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Methane Reduction:
A Response to Arctic Warming

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San Antonio, Texas
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Clean Air-Cool Planet

We are in the business of solving the global warming problem, developing economically efficient and innovative climate policies and mobilizing civic engagement to implement practical climate solutions.

- companies
- campuses
- communities
- science centers
- policy

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Three Phases of Climate Science

1) 1980's- climate theory

2) 1990's -temperature record

3) 2000's- visible impacts

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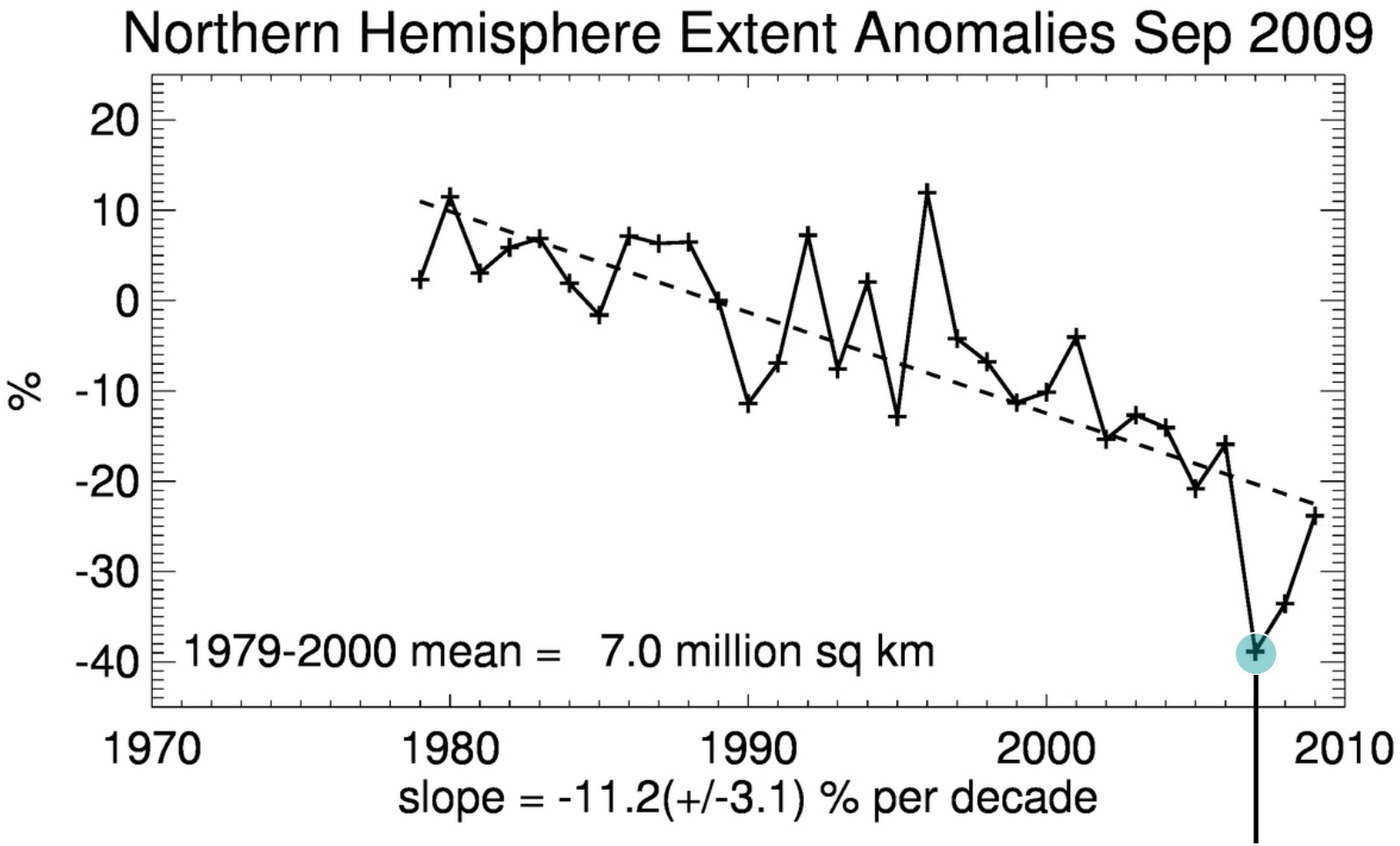
Historical Arctic Sea Ice Extent



