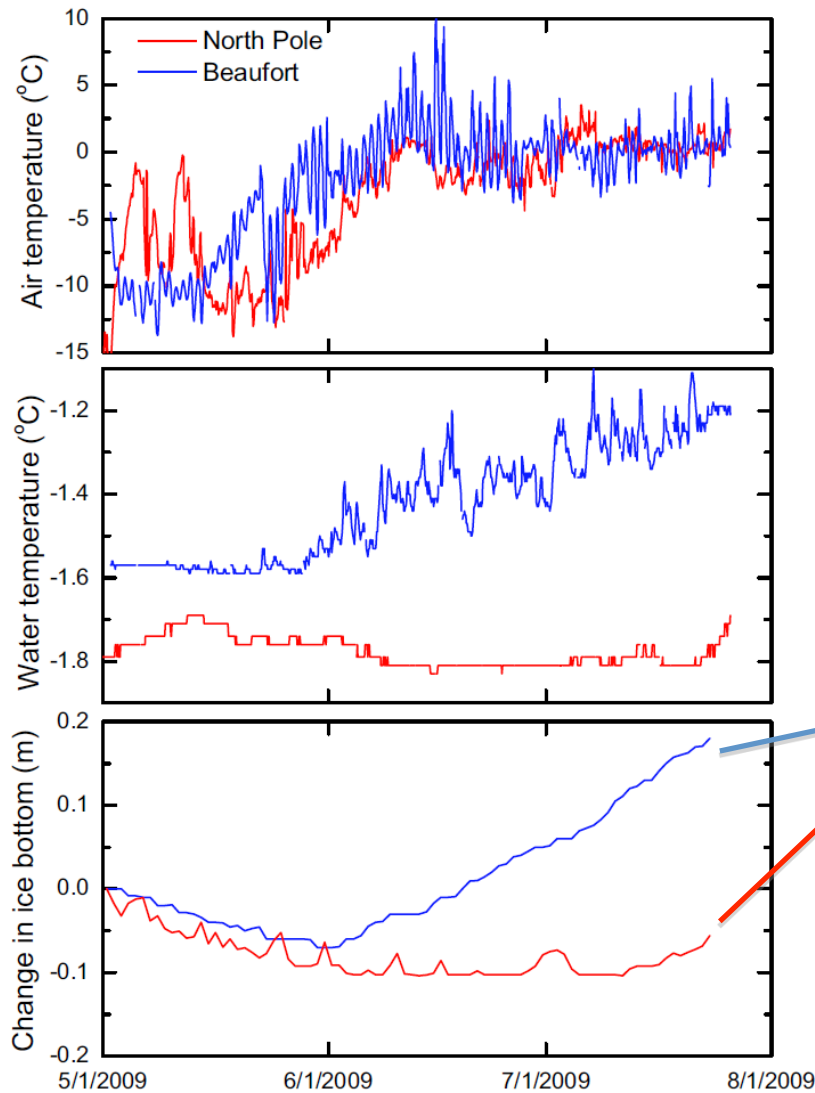
But, the delayed fall freeze-up in 2009 suggested by the photos is also seen in satellite observations of Arctic sea ice extent, and was a surprise to scientists



