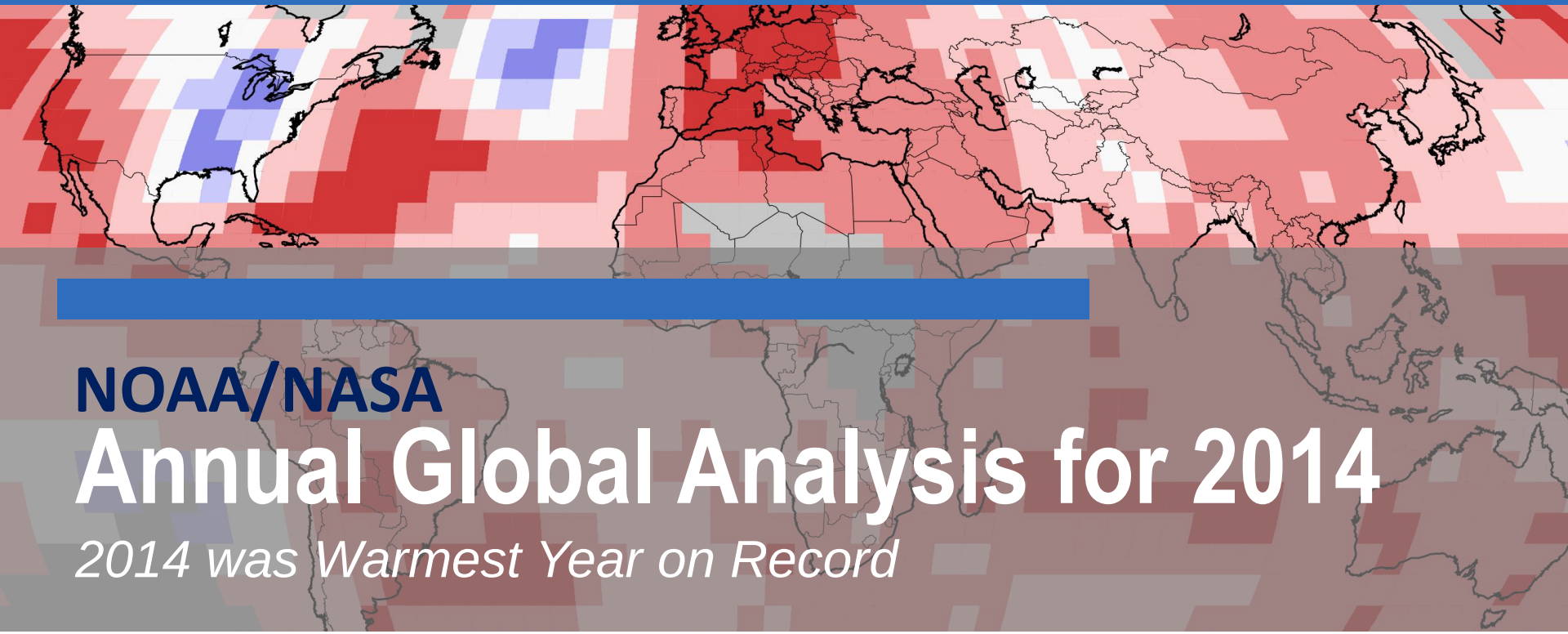


NOAA/NASA
Annual Global Analysis for 2014

2014 was Warmest Year on Record

