

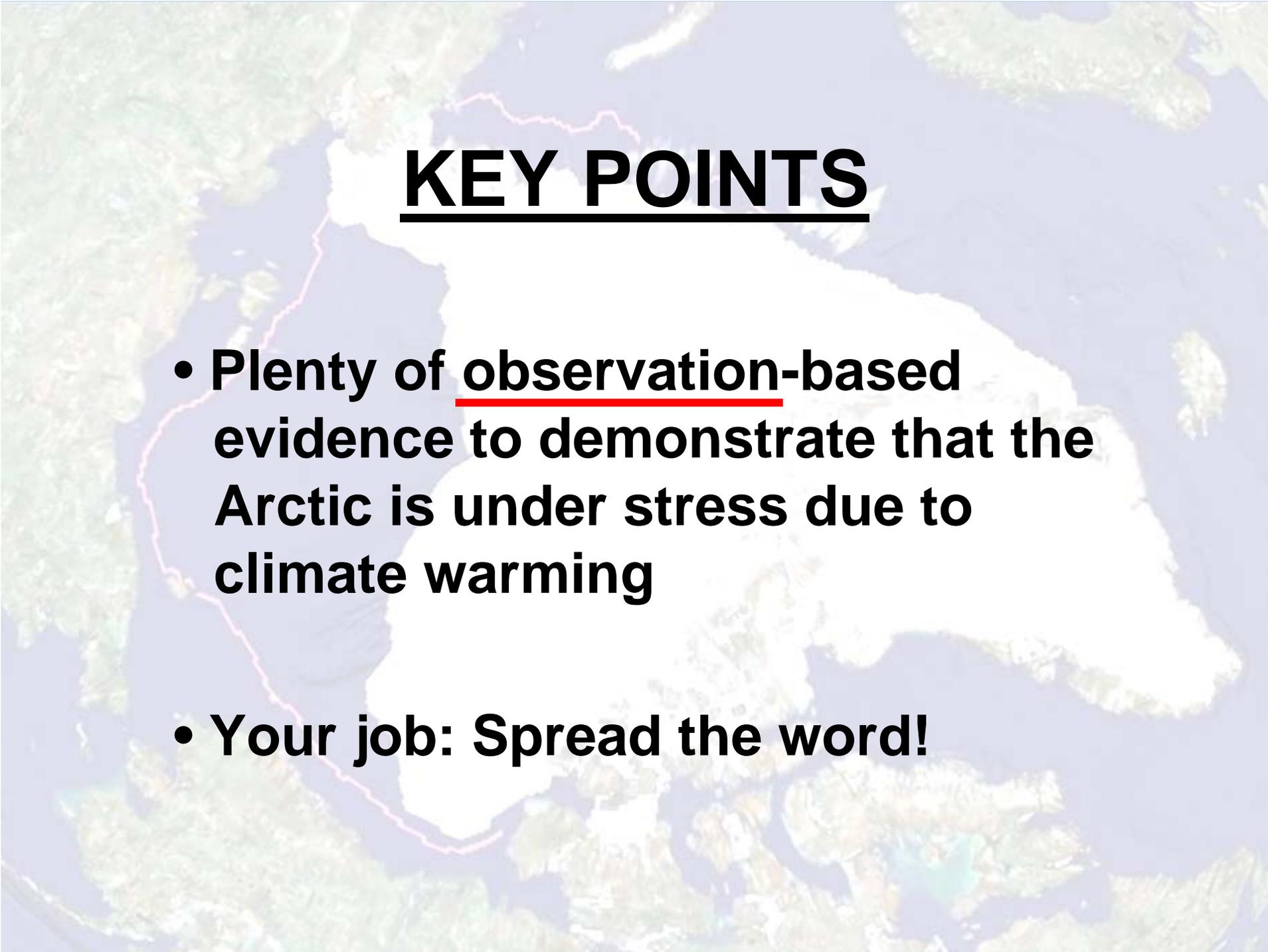
Arctic Report Card

A web-based tool describing the effects of climate change on the Arctic

Jackie Richter-Menge

US Army Corps of Engineers

Cold Regions Research and Engineering Laboratory