Source: NSIDC

Low point of 2007

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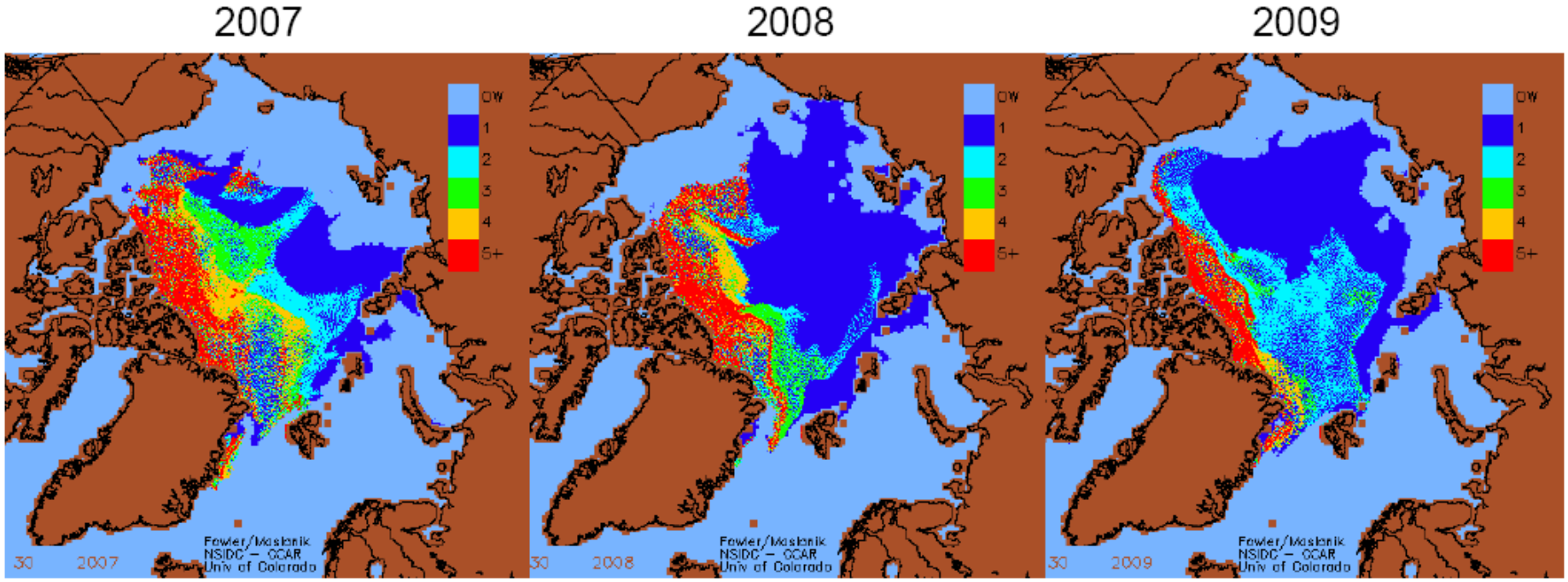
End of July Ice Age Distribution