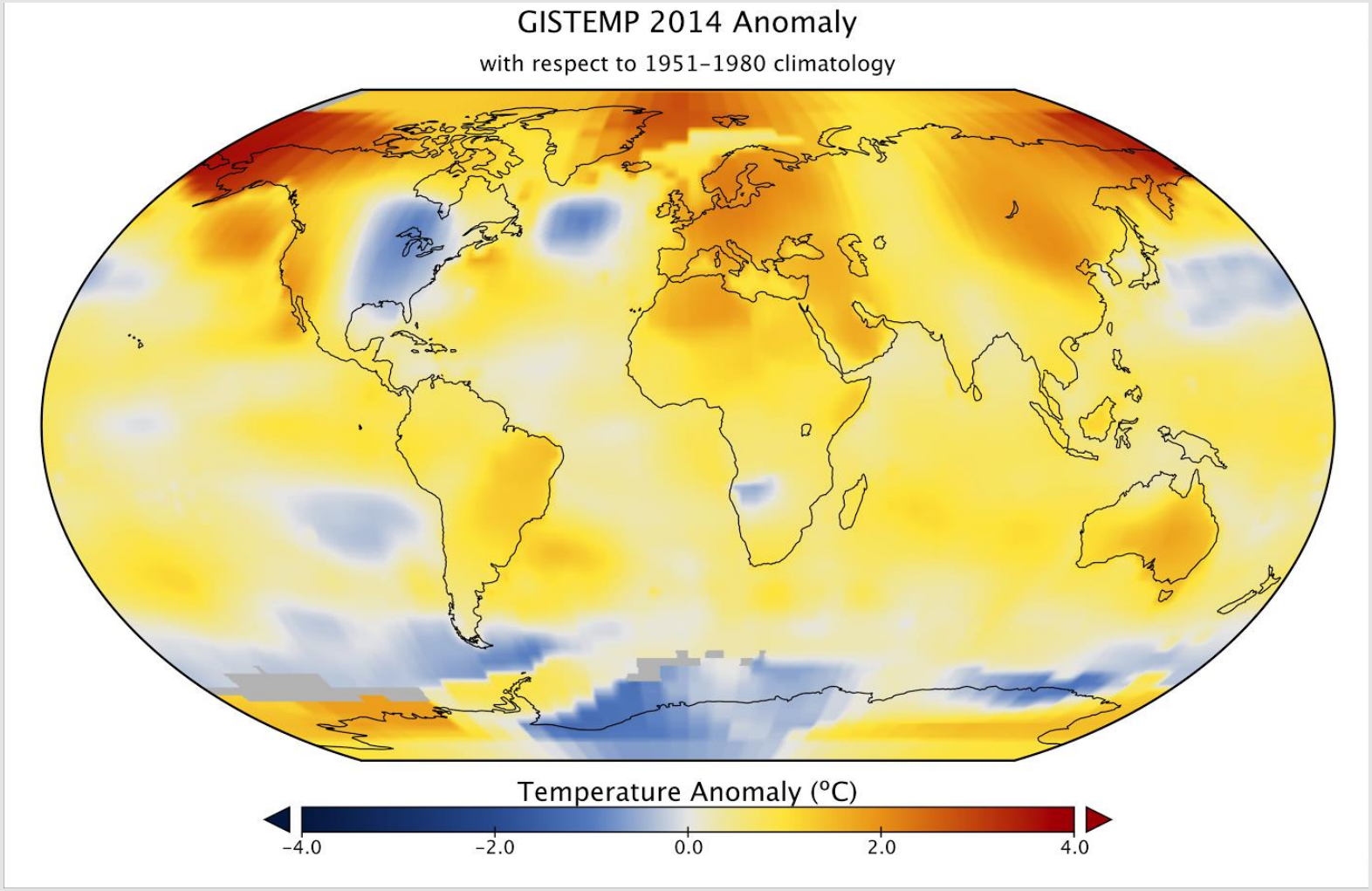
Gavin A. Schmidt
Director, NASA's Goddard Institute for Space Studies

