



# NEWS

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## New Scientific Consensus: Arctic Is Warming Rapidly

*Much larger changes are projected, affecting global climate*

WASHINGTON—The Arctic is warming much more rapidly than previously known, at nearly twice the rate of the rest of the globe, and increasing greenhouse gases from human activities are projected to make it warmer still, according to an unprecedented four-year scientific study of the region conducted by an international team of 300 scientists.

At least half of the summer sea ice in the Arctic is projected to melt by the end of this century, along with a significant portion of the Greenland Ice Sheet, as the region is projected to warm an additional 7 to 13°F (4–7°C) by 2100. These changes will have major global impacts, such as contributing to global sea-level rise and intensifying global warming, according to the final report of the Arctic Climate Impact Assessment (ACIA).

The assessment was commissioned by the Arctic Council (a ministerial intergovernmental forum comprised of eight nations, including the United States, and six Indigenous Peoples organizations) and the International Arctic Science Committee (an international scientific organization appointed by 18 national academies of science).

The assessment's findings and projections are being released today and will be presented in detail at a scientific symposium in Reykjavik, Iceland, November 9–12, 2004.

The assessment's projections are based on a moderate estimate of future emissions of carbon dioxide and other greenhouse gases, and incorporate results from five major global climate models used by the Intergovernmental Panel on Climate Change.

*"The impacts of global warming are affecting people now in the Arctic," says Robert Corell, chair of the ACIA. "The Arctic is experiencing some of the most rapid and severe climate change on earth. The impacts of climate change on the region and the globe are projected to increase substantially in the years to come."*

### Highlighted Findings

- In Alaska, Western Canada, and Eastern Russia average winter temperatures have increased as much as 4 to 7°F (3–4°C) in the past 50 years, and are projected to rise 7–13°F (4–7°C) over the next 100 years.
- Arctic sea ice during the summer is projected to decline by at least 50 percent by the end of this century with some models showing near-complete disappearance of summer sea ice. This is very likely to have devastating consequences for some arctic animal species such as ice-living seals and for local people for whom these animals are a primary food source. At the same time, reduced sea ice extent is likely to increase marine access to some of the region's resources.
- Warming over Greenland will lead to substantial melting of the Greenland Ice Sheet, contributing to global sea-level rise at increasing rates. Over the long term, Greenland contains enough melt water to eventually raise sea level by about 23 feet (about 7 meters).
- In the United States, low-lying coastal states like Florida and Louisiana are particularly susceptible to rising sea levels.
- Should the Arctic Ocean become ice-free in summer, it is likely that polar bears and some seal species would be driven toward extinction.
- Arctic climate changes present serious challenges to the health and food security of some Indigenous Peoples, challenging the survival of some cultures.
- Over the next 100 years, climate change is expected to accelerate, contributing to major physical, ecological, social, and economic changes, and the Assessment has documented that many of these changes have already begun.

The Arctic Climate Impact Assessment was formally initiated in 2000 at the Ministerial Meeting of the Arctic Council at Point Barrow, Alaska as a joint project between the Arctic Council and the International Arctic Science Committee. As specified in the Barrow Declaration, the goal of the ACIA is to "evaluate and synthesize knowledge on climate variability and change and increased ultraviolet radiation, and support policy-making processes and the work of the Intergovernmental Panel on Climate Change." The Arctic Council directed ACIA to address "environmental, human health, social, cultural, and economic impacts and consequences, including policy recommendations."

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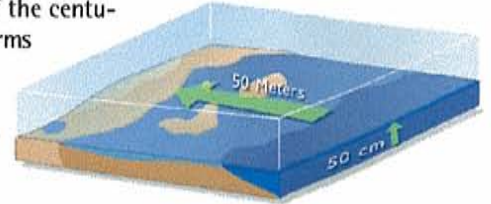


# FACTS

## Increased Warming, Melting Glaciers and Sea Ice

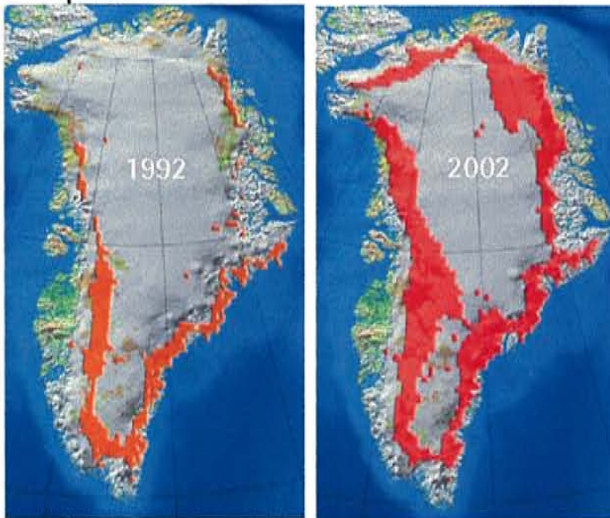
*Much larger changes are projected,  
consequences have worldwide implications*

As much as half the summer sea ice in the Arctic will have melted by the end of the century along with a significant portion of the Greenland Ice Sheet, as the region warms an additional 7 to 12 degrees F. These changes could in turn have a significant impact on the world's climate, according to the final report of the Arctic Climate Impact Assessment (ACIA). More than 250 scientists participated in the study commissioned by the Arctic Council, a ministerial intergovernmental forum comprised of eight nations, including the United States, and six Indigenous Peoples federations.