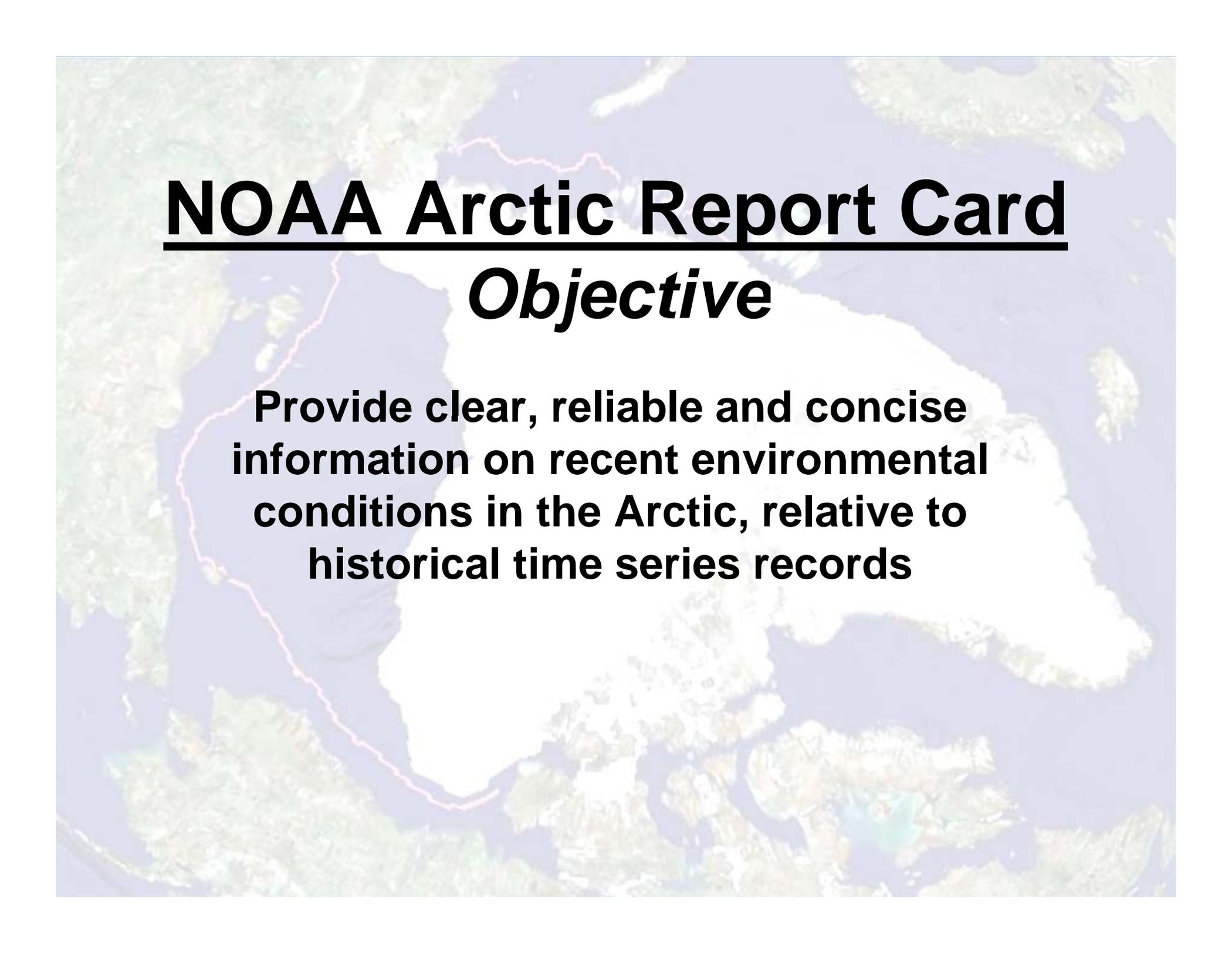


KEY POINTS

- Plenty of observation-based evidence to demonstrate that the Arctic is under stress due to climate warming
- Your job: Spread the word!