Thomas R. Karl
Director, NOAA's National Climatic Data Center

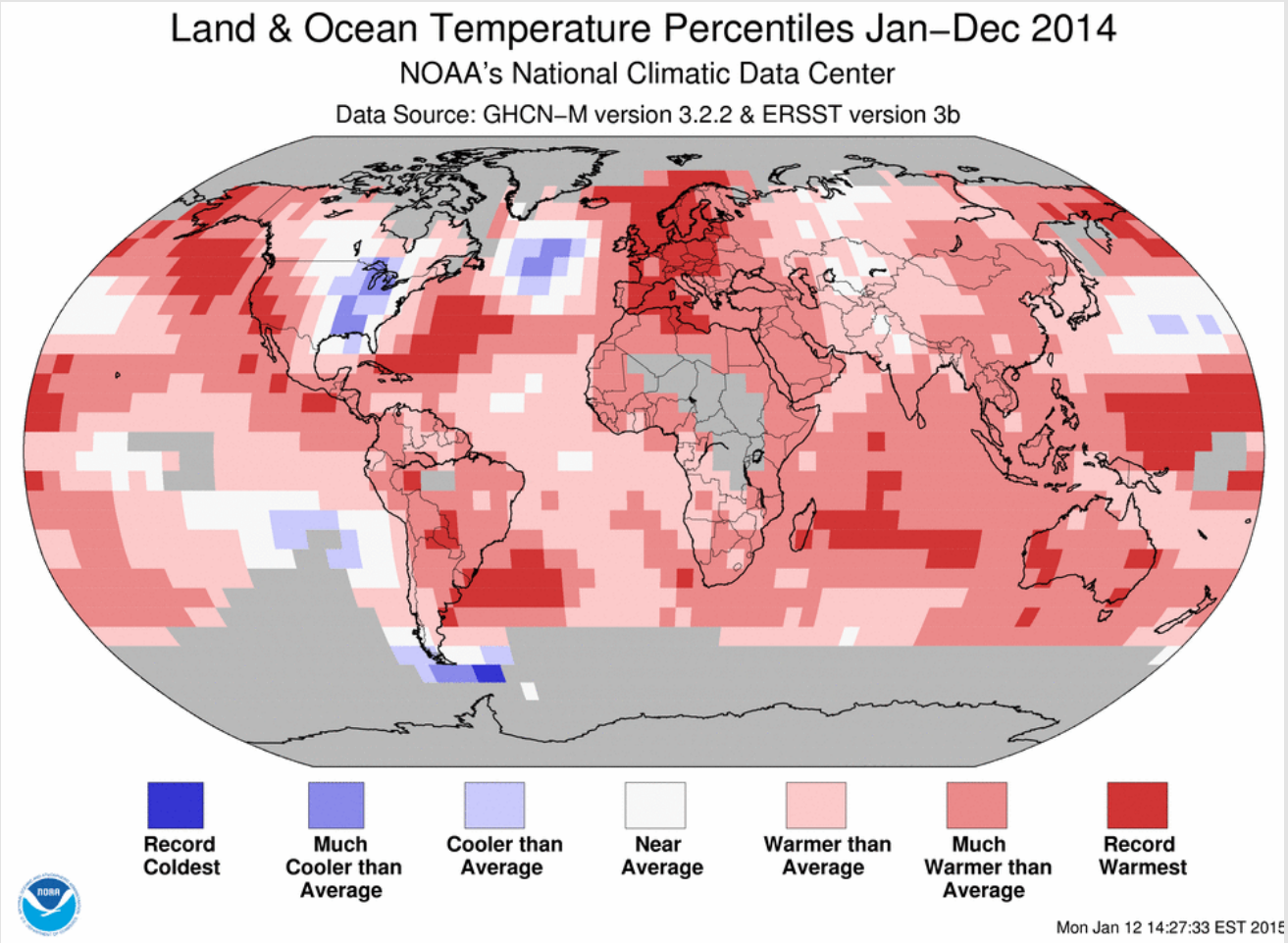
January 2015

NASA 2014 Global Temperature

Global Anomaly: 0.68ºC

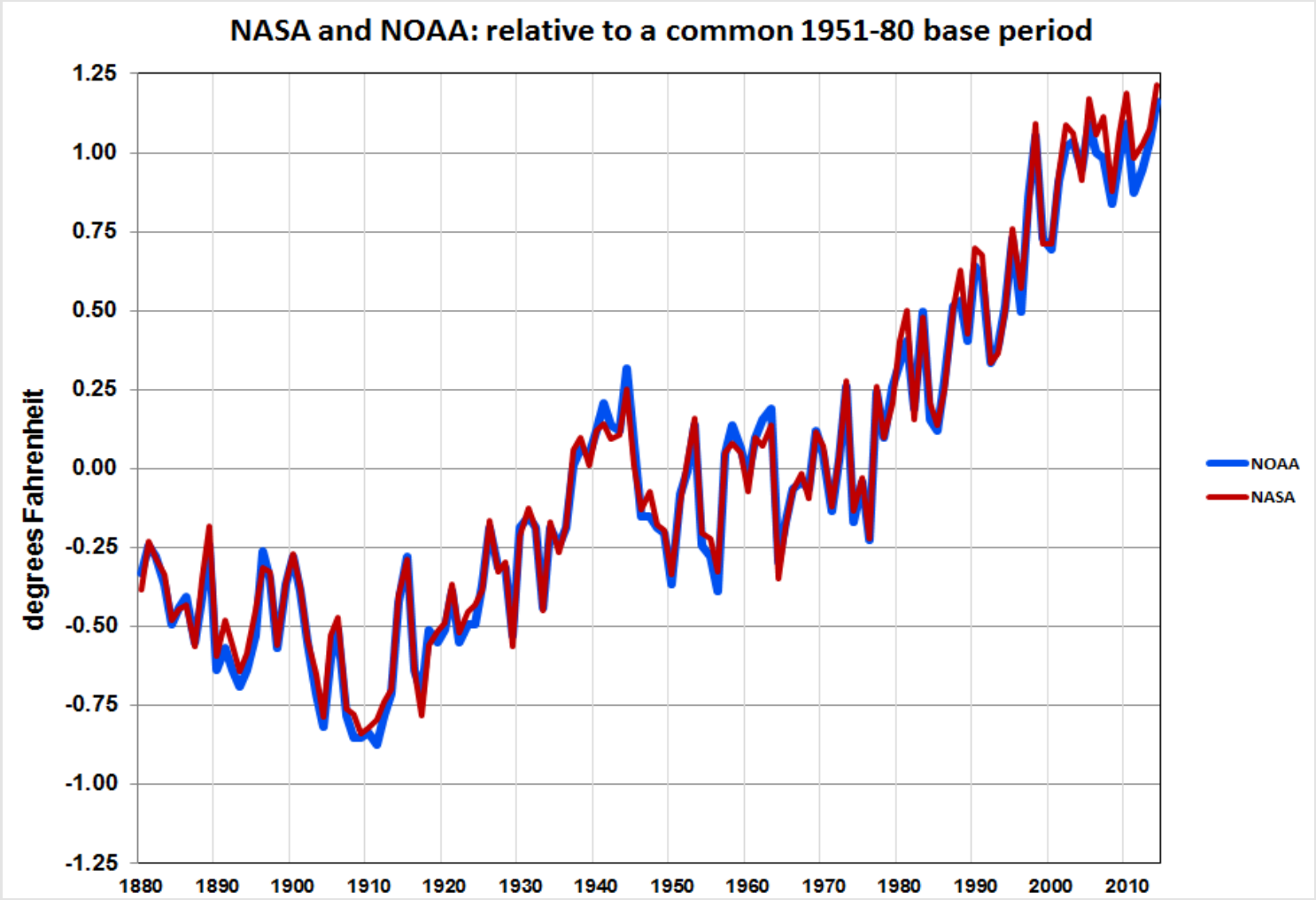


NOAA 2014 Global Temperature



- El Nino Southern Oscillation (ENSO) neutral conditions all year; almost weak ENSO in Nov-Dec
- Warmest year on record: 0.69°C / 1.24°F higher than 20th century average
- Global ocean surface record warm
- Global land surface 4th warmest on record