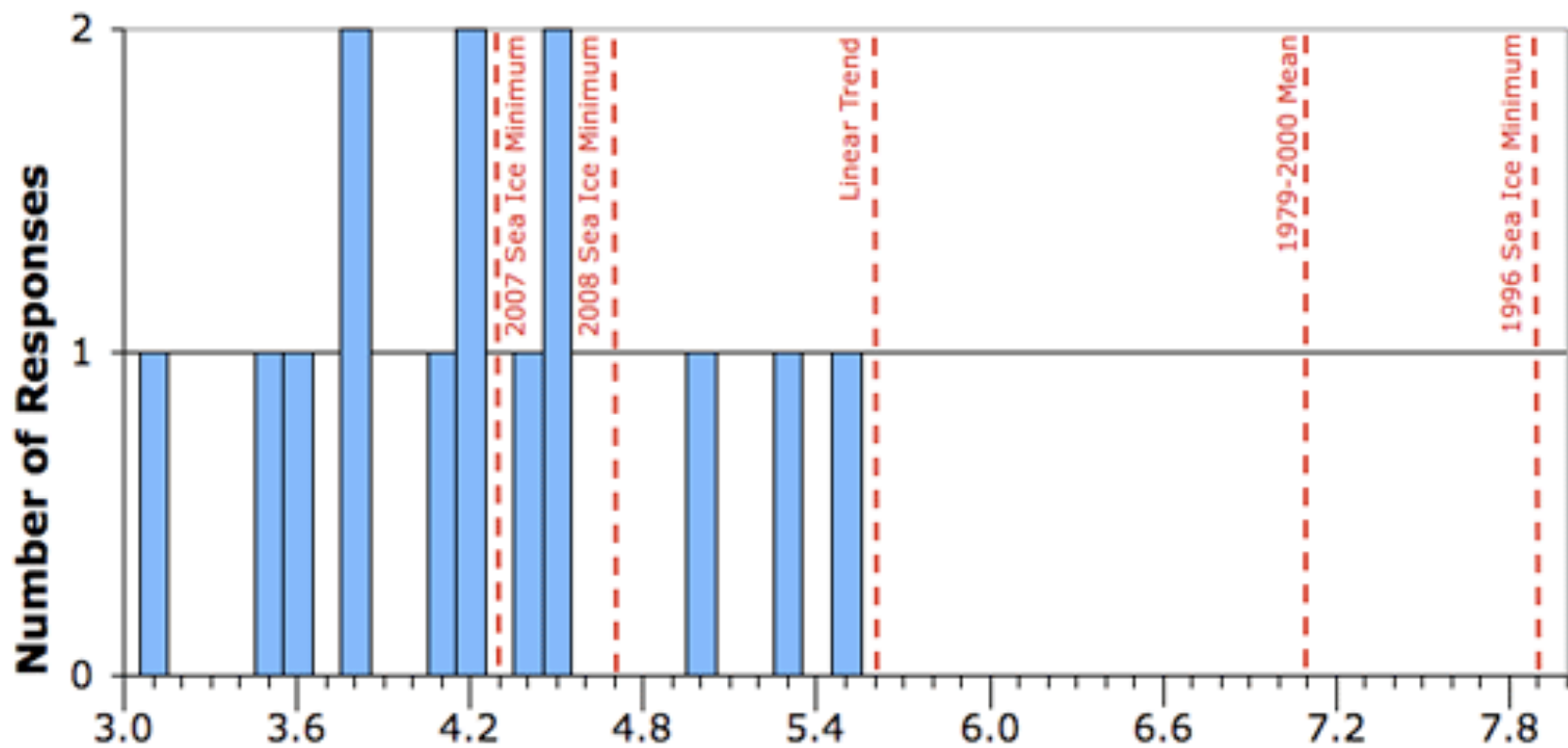
National Snow and Ice Data Center, Boulder CO

