**Media Contact:**

Maddie Rocklin, [maddie@ninetywest.com](mailto:maddie@ninetywest.com)

**NEW PUBLICATION HIGHLIGHTS CONNECTIONS BETWEEN ARCTIC AND EXTREME WINTER WEATHER**

FALMOUTH, MA — January 14, 2021 — The Polar Vortex is again making headlines, as a major “sudden stratospheric warming” event unfolds over the North Pole about 20 miles high in the atmosphere. These warming events occur naturally about every other year, disrupting the upper-level winds high over the Arctic. While often difficult to predict, they are known to cause a variety of winter weather over major population centers in Eurasia and North America, including persistent frigid spells, heavy snow storms, and even winter heatwaves, all of which can be highly disruptive to transportation, infrastructure, agriculture, and human activities.

This new paper, “How do intermittency and simultaneous processes obfuscate the Arctic influence on midlatitude winter extreme weather events?” co-authored by Dr. Jennifer Francis, a Senior Scientist at Woodwell, provides a comprehensive review of current understanding about the many ways the Arctic and other influences are affecting extreme winter weather. In addition to disruptions of the stratospheric polar vortex, the authors discuss recent research on the roles of Arctic sea-ice loss, ocean temperature patterns, tropical fluctuations, and natural variations in the atmosphere.

“It’s a complicated story,” said Dr. Francis, “but it’s clear that the changing climate, particularly in the Arctic, is affecting winter weather patterns in Europe, Asia, and North America. The winter of 2020/21 is an amazing case study, as we have witnessed near-record-low sea-ice extent, record-breaking Arctic warmth, a major disruption of the stratospheric polar vortex, and a duo of record-breaking weather features: a ridiculously high pressure center over eastern Asia along with a record low-pressure storm near the Aleutian Islands. Recent studies suggest these types of events are connected, and they may happen more often as the Arctic continues to melt and warm faster than elsewhere. In particular, we may see stratospheric disruptions like the present one happen more frequently.”

As the paper is quick to note, however, the atmosphere is a complex beast, and it’s difficult to ascertain which factors may be responsible for any given extreme event. “Mother Nature is not waiting around for researchers to understand all the ways climate change is affecting weather patterns, as she continues to dish up an ever-increasing smorgasbord of weather extremes every year,” Dr. Francis said. “One fact is clear: the loss of three-quarters of the Arctic sea-ice volume in only 40 years is one of the clearest indicators of human-caused climate change, and weather patterns will be affected. The challenge is to figure out when, where, how, and how much.”