ICE CORES 101

Via Climap – http://climap.net/ice-core

An ice core is a cylindrical sample of ice, typically from the ice sheets of Antarctica and Greenland or from mountain glaciers.
Ice cores are used by paleoclimatologists for determining ancient climate conditions.
From ice cores the scientists are able to gain information about past climate including its temperature, atmosphere, and precipitation. Ice cores from Antarctica go back about 800,000 years.

1. What does the word "climate" mean? What are ice cores used for?

2. How can ice cores be useful for scientists?

Snow is formed by crystallization around small particles in the atmosphere, and these particles fall to the ground with the snow. The particles could be ash from erupting volcanoes, pollen, or smoke, and provide the scientists with clues about the environment and climate at the time the snow fell.

TAPE ALONG THIS EDGE

When the snow lands on the ice, air fills the space between the ice crystals. As more snow settles on top of it, the ice gets compressed and eventually tiny air bubbles get trapped in the ice. The bubbles contain the gases of the atmosphere at the time they became trapped in the ice. This information is also of great value for reconstructing past climate conditions.

3. What are 3 particles in the air that could become trapped by ice?

4. In 5 sentences or less, describe how snow and gasses become trapped in ice.

In addition the ice itself reveals information. The relationship between heavy and light water molecules in the snow depends on the temperature at the time the snow fell. A low content of heavy water molecules indicate a cold climate, and a high content a warm. By analyzing the ice core it is possible to construct a vertical time line of temperatures going back many thousands years.

5. Complete the chart below:

	Ice Core Content of Heavy Water	
	Low content	High Content
Climate on Earth		

Ice core research has recently dated the end of the last ice age at exactly 11,711 years ago.

The different climatic information contained in ice cores make them an important tool for paleoclimatologists.

6. Provide at least 3 reasons why ice cores can be useful as it relates to climate change and type of organisms living during that time.