13 Dec 2009

Buoy data

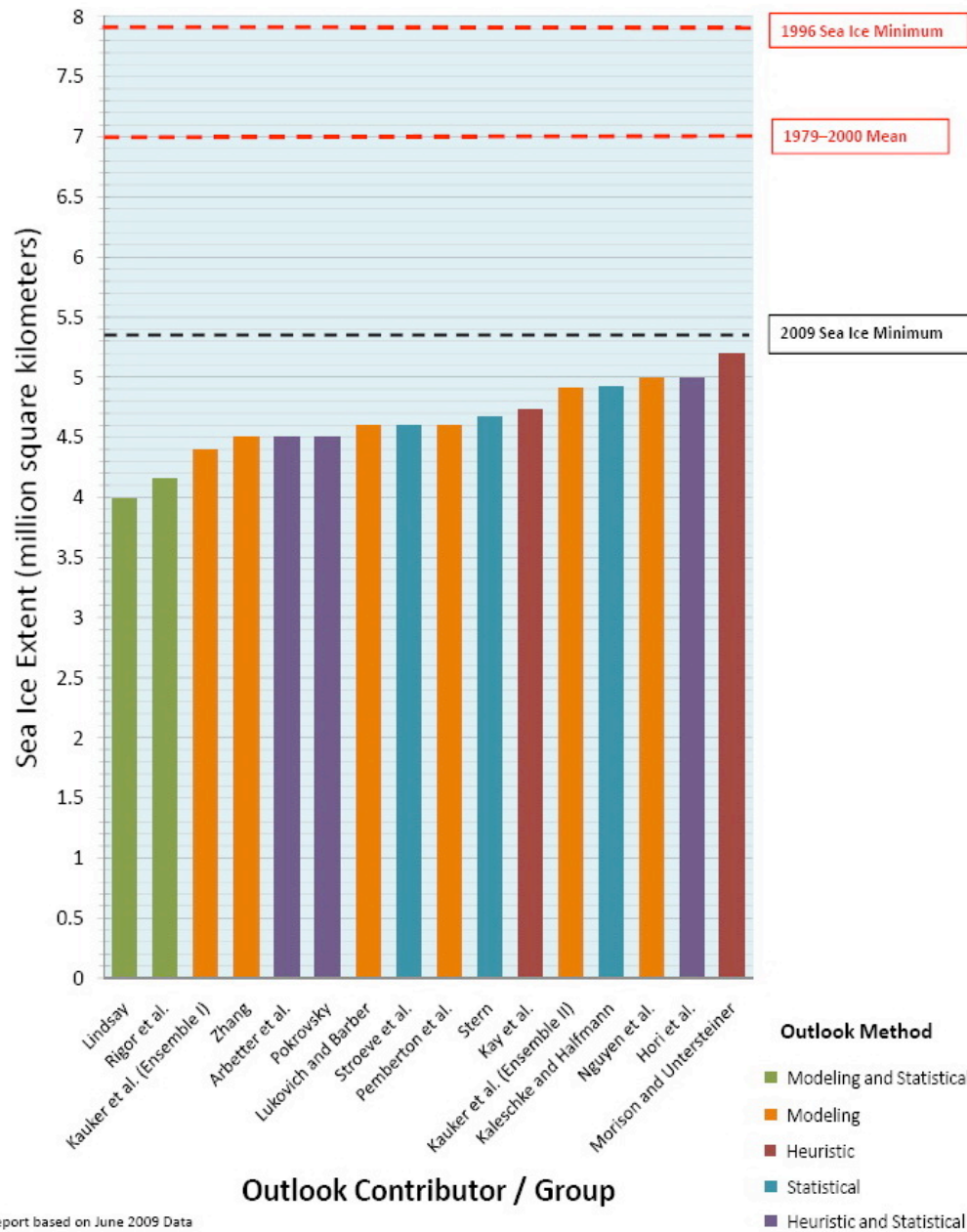


- Little bottom melt at North Pole buoy, normal bottom melt in Beaufort Sea through end of July

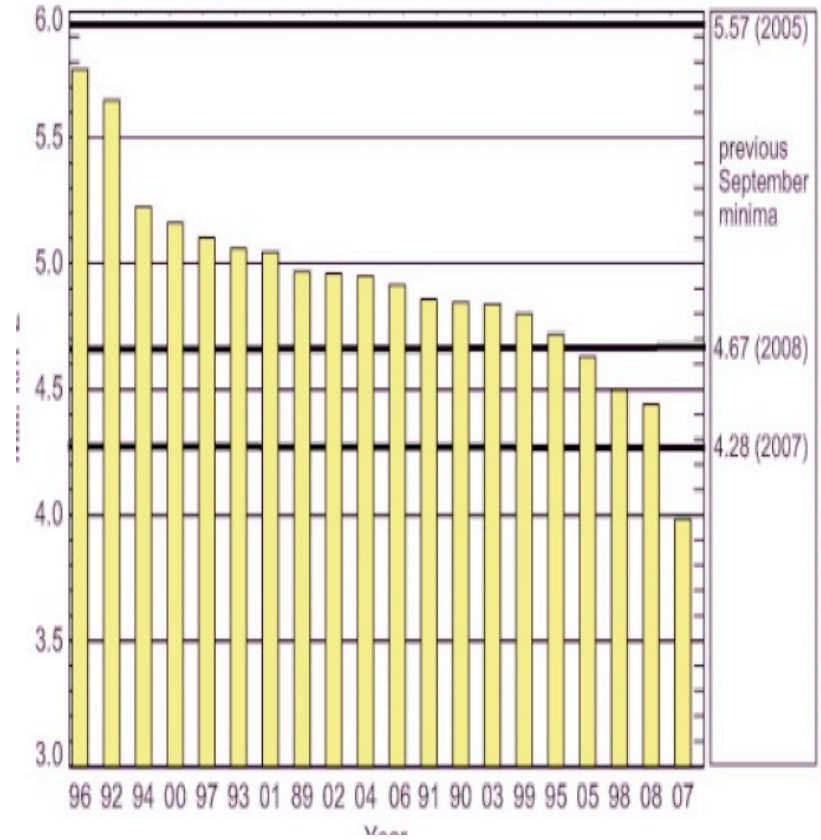


Sea Ice Extent Outlook for September 2008
 (Millions square kilometers)