Courtesy C. Fowler and J. Maslanik, Univ. of Colorado

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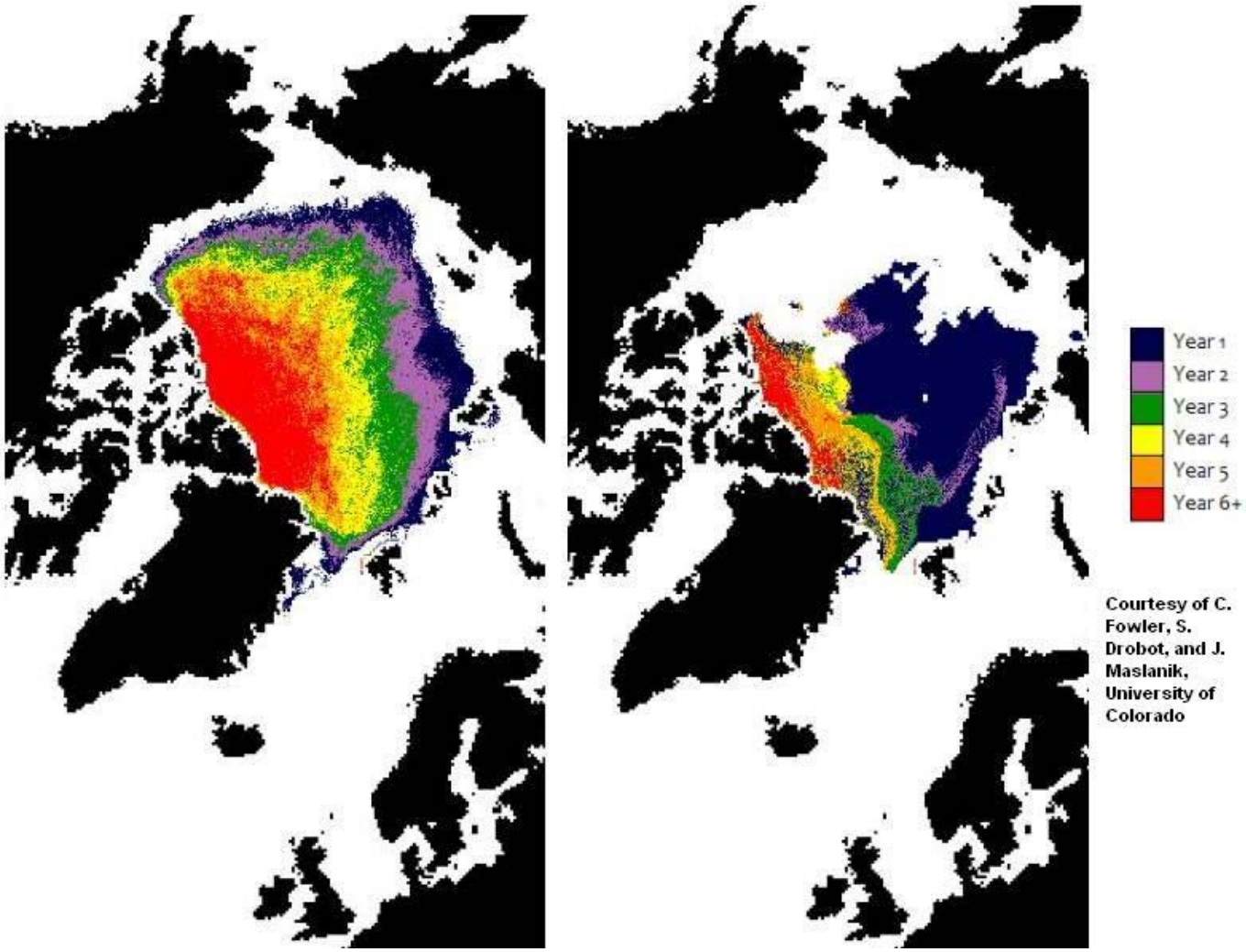
Average Arctic Sea Ice Age for Week 34 from 1983-2000