Outreach

- **Community Education: Critical**
- **Empowerment through information**
 - Strategic decision making
- **Current efforts**
 - Polar Palooza
 - NOAA-sponsored Arctic Report Card ←



NOAA Arctic Report Card

Objective

Provide clear, reliable and concise information on recent environmental conditions in the Arctic, relative to historical time series records

NOAA Arctic Report Card

- Consensus review by team of international scientists
- Peer-reviewed
- Initiated in 2006 with State of the Arctic Report
- Focus on physical components
 - Atmosphere
 - Ocean
 - Sea Ice
 - Land
- Biology section added in 2007
- Web-based format
- Updated annually



<http://www.arctic.noaa.gov/reportcard/>



Arctic Report Card 2008

Tracking recent environmental changes

Home Atmosphere Sea Ice Ocean Land Greenland Biology

Atmosphere	Ocean
Sea Ice	Greenland
Biology	Land

Warming (red) and mixed (yellow) signals

There continues to be widespread and, in some cases, dramatic evidence of an overall warming of the Arctic system.



Atmosphere
5° C temperature increases were recorded in autumn



Sea Ice
Near-record minimum summer sea ice extent



Biology
Fisheries and marine mammals impacted by loss of sea ice



Ocean
Observed increase in temperature of surface and deep ocean layers



Greenland
Records set in both the duration and extent of summer surface melt



Land
Permafrost temperatures tend to increase, while snow extent tends to decrease