September 2009 Sea Ice Outlook: July Report*



OUTLOOK 2009
 ~ 15 Groups Participated
 4 Full modeling groups

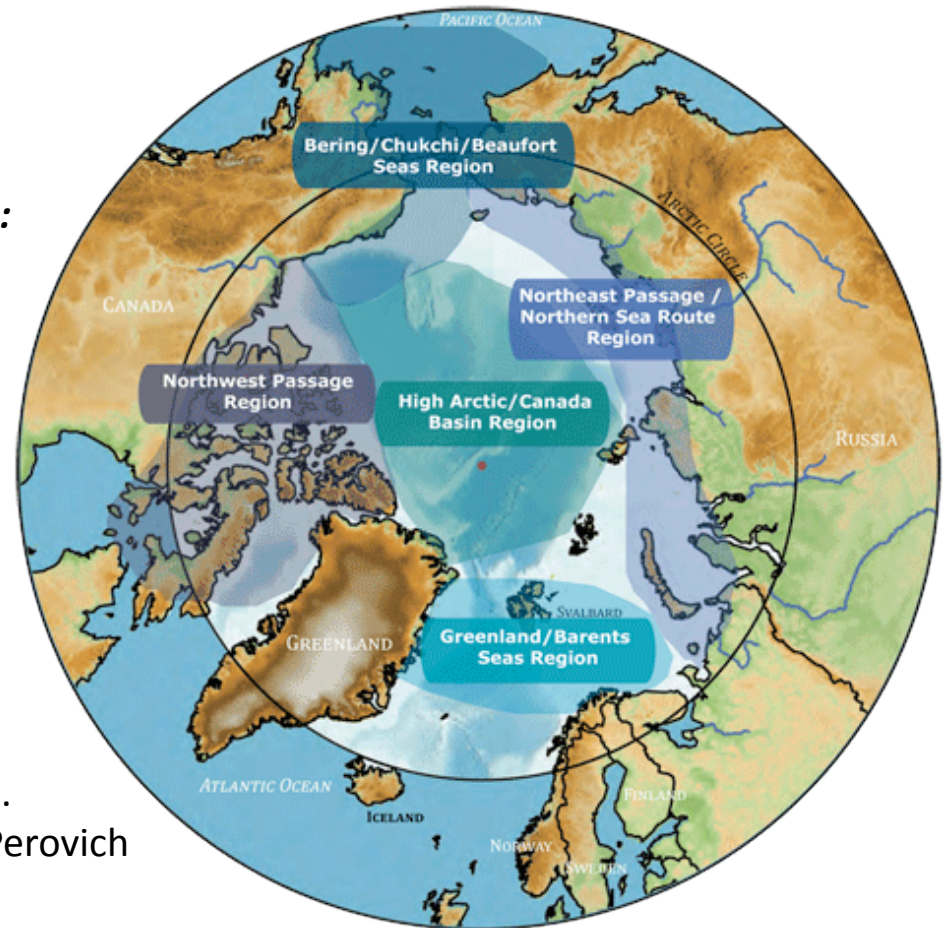


AWI Model Distribution

*Report based on June 2009 Data

Regional Outlook: Summary

- **Northwest Passage – Closed (CIS)/Marginally passable:**
Open – Zhang;
Closed – Howell and Duguay (Parry Strait Route)
Closed – Arbetter et al. (Parry Strait Route)
- **Nares Strait - Open:**
Open – Gudmandsen
- **Northern Sea Route – Open (w/ limitations – NIC):**
Open (but less than in 2007) – Pokrovsky
Open – Maslanik et al.
- **Chukchi and Beaufort Seas – Early melt onset, late ice out, light ice conditions:**
Early melt (Maslanik et al.)
Barrow: light ice conditions with sluggish ice retreat – Eicken et al.
Potential masking of old ice – Barber et al.
- **High Arctic – below-normal melt/normal ice conditions:**
Lighter ice conditions than normal – Maslanik et al.
Sluggish melt (buoy observations, not forecast) – Perovich
- **Greenland and Barents Seas:**
Below normal ice conditions (observations from remote sensing, not forecast) – Gerland and Hall



2009 SEARCH OUTLOOK was as a success: 15+ Groups

While 2009 was 3rd lowest summer extent, fall freeze up was late with near record minimum ice extent record set for November.

In 2009 we met the goal of rapid communication among international scientists; we will continue the OUTLOOK for 2010

Priority for winter 2010:

***Define priority observations in support of OUTLOOK- ocean heat content, visual recon of ice types.**

***Investigate Support for Walrus**

***Extend info into Fall**

N Bering/S Chukchi Regional Outlook with focus on walrus/ice seals

- Outlook map of sea-ice variability in spring & autumn based on regional ice assessment & 2-week forecast
- Outlook map of anticipated seasonal ice retreat (and advance?) based on spatial-statistical modeling
- Evaluate outlook maps in context of marine mammal management & subsistence hunt with focus on walrus
- Assess requirements of observing system capable of forecasting sea ice aspects relevant to marine mammals

N Bering/S Chukchi Regional Outlook with focus on walrus/ice seals

- 3-4 outlook maps each in spring (March-May) and autumn (Oct-mid Dec)
- Timely (24h) dissemination
- Web-based interpretation and evaluation by core team (and others?)
- Target audience: Native communities, biologists assessing ice habitat, PAG, E&O?
- Contributors: Regional ice analyst, forecaster/interpreter, web programmer, ice forecaster/modeler, walrus & ice seal experts, Sea Ice Outlook Office Coordinator, Outlook liaisons