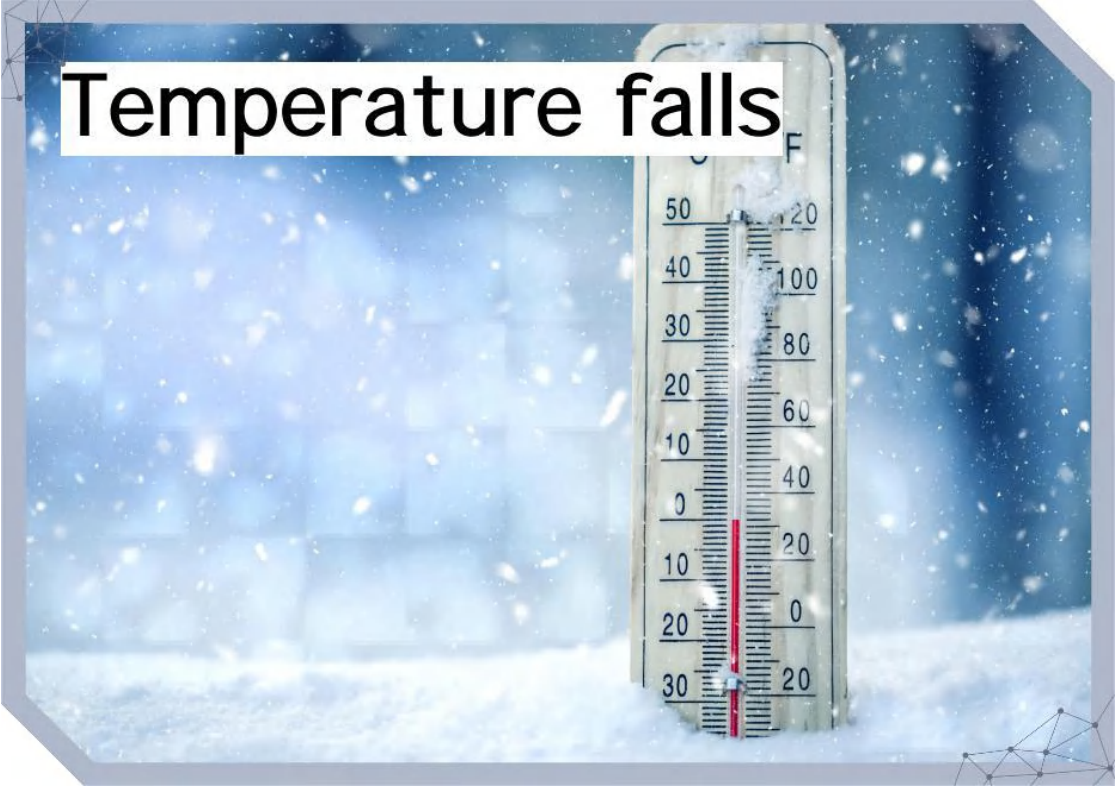

Cold wave

Cold wave

A cold wave is a weather phenomenon that is distinguished by a cooling of the air.The precise criteria for a cold wave are the rate at which the temperature falls, and the minimum to which it falls.

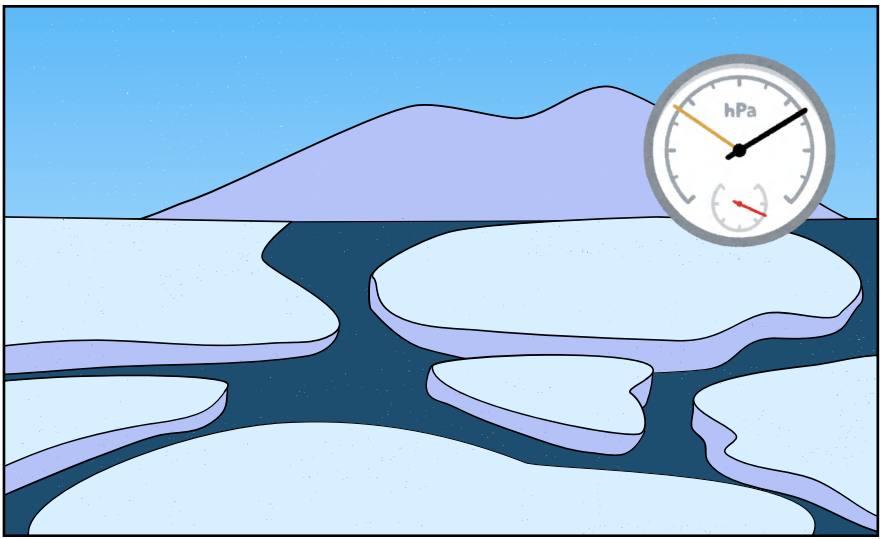
Temperature falls



Temperature falls

In the United States, a cold spell is defined as the national average high temperature dropping below 20 °F (−7 °C). A cold wave of sufficient magnitude and duration may be classified as a cold air outbreak.

