Photo by Travis Spradling


Photo by Wikimedia

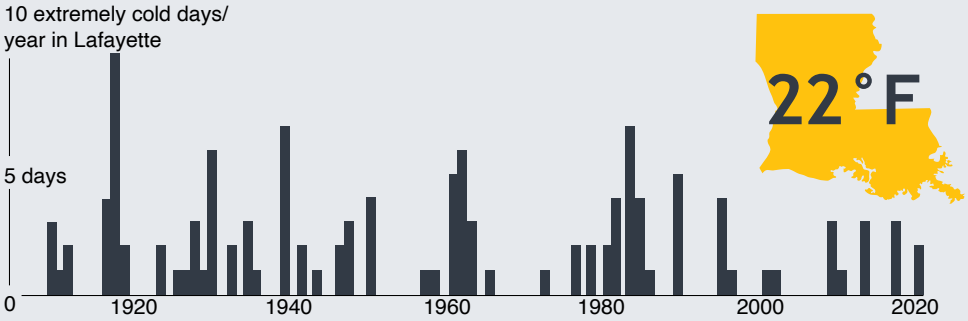
Extreme cold in Louisiana & Alaska

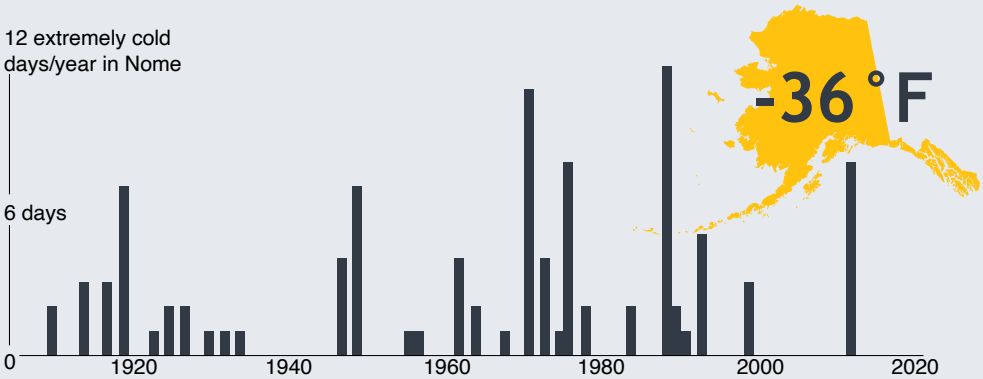
What do Louisiana and Alaska have in common?

Although in very different regions of the United States, water and wastewater management in western Alaska and southern Louisiana are similarly impacted by extreme weather events. In both locations, winter storms wreak havoc by freezing water pipes, flooding infrastructure and more. Research at the University of Alaska Fairbanks and Louisiana State University explores resilience to future trends in extreme cold events in these communities.

How cold is cold?

This research defines extreme cold as the coldest 2% of winter days. In Lafayette, extremely cold days are around 22°F, while in Nome the temperature drops to about -36°F. These graphs show how the number of cold days from December–February has changed over the past century.





Figures by Siiri Bigalke, Alaska Climate Adaptation Science Center and Utah State University.

Are extreme cold events changing?

Yes. Since 1979, extreme cold events have decreased in frequency, duration and spatial extent across most of the world, especially Alaska, Canada, the contiguous United States and the North Atlantic. The few areas of increased extreme cold events include central Eurasia and eastern Europe. Even in the regions with fewer extreme cold events, cold snaps occasionally still occur.

While cold snaps are occasionally still severe, their decreased frequency can contribute to a lack of preparedness. For example, a February 2021 winter storm that hit Texas to Mississippi, including southern Louisiana, cut power to over 4 million people and cost an estimated $500 million.

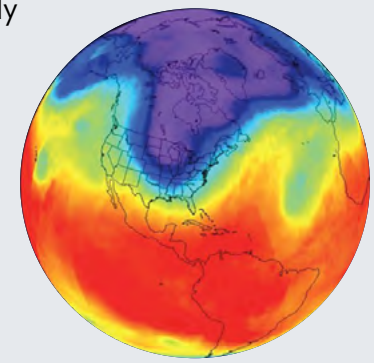
See project materials https://tinyurl.com/5692d9sr
or send questions to accap@uaf.edu

International Arctic Research Center
UAF University of Alaska Fairbanks
ACCAP Alaska Center for Climate Assessment and Policy
SCIPP A NOAA RISA TEAM

Are changes linked to climate change?

Yes. The coldest air masses flowing southward from the Arctic are becoming less cold. As climate change shrinks sea ice, the Arctic loses some of its refrigeration capacities. Shrinking sea ice will continue moderating cold air masses into the future.

Increased waviness of the atmospheric jet stream is contributing to more pronounced warming in the Arctic while simultaneously increasing Eurasian cold events. Whether recent trends in jet stream waviness are linked to climate change depends on how jet stream waviness is characterized.



Climate change causes cold Arctic air to get less cold

Photo by Davin Holen

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Fewer extreme cold events can mean less preparedness

Will extreme cold events go away?

No. Over the next several decades, normal extremes due to year-to-year variability will outweigh the large-scale trend from climate change. This means we will likely continue to see occasional extreme cold events. However, their duration, frequency and intensity will decline.

Winter warming projected by climate models will reduce extreme cold events by 2100. Certain cold thresholds may even disappear completely in some areas. At high-latitudes, the warming driven by loss of sea ice and reduced snow cover will continue to moderate cold air masses.

About this project

In Alaska, this work is conducted by the Alaska Center for Climate Assessment and Policy at the University of Alaska Fairbanks. ACCAP addresses the needs of rural communities by developing materials and relationships that foster resilience, reduce risk and connect scientists and communities. These collaborative efforts enhance community access to information and skills, and facilitates information exchange and research.

The work in Louisiana is in collaboration with the Southern Climate Impacts Planning Program. SCIPP is a climate hazards research program that helps organizations make decisions to build resilience by collaboratively producing research, tools and knowledge that reduce weather and climate risks and impacts across the South Central United States. ACCAP and SCIPP are members of the NOAA RISA network.

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