Comparing Global Temperature Analysis



Ranking of Record Years is Sensitive to Methodology and Coverage

NOAA

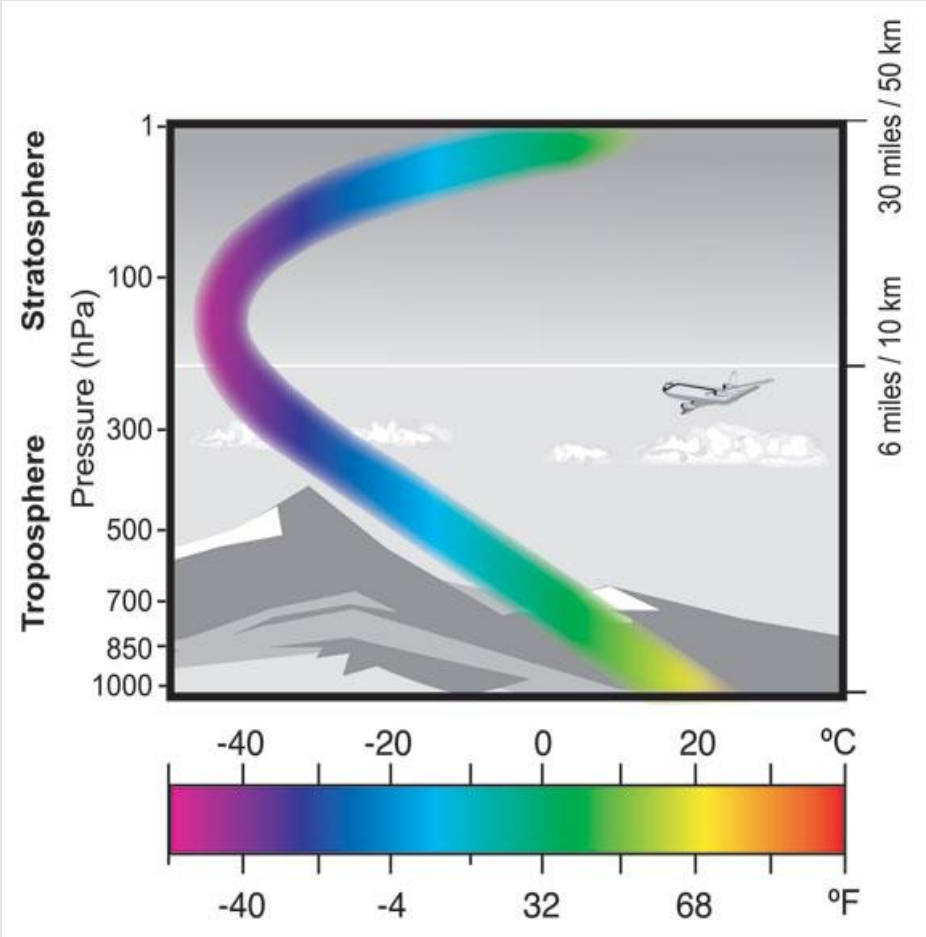
Probability of warmest year	
2014	~48%
2010	~18%
2005	~13%
2013	~6%
1998	~5%