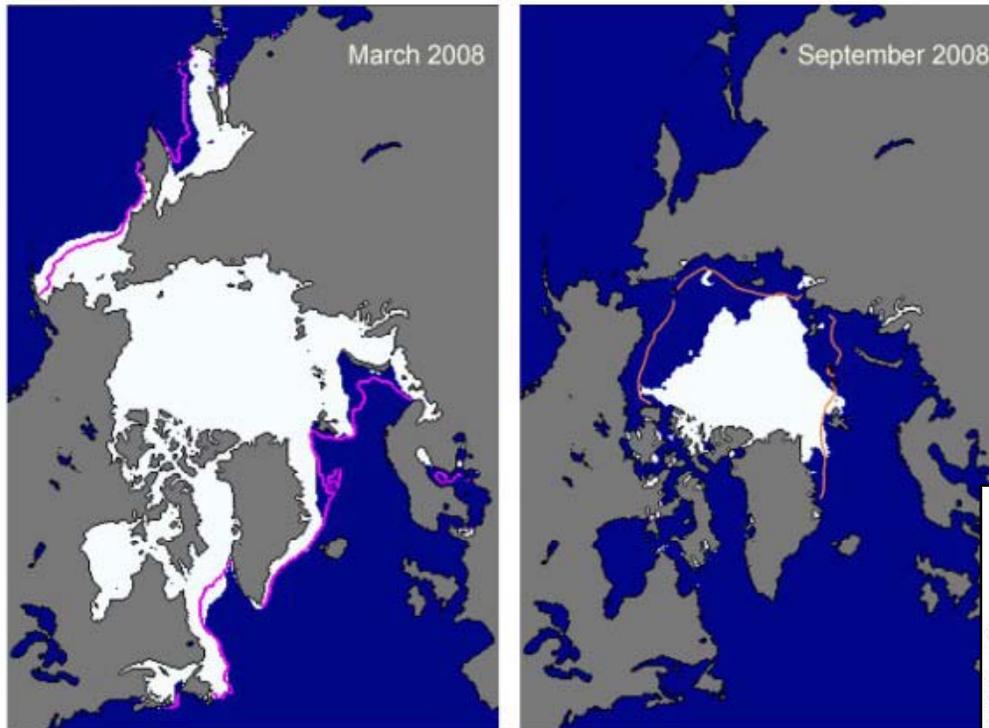
About the Report Card

Printable Handout :: Full Arctic Report Card (PDF)
NOAA Arctic Theme Page



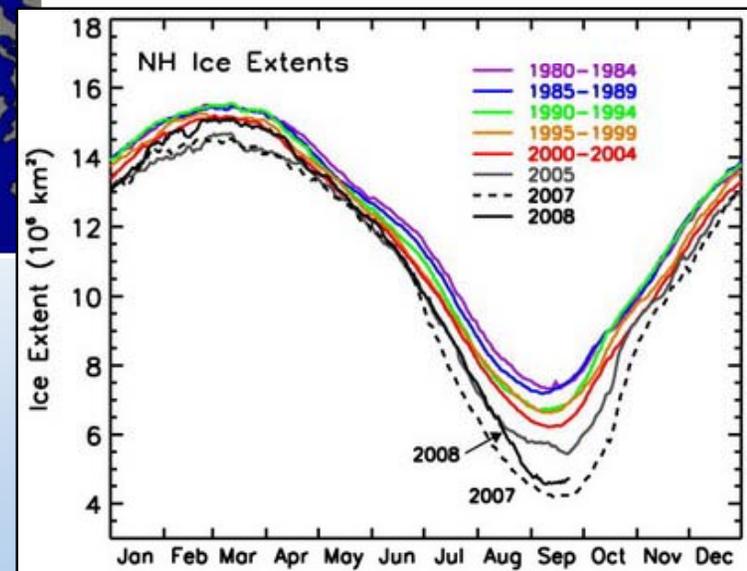
[DOC](#) | [NOAA](#) | [NOAA Arctic Research Program](#)
[Disclaimer](#) | [Privacy Policy](#) | [Webmaster](#)