Arctic Sea Ice Age for Week 34 of 2008



Courtesy of C. Fowler, S. Drobot, and J. Maslanik, University of Colorado

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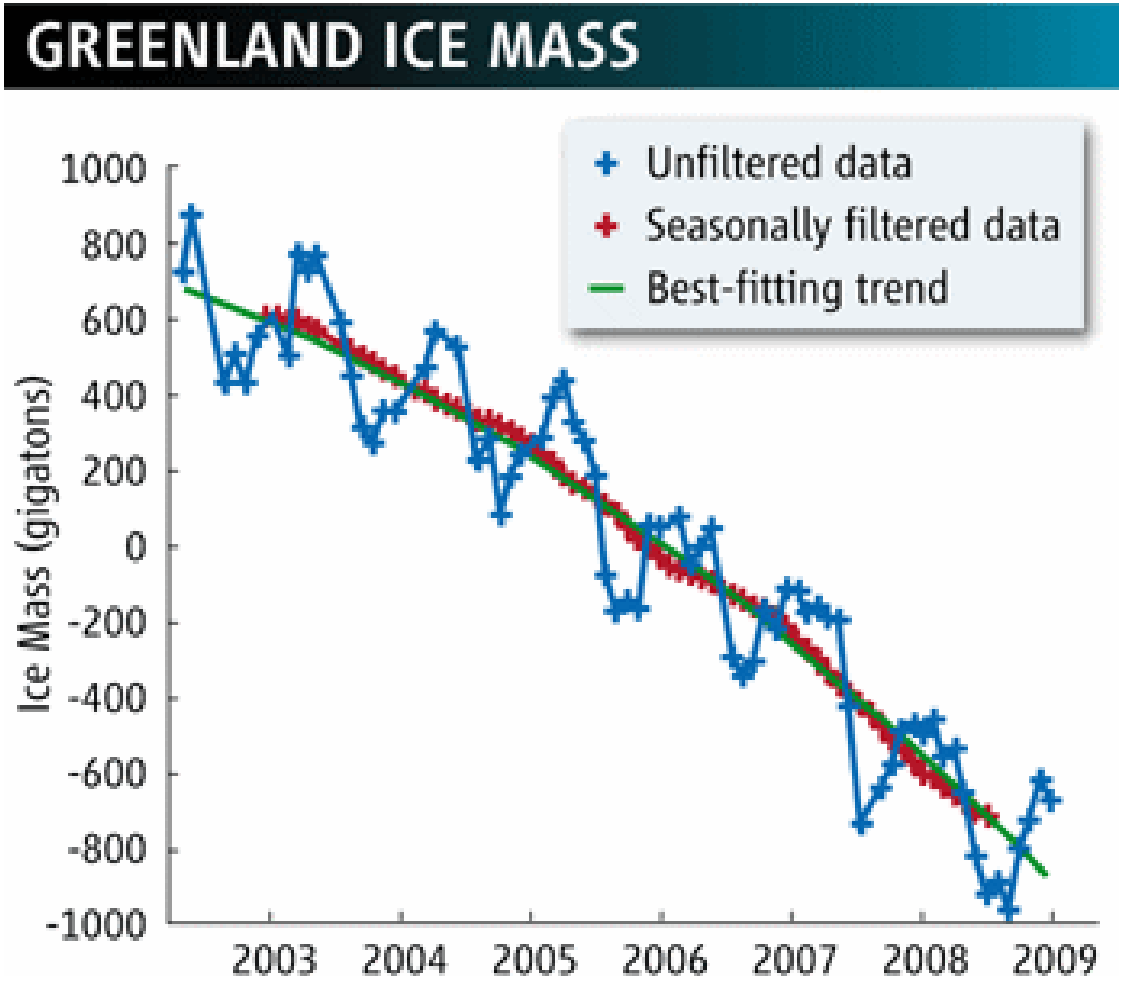

Science October 2009, adapted from Isabella Velicogna, Geophysical Research Letters.

Science AAAS

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Global Impacts of Arctic Warming

- Change in global energy balance (e.g. “darker” north pole has occurred)
- Ocean circulation changes
- Sea level rise
- Ecosystem and wildlife impacts, e.g. migratory species
- Change in strength of jet stream

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Methane – Levels Rising

- Global average atmospheric concentrations of methane have increased by 150 percent since 1750. Levels are as high as they have been in at least the last 650,000 years.

- In the late 1990s, atmospheric methane concentrations stopped rising and remained nearly constant until beginning to rise again in 2007 and continue to rise.

