Main points:

(1) The present world climate has lasted about 10,000 years and is the longest known more-or-less stable climate period in the last 420,000 years;

(2) Even within our stable period, there have been regional catastrophes:
   * The “little Ice Age” in Europe and the North Atlantic from about 1500-1800. The Viking colony on Greenland starved to death and vanished. The population of Iceland dropped by 50%. Small towns in Switzerland were abandoned as glaciers moved in;
   * American Indian tribes in our Southwest and the Mayans in the Yucatan abandoned their towns and cities as a result of a savage drought in the 1200s, longer and worse than the Dust Bowl of the 1930s;

(3) Most of the global warming controversy is centered around two questions:
   * Is the temperature of the planet increasing?
   * Are humans (mostly) responsible for the climate changes?
To discuss these questions I will introduce you to some new ideas:
   * Blackbody radiation;
   * Molecules and what light they absorb and emit (such as CO$_2$, CH$_4$, nitrous oxides)-greenhouse gases;
   * Sources of such molecules in history and recently;
   * How much of a temperature change matters?
   * What are the main contributors and sources of greenhouse gases? What might such sources be in the near future?

(4) There is not much discussion of two other possibilities, but these are potentially so important I will discuss them:
   * Abrupt (1-50 years) changes in climate to either a glacial climate or a “hot” climate (> 10C higher than today);
   * Climate changes that accelerate and what possibilities “accelerate” include.

There is a reference I strongly recommend you read:
http://www.aip.org/history/climate/rapid.htm