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The Urgency of Methane Reduction: **The Arctic Drama**

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Methane to Markets Partnership
Monterrey, Mexico
January 28, 2009

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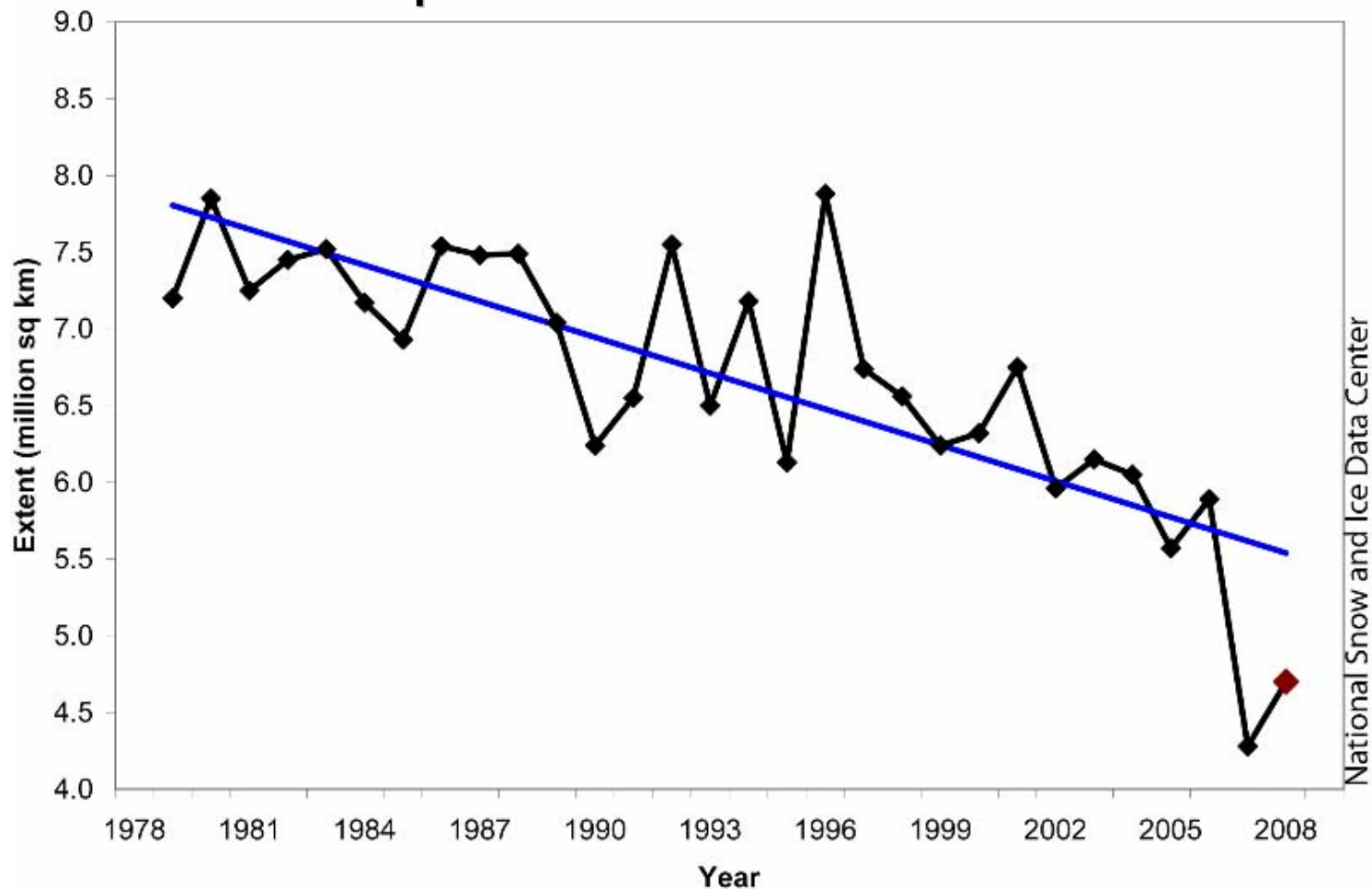
Clean Air-Cool Planet