SEA ICE COVER

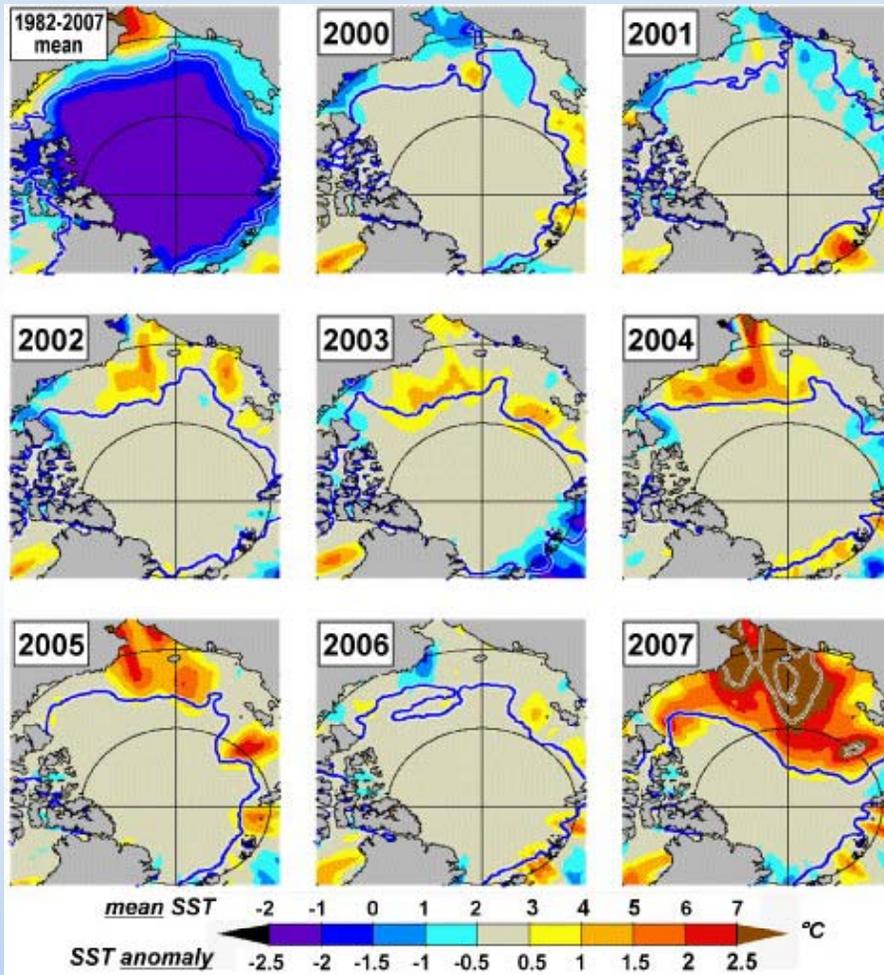


**Extreme loss of
summer sea ice cover**

**Particularly pronounced
along the Alaskan and
Eurasian coastlines and
Canadian Archipelago**



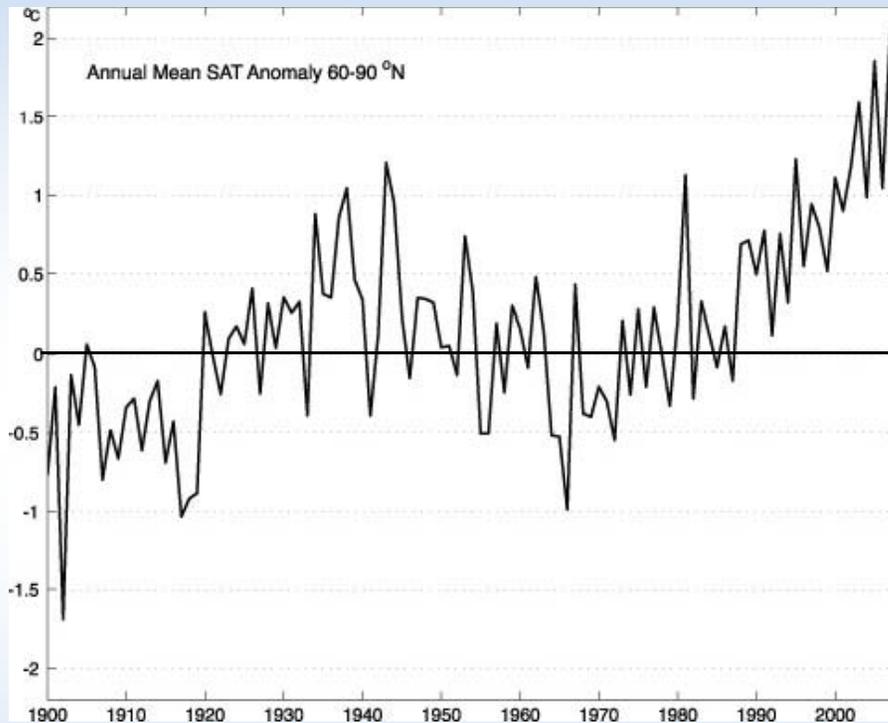
OCEAN



- Pronounced warming since 1995
- Maximum change in marginal seas
- Corresponds to ice-free regions
- 2007: Up to 5°C warmer (!)

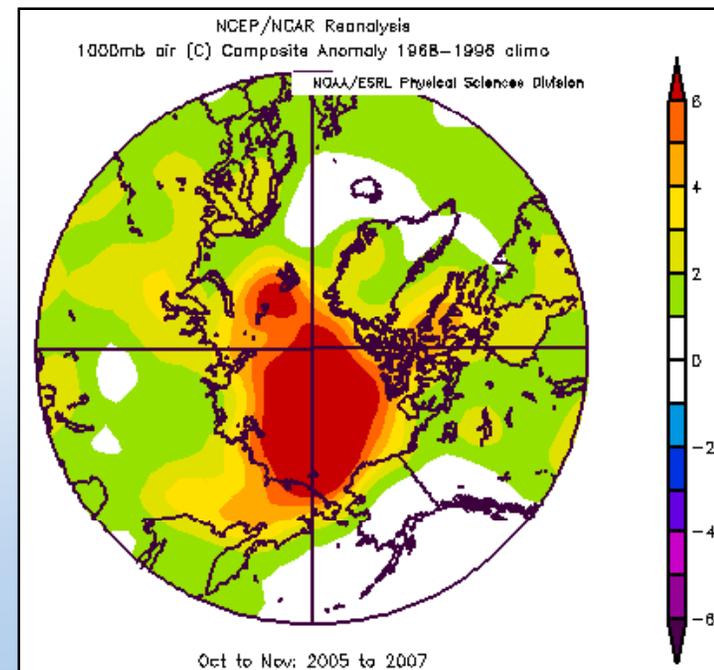
Sea Surface Temperature

ATMOSPHERE



**Generally warming
temperatures since
late 1960's**

- **Relatively warm temps over the entire Arctic region**
- **Maximum of +5°C (!)**

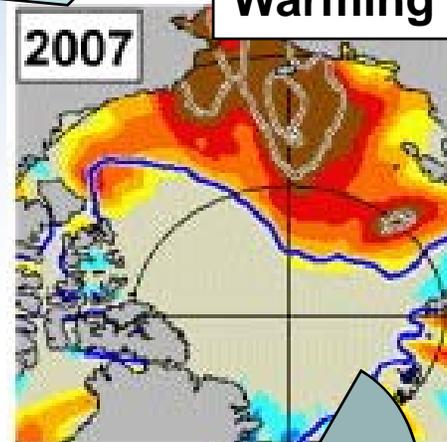


Sum of the parts...

