

should address the issue of the changing composition of the atmosphere and the rapid pace of change, with a view to slowing down the pace of that change.

Predicting Climate Change

In order to develop a sense of how vulnerable our planet may be, Fred Roots, Science Advisor Emeritus to Environment Canada, presented a brief history of the earth. There have been many profound changes on the earth in its 5 billion year history and, at least five times in the last 5 million years, there have been sudden and catastrophic mass extinctions.

Of the many hypotheses that have been put forward to explain these and other catastrophes, the most plausible, in Dr. Roots's view, is the superimposition of a rapid, worldwide change in environmental conditions on an already stressed and overloaded system. These changes in the distant past illustrate that conditions on earth have not always been as they are today and that marked changes now or in the future are possible. They also provide the only examples available of large-scale environmental and biological responses to change. Some of these examples suggest that when conditions become stressed, quite small changes in ordinary events may lead to overall significant changes.

Effects of Climate Change

The basic physical processes and scientific measurements of climate change were viewed as "fairly sound." But the enormous complexity and variability of the environmental response was subject to greater speculation. Dr. Roots outlined the general areas of agreement on the effects of a global rise in temperature. He also described some of the likely impacts of climate change in several areas including changes in precipitation patterns and major atmospheric circulation patterns as well as significant changes in hydrology.