A 50-cm (1.5 feet) rise in sea level will typically cause a shoreward retreat of coastline of 50 meters (150 feet) if the land is relatively flat (like most coastal plains), causing substantial economic, social, and environmental impacts.

### Greenland Ice Sheet Melt Extent



Seasonal surface melt extent on the Greenland Ice Sheet has been observed by satellite since 1979 and shows an increasing trend. The melt zone, where summer warmth turns snow and ice around the edges of the ice sheet into slush and ponds of meltwater, has been expanding inland and to record high elevations in recent years. When the meltwater seeps down through cracks in the ice sheet, it may accelerate melting and, in some areas, allow the ice to slide more easily over the bedrock below, speeding its movement to the sea. In addition to contributing to global sea-level rise, this process adds freshwater to the ocean, with potential impacts on ocean circulation and thus regional climate.

### Areas in Florida Subject to Inundation with 100 Centimeter (3.3 ft) Sea Level Rise



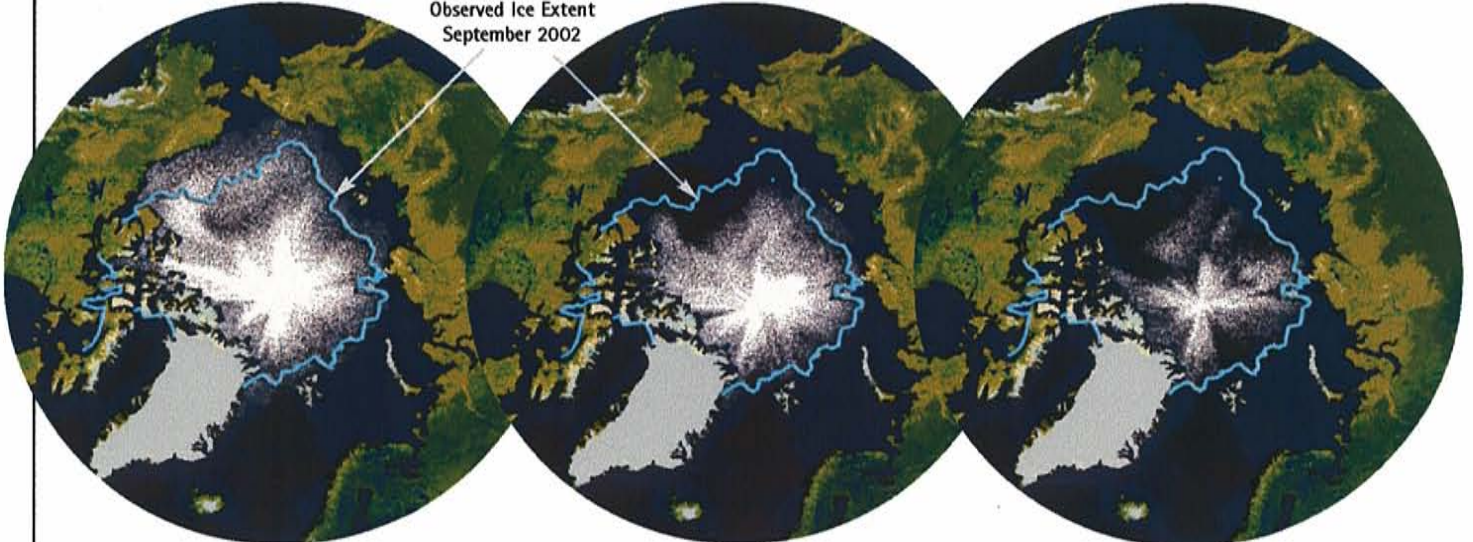
### Projected Sea Ice Extent

2010 - 2030

2040 - 2060

2070 - 2090

Observed Ice Extent  
September 2002



September sea-ice extent, already declining markedly, is projected to decline even more rapidly in the future. The three images above show the average of the projections from five climate models for three future time periods. As the century progresses, sea ice moves further and further from the coasts of arctic land masses, retreating to the central Arctic Ocean. Some models project the nearly complete loss of summer sea ice in this century.