

Arctic heats up more than other places

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Temperature change in the Arctic is happening at a greater rate than other places in the Northern Hemisphere, and this is expected to continue in the future.

As a result, glacier and ice-sheet melting, sea-ice retreat, coastal erosion and sea level rise can be expected to continue.

A new comprehensive scientific synthesis of past Arctic climates demonstrates for the first time the pervasive nature of Arctic climate amplification.

The U.S. Geological Survey led this new assessment, which is a synthesis of published science literature and authored by a team of climate scientists from academia and government. The U.S. Climate Change Science Program commissioned the report, which has contributions from 37 scientists from the United States, Germany, Canada, the United Kingdom and Denmark.

The new report also makes several conclusions about the Arctic:

Taken together, the size and speed of the summer sea-ice loss over the last few decades is highly unusual compared to events from previous thousands of years, especially considering that changes in Earth's orbit over this time have made sea-ice melting less, not more, likely.

Sustained warming of at least a few degrees (more than approximately 4° to 13°F above average 20th century values) is likely to be sufficient to

cause the nearly complete, eventual disappearance of the Greenland ice sheet, which would raise sea level by several meters.

The current rate of human-influenced Arctic warming is comparable to peak natural rates documented by reconstructions of past climates. However, some projections of future human-induced change exceed documented natural variability.

The past tells us that when thresholds in the climate system are crossed, climate change can be very large and very fast. We cannot rule out that human induced climate change will trigger such events in the future.

"By integrating research on the past 65 million years of climate change in the entire circum-Arctic, we have a better understanding on how climate change affects the Arctic and how those effects may impact the whole globe," said USGS Director Mark Myers. "This report provides the first comprehensive analysis of the real data we have on past climate conditions in the Arctic, with measurements from ice cores, sediments and other Earth materials that record temperature and other conditions."

To view the full report, titled Synthesis and Assessment Product 1.2: Past Climate Variability and Change in the Arctic and at High Latitudes, and a summary brochure on this report, visit www.climatescience.gov/default.php .

Source: United States Geological Survey

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