NASA

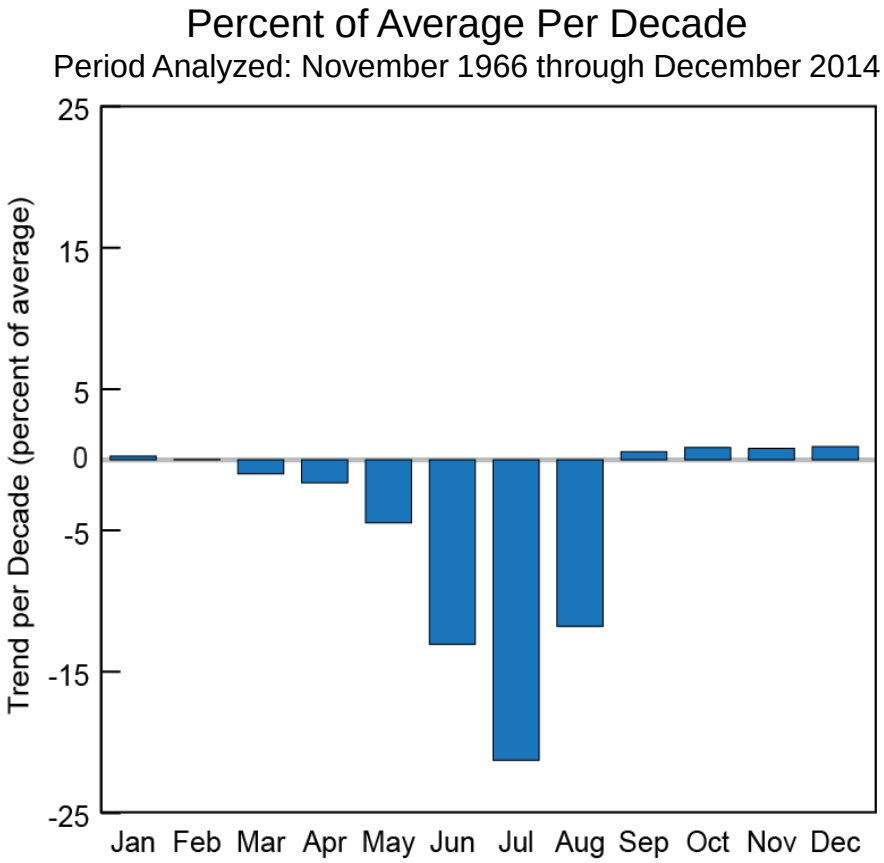
Probability of warmest year	
2014	~38%
2010	~23%
2005	~17%
1998	~4%

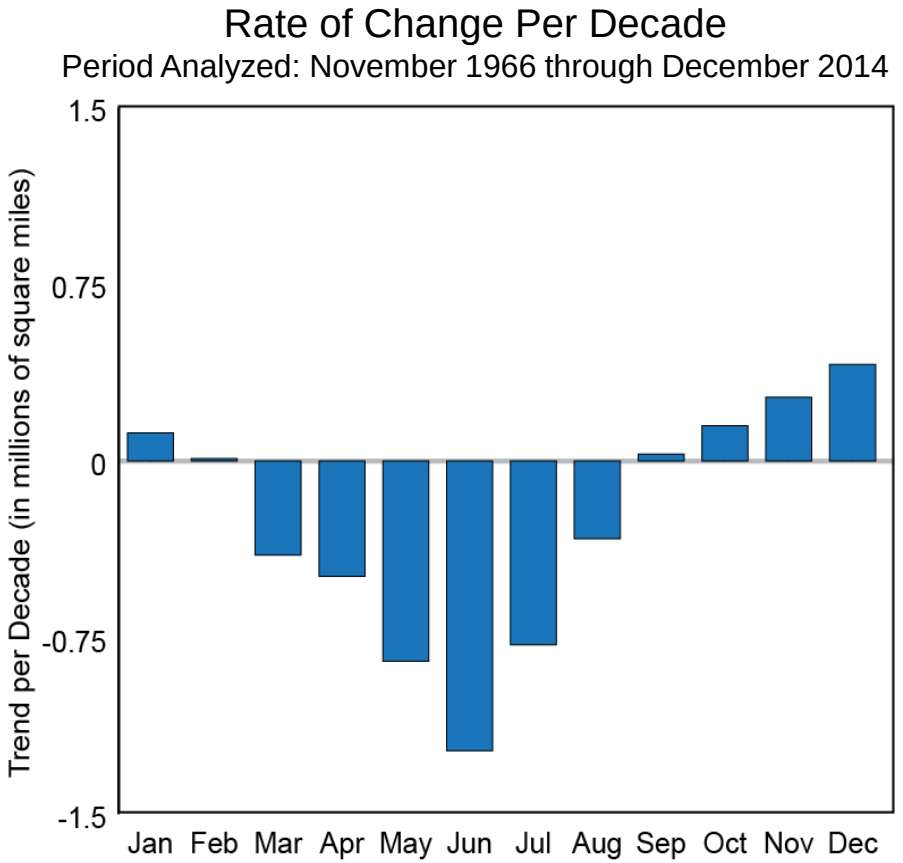
Looking at the Atmosphere

- Lower Stratosphere
  - UAH: 13th coolest
  - RSS: 13th coolest
- Middle Troposphere
  - UAH: 3rd warmest
  - RSS: 6th warmest
- Lower Troposphere
  - UAH: 3rd warmest
  - RSS: 6th warmest

