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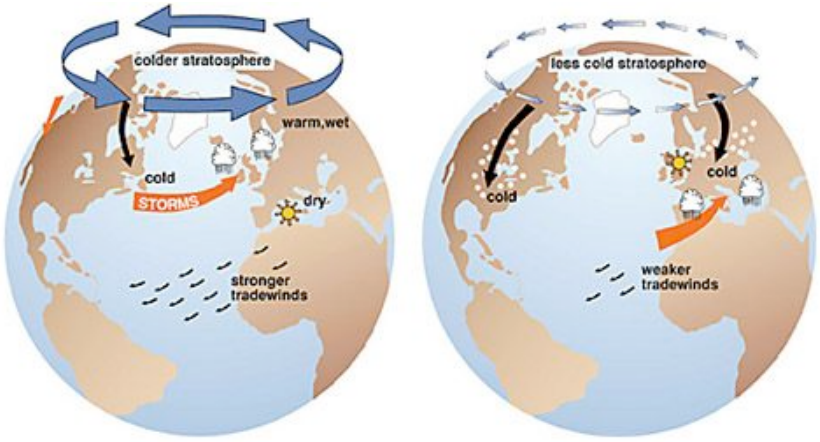
The Arctic Oscillation

The Arctic Oscillation refers to opposing atmospheric pressure patterns in northern middle and high latitudes.

The oscillation exhibits a "negative phase" with relatively high pressure over the polar region and low pressure at midlatitudes (about 45 degrees North), and a "positive phase" in which the pattern is reversed. In the positive phase, higher pressure at midlatitudes drives ocean storms farther north, and changes in the circulation pattern bring wetter weather to Alaska, Scotland and Scandinavia, as well as drier conditions to the western United States and the Mediterranean. In the positive phase, frigid winter air does not extend as far into the middle of North America as it would during the negative phase of the oscillation. This keeps much of the United States east of the Rocky Mountains warmer than normal, but leaves Greenland and Newfoundland colder than usual. Weather patterns in the negative phase are in general "opposite" to those of the positive phase, as illustrated below.

Over most of the past century, the Arctic Oscillation alternated between its positive and negative phases. Starting in the 1970s, however, the oscillation has tended to stay in the positive phase, causing lower than normal arctic air pressure and higher than normal temperatures in much of the United States and northern Eurasia.



Effects of the Positive Phase of the Arctic Oscillation | Effects of the Negative Phase of the Arctic Oscillation

(Figures courtesy of J. Wallace, University of Washington)