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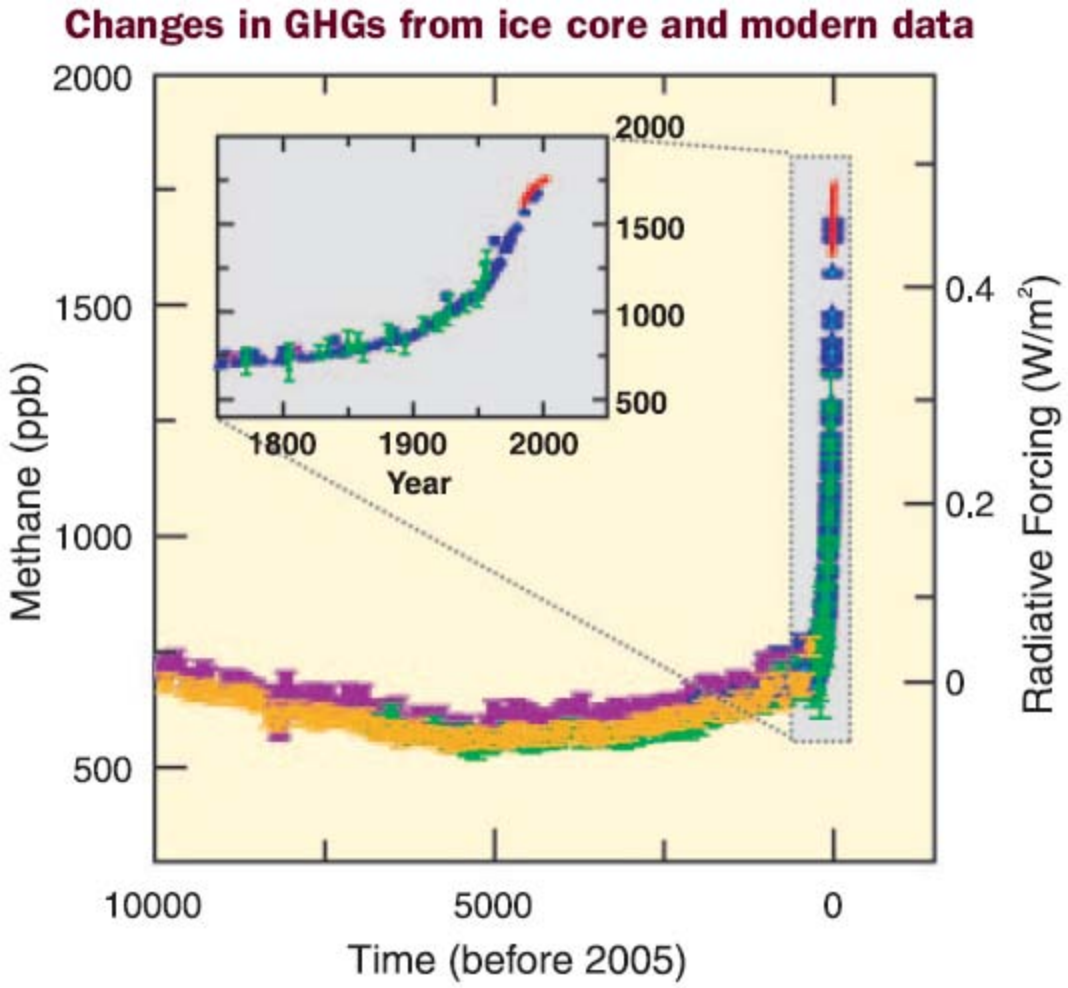

Source: IPCC AR4

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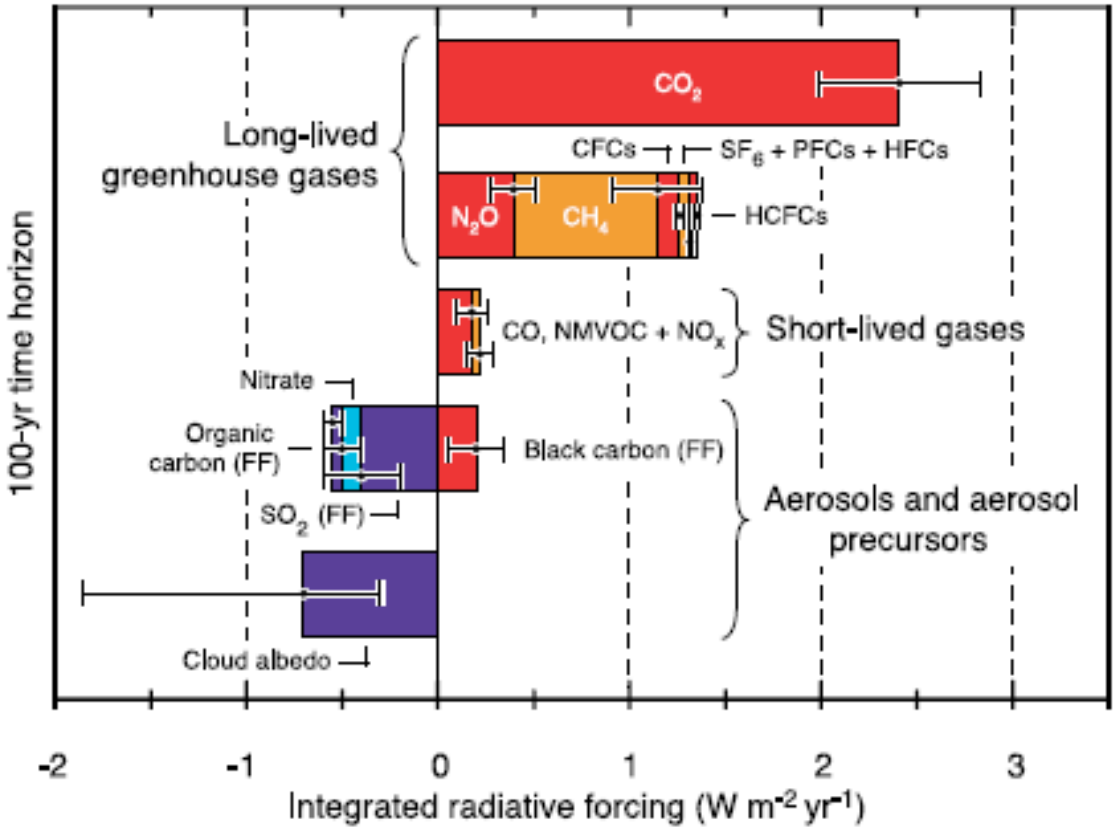
Integrated Radiative Forcing for Year 2000 Global Emissions 100-year time horizon