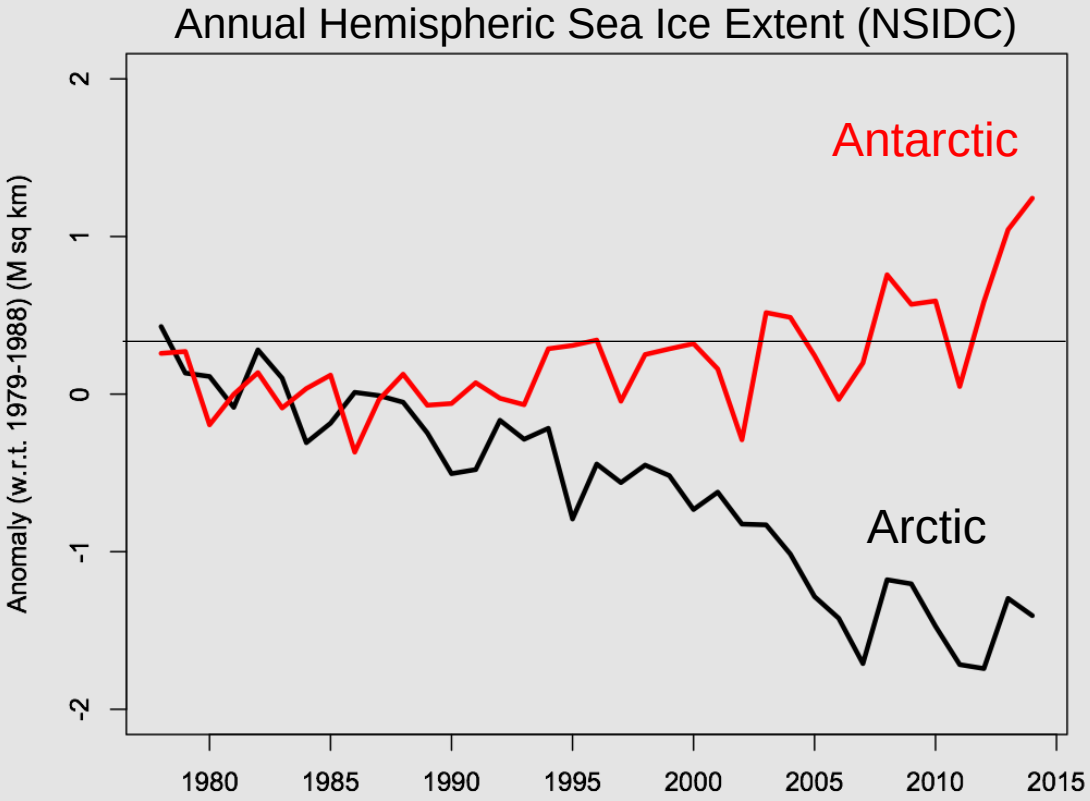


Northern Hemisphere
Monthly Snow Cover Extent

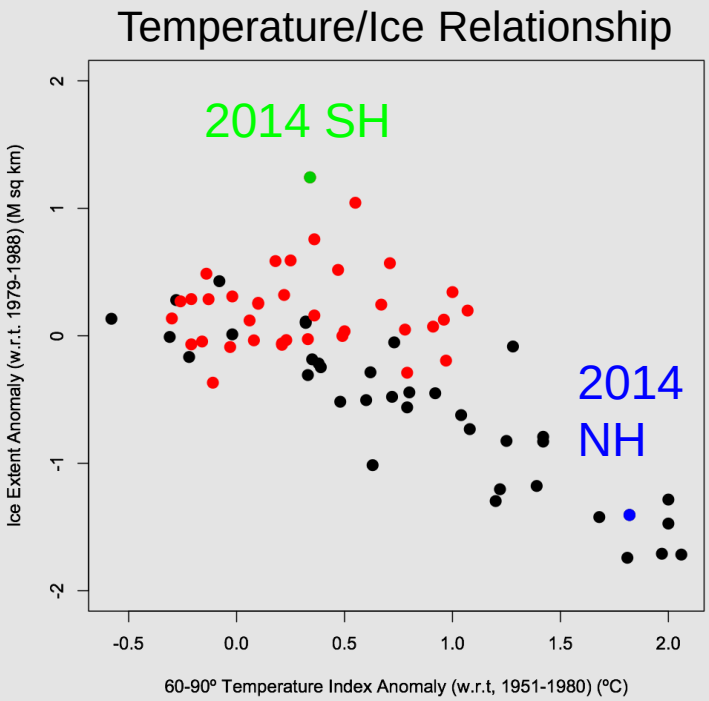




Arctic and Antarctic Sea ice Extent



2014 was 6th lowest Arctic, *highest* Antarctic extent.



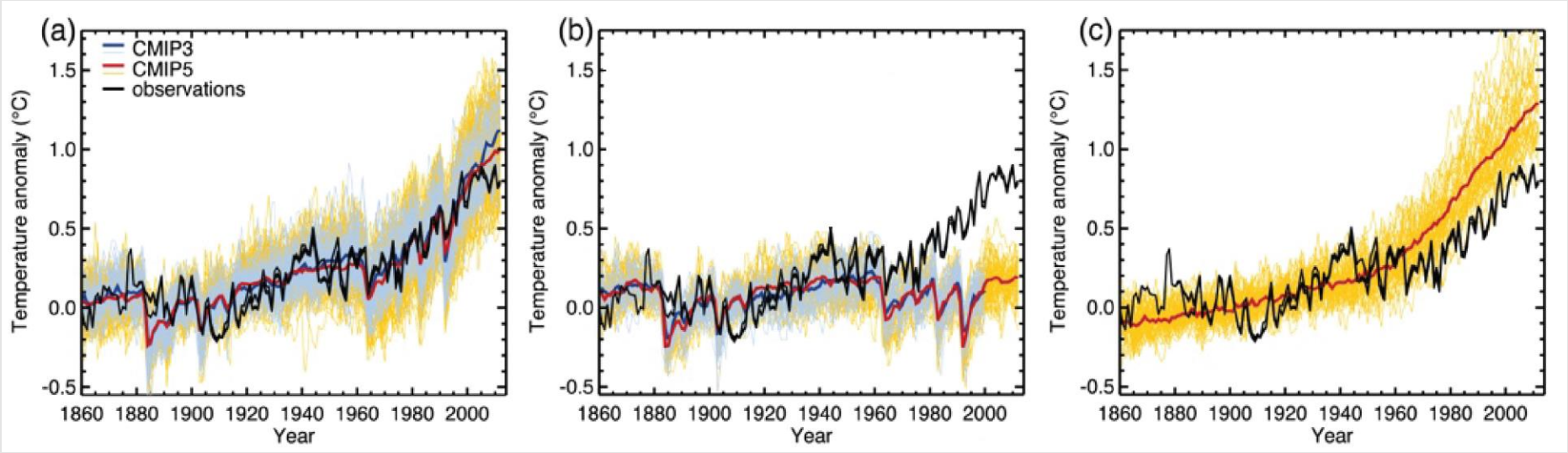
Arctic changes strongly correlated to polar temperature index. No clear relationship in Southern Hemisphere.

Attribution of Long Term Trends

All forcings (GHGs, aerosols, natural, land use etc.)

Natural forcings only (solar, volcanic)

Greenhouse Gases only



Long term trends since ~1970 are dominated by increases in greenhouse gases (principally CO_2). Natural forcings are slightly cooling.

IPCC AR5 Fig 10.1

NOAA/NASA

Questions?

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