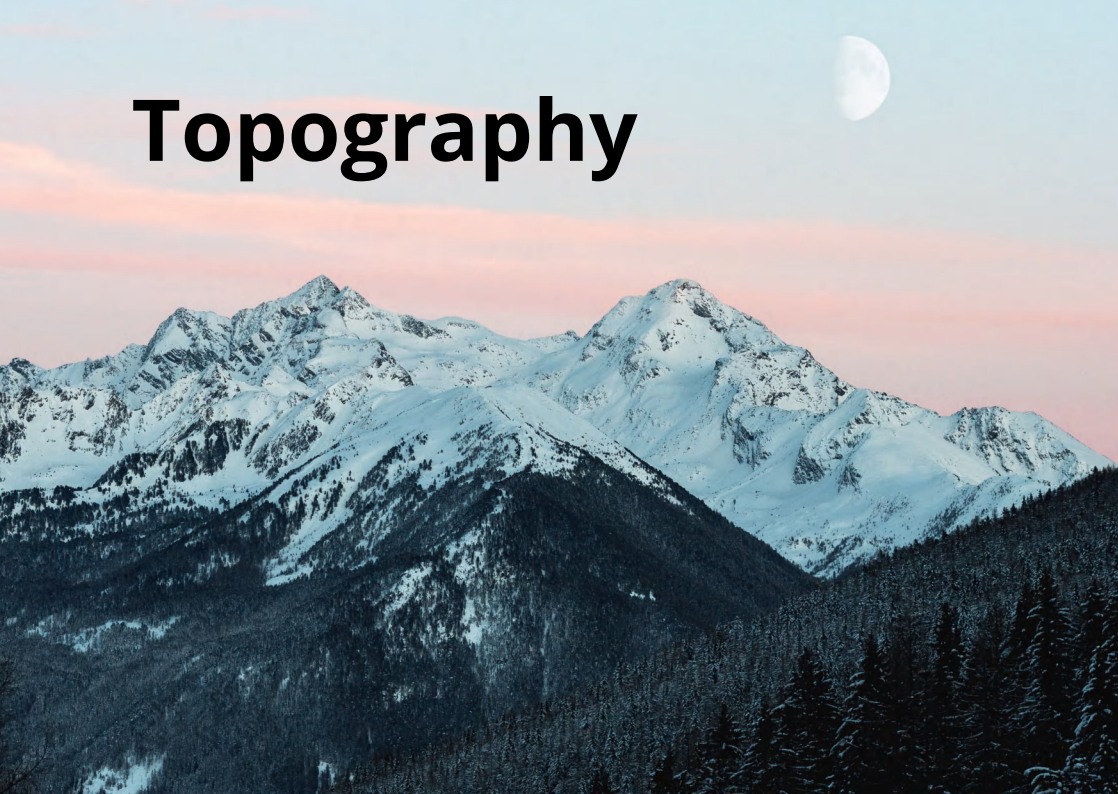
Arctic Oscillation



Arctic Oscillation

Arctic oscillation is the term used to describe the pressure differential between the arctic and the Northern Hemisphere. If positive, the cold air is trapped in arctic else it migrates, thus cooling the Northern Hemisphere.

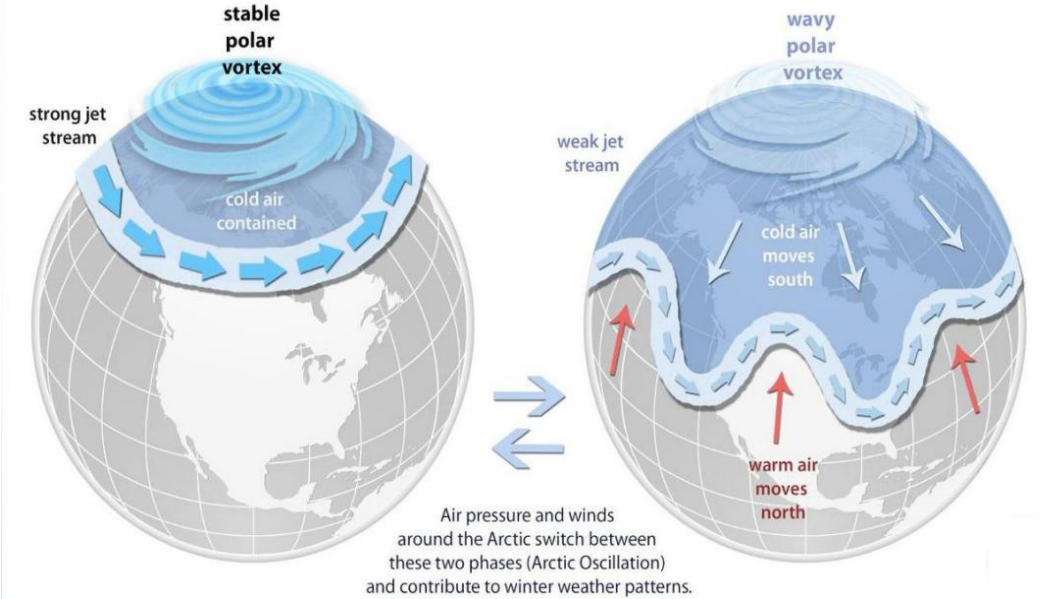
Topography



Topography

Mountain ranges can act as a barrier and trap cold wind in an area. This can cause an extended cold weather in a region. However, mountain passes and the lower region will channel the trapped air.