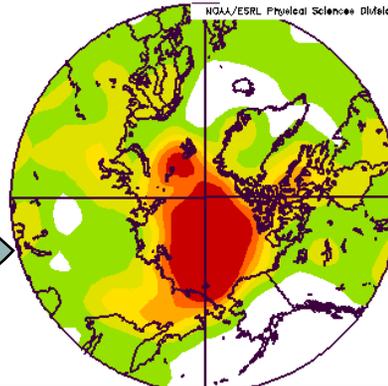
Melting ice



Warming ocean surface



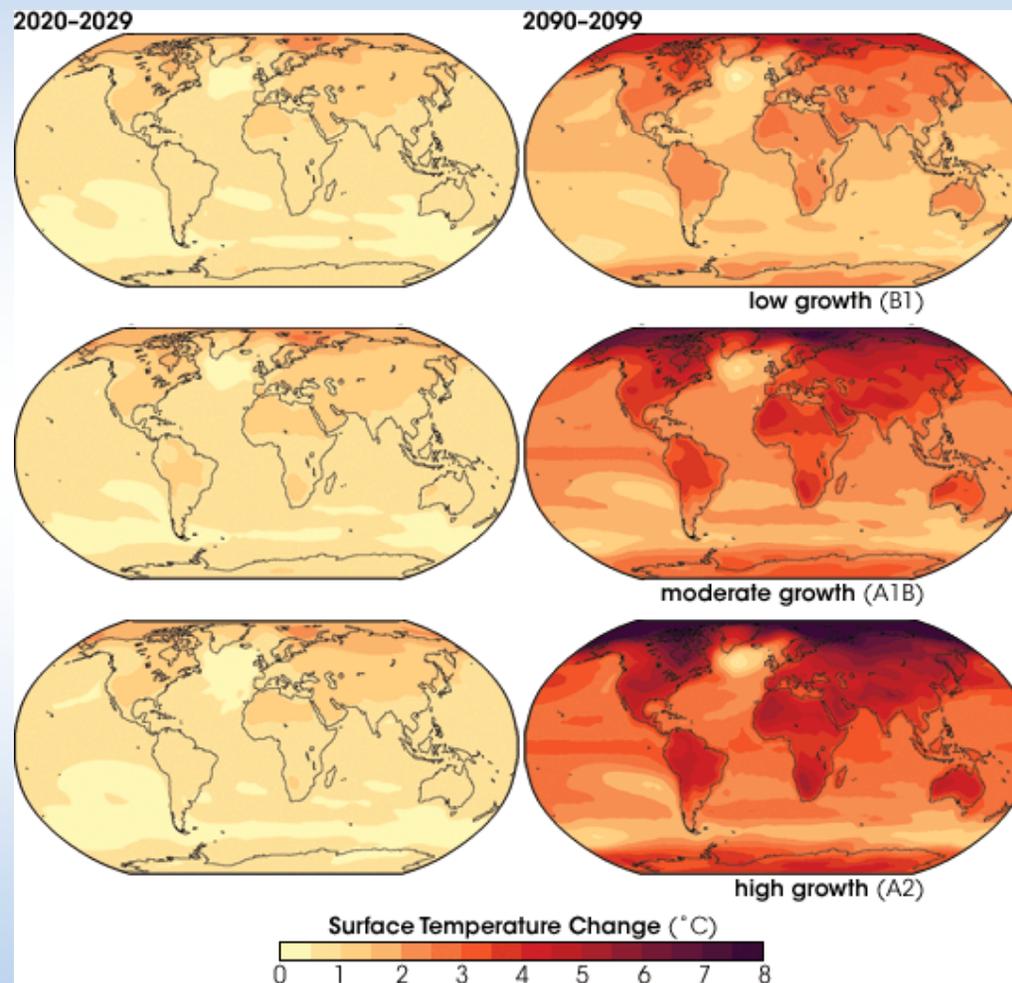
NCEP/NCAR Reanalysis
1000mb air (C) Composite Anomaly 1988-1998 clima
NOAA/ESRL Physical Sciences Division