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



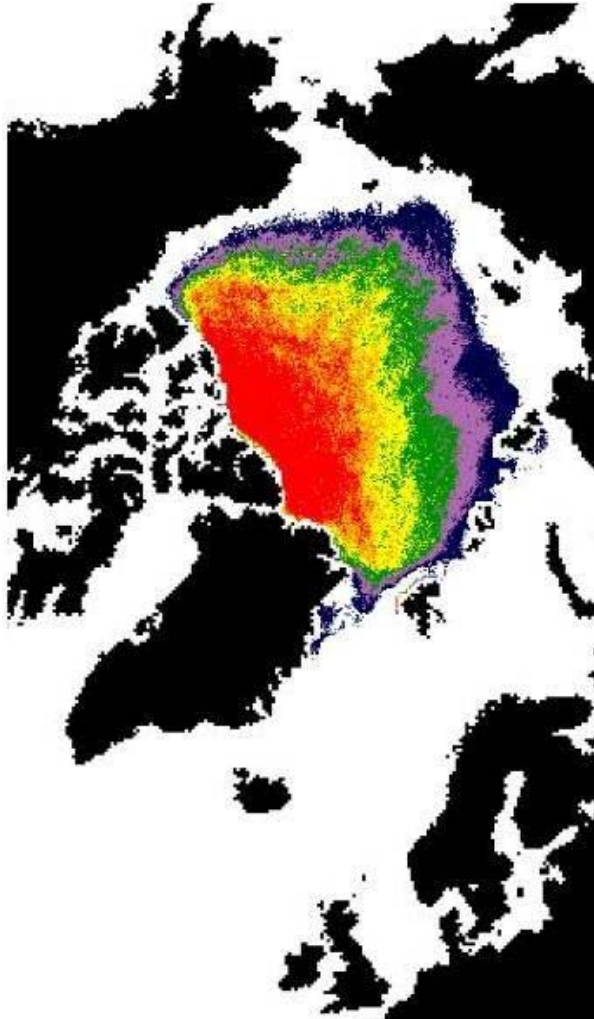
Arctic September ice extent from 1979 to 2008



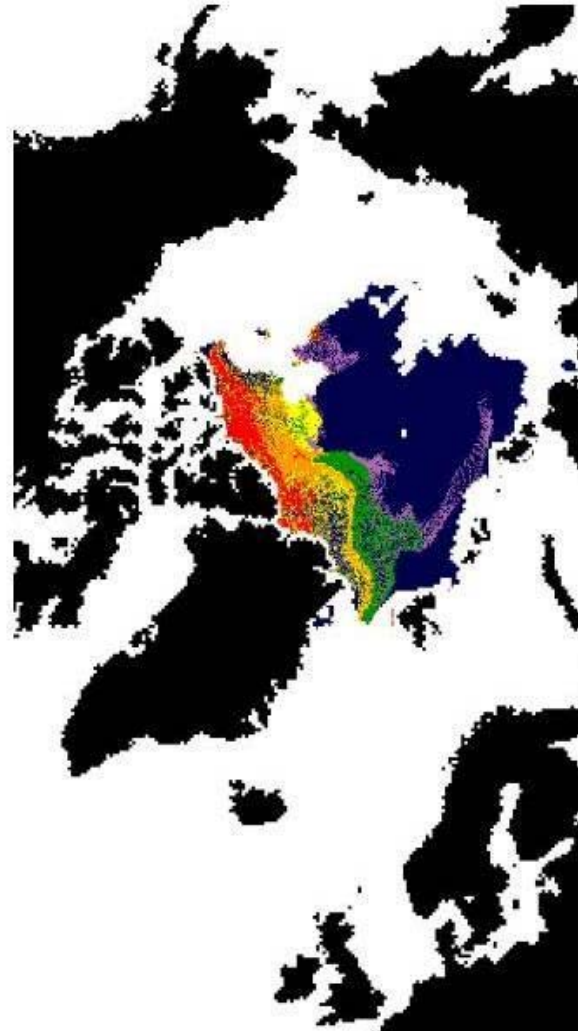
National Snow and Ice Data Center



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



Global Impacts of Arctic Warming

- Change in global energy balance (e.g. “darker” north pole has occurred)
- Ocean circulation changes
- Sea level rise
- Ecosystem changes, e.g. migratory birds

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ScienceDaily

Your source for the latest research news

Web address:

<http://www.sciencedaily.com/releases/2008/12/081217203407.htm>

Scientists Find Increased Methane Levels In Arctic Ocean

ScienceDaily (Dec. 18, 2008) — A team led by International Arctic Research Center scientist Igor Semiletov has found data to suggest the Arctic Ocean is leaking.