IPCC

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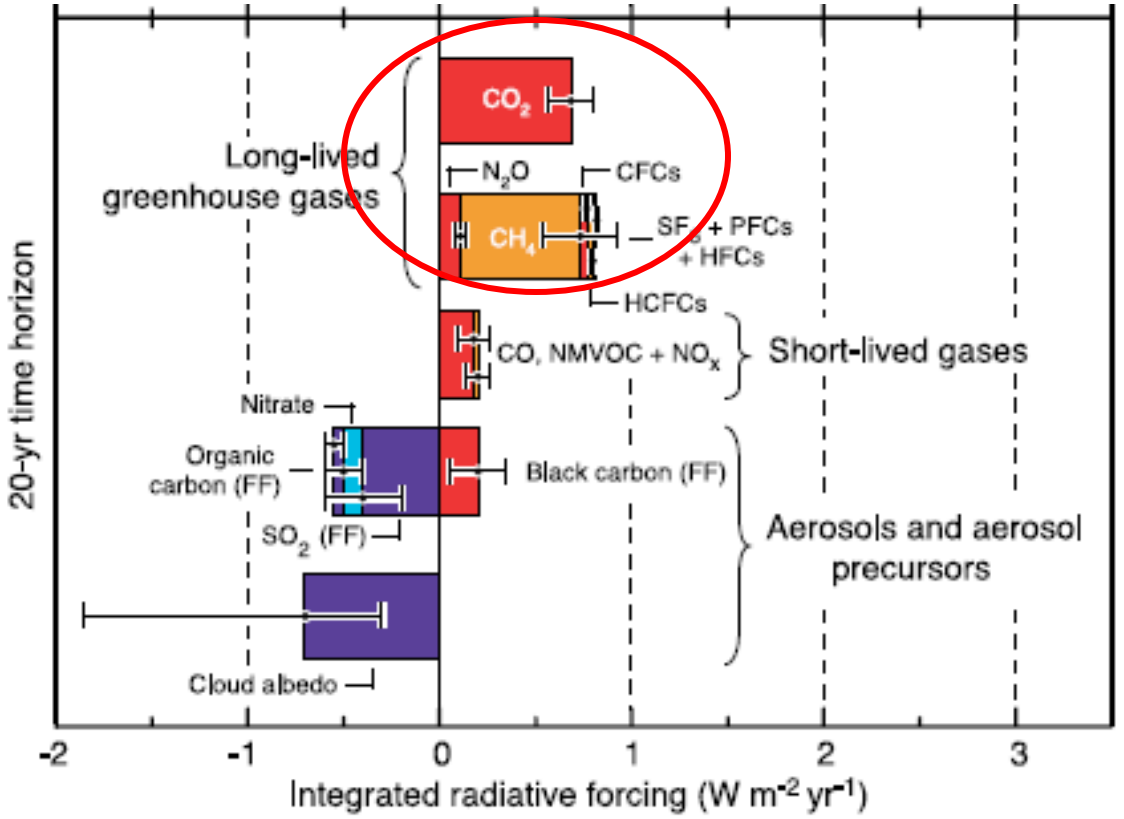
Integrated Radiative Forcing for Year 2000 Global Emissions 20-year time horizon:

Methane has a much larger impact , compared to CO2, when considered in this time frame



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The Arctic Council

- Created in 1996 to more broadly address Arctic issues
- Eight member states and indigenous representatives
- Arctic Monitoring and Assessment Program (AMAP) is working group of the Arctic Council

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AMAP Recommendations – Methane

- Methane reductions anywhere on the globe will benefit the Arctic climate.
- Major methane sources with mitigation potential include:
  - Coal mining,
  - Oil and natural gas systems
  - Municipal solid waste – landfills
  - Waste water
  - Agriculture
    - Manure management/biogas recovery
    - Ruminant livestock

AMAP / Quinn et al., 2008. The Impact of Short-Lived Pollutants on Arctic Climate. AMAP Technical Report No. 1 (2008), Arctic Monitoring and Assessment Programme (AMAP), Oslo, Norway.

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AMAP Recommendations: Ozone

- Most effective way to address ozone is methane
- Ozone affects Arctic by heat transport from lower latitudes, ozone transport from lower latitudes and in-Arctic ozone production. Lifetime: days to weeks, longer in winter
- Springtime ozone layer accelerates onset of spring melt.
- Climate benefits will come from reducing the background ozone and not the peak reductions that are the targets of health-based ozone regulations.
- Increased Arctic shipping will result in an increase in ozone precursor emissions

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Rapid Arctic Council Response

- Series of science-policy meetings 2007-08 led to formal presentation to Senior Arctic Officials (SAOs) in April 08; SAOs charged AMAP Working Group to develop recommendations
- Sept 2008 AMAP Workshop developed recommendations, presented to Deputy Ministers October 2008, and AC SAOs November 2008
- Ministerial Declaration and Melting Ice (Gore-Store) April 28-29, 2009: strong statements, new mitigation "task force" and Melting Ice science "task force"

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TROMSØ DECLARATION

On the occasion of the Sixth Ministerial Meeting of

The Arctic Council

The 29th of April, 2009, Tromsø, Norway

- Strong statements on black carbon, tropospheric ozone and methane.
- Established a Task Force on Short-lived Forcers (SLFs) to identify existing and recommend new mitigation measures to reduce emissions
- Melting Ice Task Force process and report to COP-15
- Speeches and statements by Norwegian ministers Erik Solheim and Jonas Gahr Store, U.S. Hillary Clinton, and Al Gore

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The Opportunity – Energize a Global Methane Initiative

- Enhance Methane Efforts and Focus
- Be Ambitious: Set Goals
- Expand the Enterprise
- Move Quickly
- Arctic as “Lens” for Intensified Effort

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The Ground Rules Have Changed

- The importance of methane as climate forcer is more widely understood
- Arctic impacts present increased urgency
- New M2M charter in 2010
- Methane initiative provides short-term gains to enhance current climate agreements

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Challenge – Ambitious Next Steps

- Develop mechanisms to expand role of and focus on methane in national strategies
- Establish aggressive processes for identifying and implementing projects
- Establish goals:
  - Set goals for future emission levels: hold anthropogenic levels steady; decrease by 10%, 20%, or even 50%;
  - Set goals for financing and participation;
  - The importance is to set a goal!

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Challenge – Move quickly

- With methane (and ozone) as short-lived climate forcers with special impact on Arctic warming, need to frame and focus any new/expanded global methane efforts on near-term benefits.
- Focus on projects/programs with implementation windows that provide benefits within two decades (preferably less).
- The time to act is now.

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Challenge: Expand the Enterprise

- More countries needed to contribute $ and expertise
- Commitments from partner donors and recipients in exchange for greater funding
- Include education/research as well as emission control projects
- Capacity building around the world

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Summary

- Reductions in methane, and ozone all can have major, near-term benefit to slow polar/alpine warming and melting, as well as improving health
- For Arctic [cryosphere] benefit, nothing more certain and robust than methane reductions
- Arctic and M2M nations can demonstrate means and seriousness by acting first

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For more information and additional scientific presentations:

www.arcticwarming.net

www.amap.no

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