

ACTIVITY I SPOTLIGHT ON SNOW

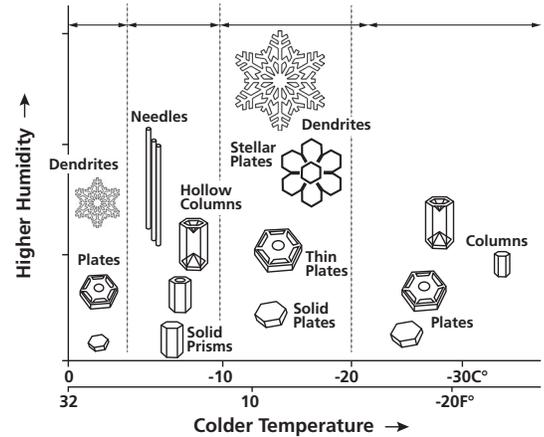
The Search for Snow is a new 3D movie that shows the beauty of snow in a whole new way. It also shows the impact snow has on the environment and living things. You will travel across the globe from icy mountain peaks to sunny valleys, from the Great Lakes to the Alps and beyond. You will learn how weather connects and creates ecosystems, how plants and animals survive in snowy habitats, and how the planet’s changing climate will affect them and us in surprising ways.

PART 1: AS IT FALLS

First, take a look at how snow forms. Use the word bank and chart to complete the paragraph below.

atmospheric **dendrites** **precipitation**
columns **humidity** **temperature**
crystals **plates** **vapor**

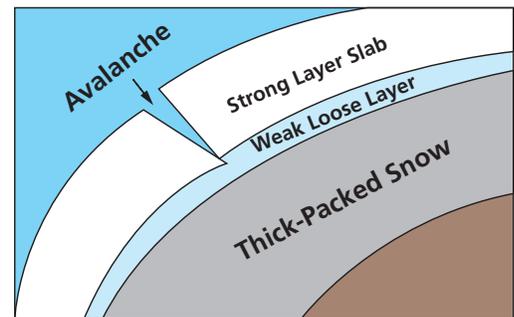
Snowflakes are clusters of _____. They form in the clouds when water _____ (a gas) freezes directly onto a small solid particle (pollen or dust) called a *condensation nuclei*, without ever becoming a liquid! Other icy forms of _____, like sleet, start as raindrops which then freeze. Snowflakes come in many shapes based on the _____ conditions. As snowflakes fall, they continue to grow and change shape based on _____ and _____. In cold conditions with low humidity, snow crystals will be simple _____ and _____. Lacy _____ like we see in movies and coloring books require warmer temperatures and more moisture in the air.



PART 2: ON THE GROUND

Snow is always changing, even after it hits the ground. As it piles up during the winter, it builds layers called a *snowpack*. Every time there is a snowstorm, it adds another layer to the snowpack.

In places where temperatures remain freezing over a long winter season, as in the mountains and Arctic climates, the snowpack can be very deep and complex. When a thick, heavy layer builds over a looser layer, where snow slides around, it can cause an avalanche.



Use the materials your teacher provides to build a model snowpack. Then test how different snowflake shapes react to “avalanche” conditions.

1. Use a textbook to represent the dense layer at the base of the snowpack.
2. Now sprinkle some “snowflakes” on the base. Use round toothpicks for the column and needle shapes, sticky notes for plates, small pieces of paper for dendrites, and salt for pellets of icy snow. Test one shape at a time rather than mixing different shapes together.
3. Stack another textbook on top of the “snowflake” layer, then lift one end of the bottom book to cause an “avalanche.” Observe what happens. How long does it take for the top book to slide off? At what angle does it begin to slide? Record your observations of time and angle on the back of this sheet.
4. Keep experimenting. Try putting two or more layers of “snowflakes” between the books (toothpicks over salt, for example). Record your conclusions here:

Which stack is the most stable? _____ Which is the least stable? _____

What happens if you layer denser materials on top of looser materials? _____