The results of more than 1,000 measurements of dissolved methane in the surface water from the East Siberian Arctic Shelf this summer. Siberian Shelf Study show an increased level of methane in the area. Geophysical measurements showed methane bubbles coming out

“The concentrations of the methane were the highest ever measured in the summertime in the Arctic Ocean,” Semiletov said. “We have above the gas-charged sediment and above the chimneys going through the sediment.”

The new data indicates the underwater permafrost is thawing and therefore releasing methane. Permafrost can affect methane release in and on land, it contains frozen organic material such as dead plants and animals. When permafrost thaws, that organic material decomposes into methane and carbon dioxide. In addition, methane, either in gas form or in ice-like methane hydrates, is trapped underneath the permafrost. When the permafrost thaws, the trapped methane can seep out through the thawed soil. Methane, a greenhouse gas 20 times more powerful than carbon dioxide, is an important factor in global climate change.

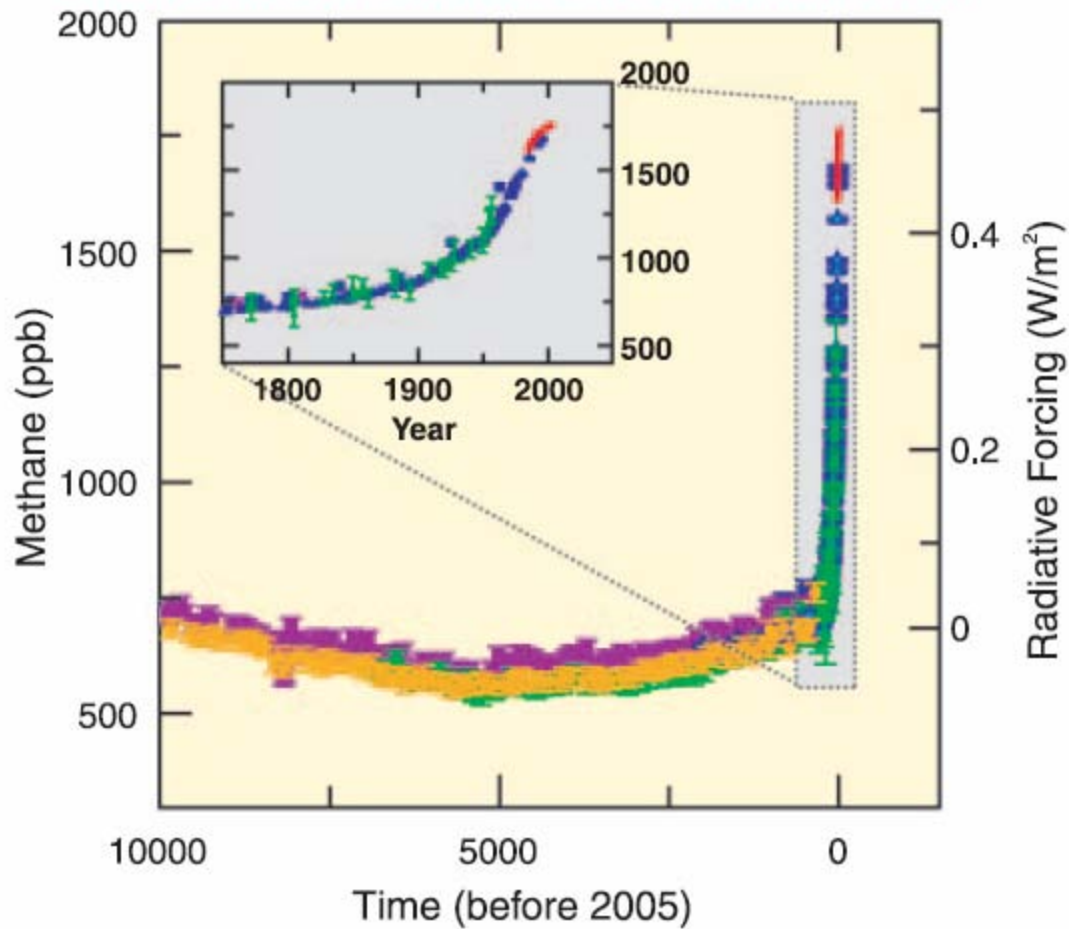


Methane – Levels Rising

- 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.

