

The Changing State of Sea Ice is Impacting the Globe

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The Arctic has moved to a new climate state, with physical and socio-economic impacts for the globe



- The Arctic is warming faster than anywhere else
- A sea-ice-free Arctic in summer is projected for 2035*, or sooner based on 2009 data
- Sea ice is a thermostat for global climate, and it is no longer functioning the way it used to

** Based on IPCC AR4 models*

Recent changes in Arctic Sea Ice are further indicators that the Arctic has moved to a new climate state, with physical and socio-economic impacts for the globe. Overflights of the Chukchi Sea in autumn 2009 showed it to be warm when it would normally have been freezing, an observation that is confirmed by the slow rate of freezeup seen in satellite measurements of sea ice extent. Satellite observations also show that the thick multi-year ice has retreated dramatically in the past five years. Sea ice is the memory of the system, and these changes are difficult to reverse and have global implications.

Northern continents will warm 3° by 2050, based on IPCC models and atmospheric teleconnections related to the loss of sea ice make it colder and snowier in East Asia, and increase drought conditions in the southwestern USA. Arctic shipping is expanding in Autumn, fisheries are expanding northward, and species are endangered.

Arctic change impacts:

Atmosphere: Large-scale wind patterns impacted by loss of summer sea ice

Sea Ice: Multi-year sea ice is being replaced by first-year sea ice

Ocean: Upper ocean remains warm and less salty

Land: Increased runoff in Siberia, less snow in North America

Greenland: Ice sheet loss continues

Biology and Humans : High Arctic species impacted by loss of sea ice



Commercial fisheries are expanding northward



Northern continents 3°C warmer by 2050 (based on IPCC models)

Changes in sea ice are difficult to reverse, and have global implications



Atmospheric teleconnections related to the loss of sea ice make it colder and snowier in East Asia



Arctic shipping is expanding in Autumn



Species in danger