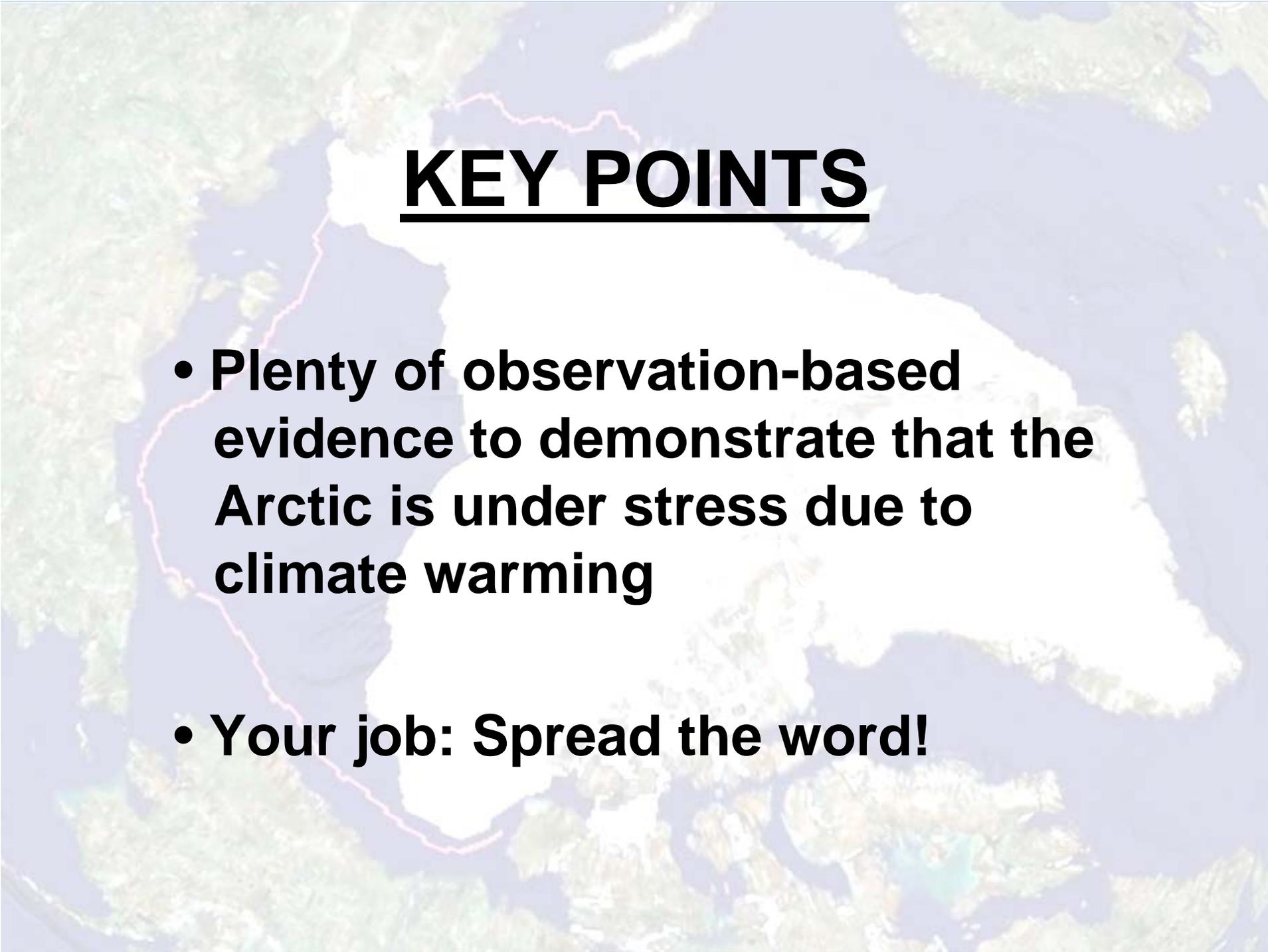
Warming air temperatures

... provides compelling evidence of change

The plot thickens...



Projected increase of surface temperatures in Arctic: +4 to 8 °C



KEY POINTS

- **Plenty of observation-based evidence to demonstrate that the Arctic is under stress due to climate warming**
- **Your job: Spread the word!**