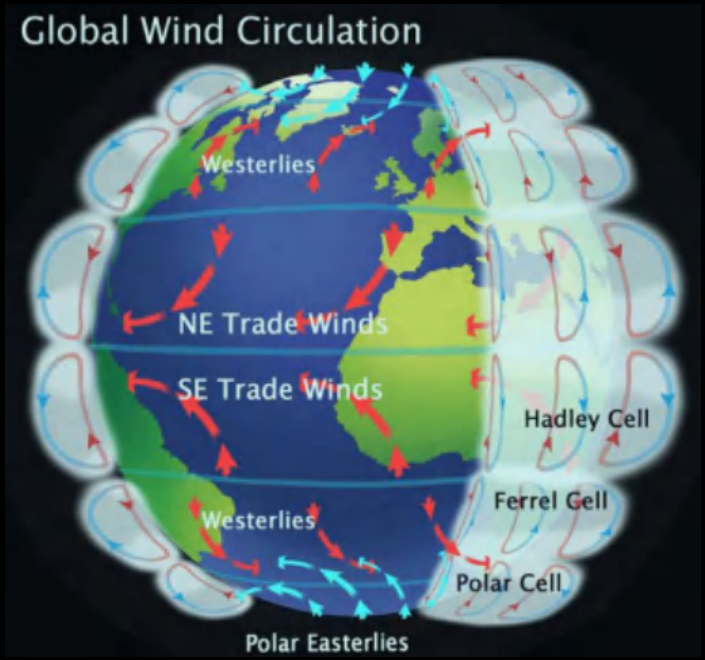
Polar Vortex



Polar Vortex

The polar vortex is a large area of low pressure and cold air surrounding the Earth's North and South poles.The term vortex refers to the counterclockwise flow of air that helps keep the colder air close to the poles (left globe).

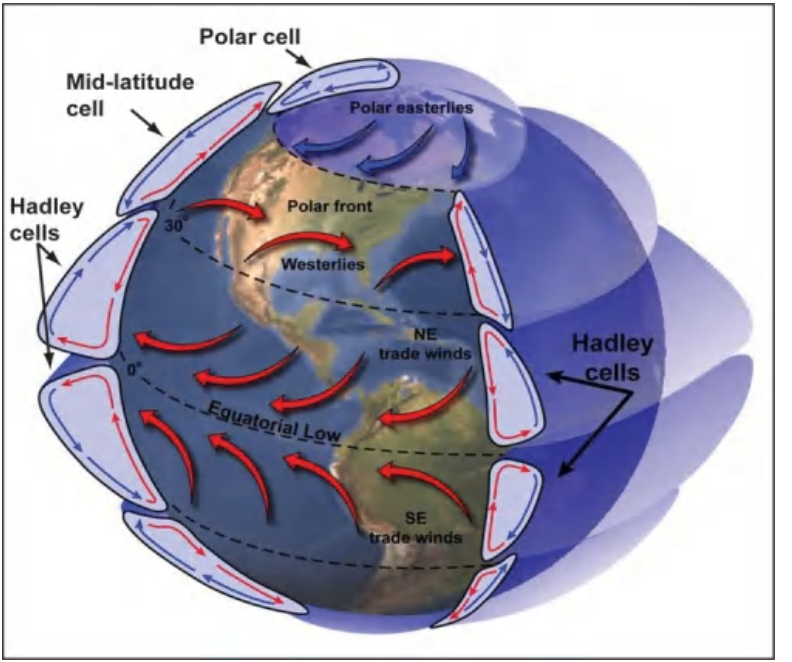
Westerlies


Global Wind Circulation
Westerlies
NE Trade Winds
SE Trade Winds
Hadley Cell
Ferrel Cell
Westerlies
Polar Cell
Polar Easterlies

Westerlies

When the Arctic Oscillation Index is positive, the prevailing westerly winds increase, causing warming in mid latitude areas. When negative, the prevailing westerly wind weakens, the polar cold air moves southward, making mid latitude areas colder.

Heat exchange



Heat exchange

It promotes the exchange of atmospheric heat between different latitudes and prevents high latitudes from getting colder and low latitudes from getting hotter.


Alleviate winter drought

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Cold waves are often accompanied by widespread snowfall, which can alleviate the water shortage in winter compared to other seasons.

Polar ice caps

Polar ice caps

Polar ice caps are large white regions. It reflects light and decrease the gray optical thickness of the Earth.
The colder the Earth, the bigger the ice caps. It's a feedback loop.


Snow fall

Snow fall

The rapid decrease in temperature, cold wind and low pressure can lead to heavy snow fall. Thus covering the Earth with a thick snow jacket