

A snowfall consists of myriads of minute ice crystals that fall to the ground in the form of frozen precipitation. The formation of snow begins with these ice crystals in the subfreezing strata of the middle and upper atmosphere when there is an adequate supply of moisture present. At the core of every ice crystal is a minuscule nucleus, a solid particle of matter around which moisture condenses and freezes. Liquid water droplets floating in the supercooled atmosphere and free ice crystals cannot coexist within the same cloud, since the vapor pressure of ice is less than that of water. This enables the ice crystals to rob the liquid droplets of their moisture and grow continuously. The process can be very rapid, quickly creating sizable ice crystals, some of which adhere to each other to create a cluster of ice crystals or a snowflake. Simple flakes possess a variety of beautiful forms, usually hexagonal, though the symmetrical shapes reproduced in most microscope photography of snowflakes are not usually found in actual snowfalls. Typically, snowflakes in actual snowfall consists of broken fragments and clusters of adhering ice crystals. For a snowfall to continue once it starts, there must be a constant inflow of moisture to supply the nuclei. This moisture is supplied by the passage of an airstream over a water surface and its subsequent lifting to higher regions of the atmosphere. The Pacific Ocean is the source of moisture for most snowfalls west of the Rocky Mountains, while the Gulf of Mexico and the Atlantic Ocean feed water vapor into the air currents over the central and eastern sections of the United States. Other geographical features also can be the source of moisture for some snowstorms. For example, areas adjacent to the Great Lakes experience their own unique lake-effect storms, employing a variation of the process on a local scale. In addition, mountainous section or rising terrain can initiate snowfalls by the geographical lifting of a moist airstream.