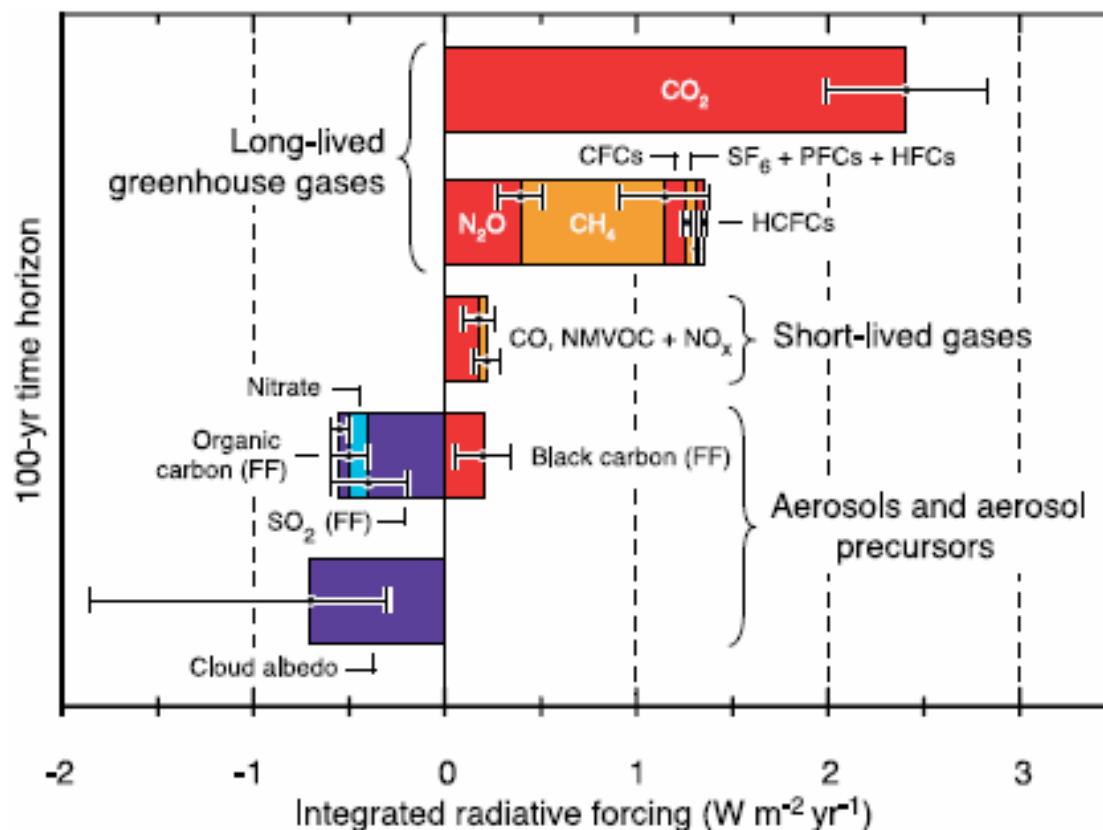


Changes in GHGs from ice core and modern data





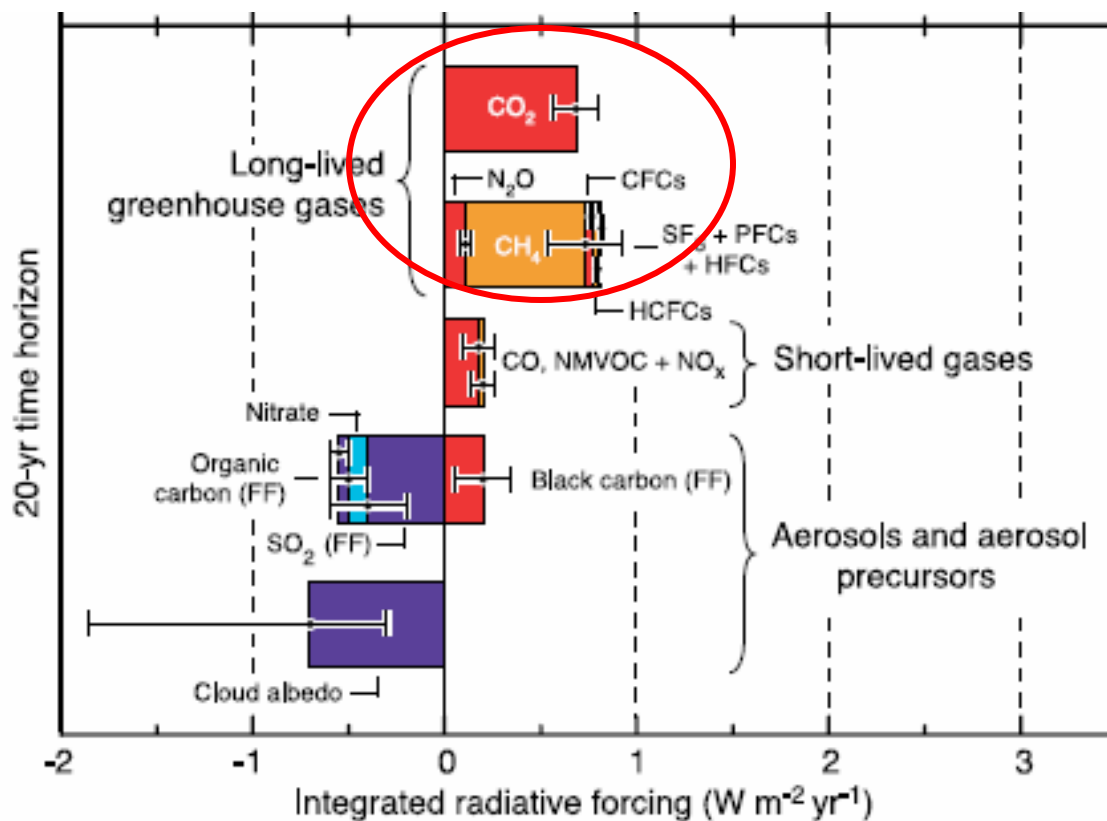
Integrated Radiative Forcing for Year 2000 Global Emissions 100-year Time Horizon





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





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



AMAP Recommendations – Methane

- Methane reductions anywhere on the globe will benefit the Arctic climate.
- Methane mitigation a “no-regrets” measure: both well understood science AND mitigation
- 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.



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



Methane in Arctic Council Ministerial Declaration?

- AMAP and “Senior Arctic Officials” meet in February – methane currently on possible “deliverable” list.
- Ministers meet in Tromsø, Norway April 28-29.
- Denmark (also COP-15 chair) takes over as Council Chair through 2011.

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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



Methane to Markets a Success

- 27 Partner Governments
 - key developed and developing countries
 - over 60 percent of global emissions
- Over 800 public and private sector organizations
- Over 160 projects
 - delivering real emission reductions
 - building capacity for future efforts



The Ground Rules Have Changed

- The importance of methane as climate forcer is more widely understood
- Arctic impacts present increased urgency
- New charter in 2010 and new administration in US present opportunity
- Methane initiative provides short-term gains to enhance Kyoto and successor agreements



Challenge – Ambitious Next Steps

- Expand role of methane in national climate strategies
- Establish accelerated means to identify and implement projects
- Establish goals



Challenge – Set Goals

- Set goals for future emission levels: hold anthropogenic levels steady; decrease by 10%, 20%, or even 50%;
- Set goals for projects: such as 10,000 projects implemented by 2015;
- Set goals for financing and participation;
- The importance is to set a goal!



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.



Challenge: Expand the Enterprise

- More countries needed to contribute \$ and expertise
- Allow moderate costs (\$10-20/ton)
- 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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For more information and additional scientific presentations:

www.arcticwarming.net

www.amap.no

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