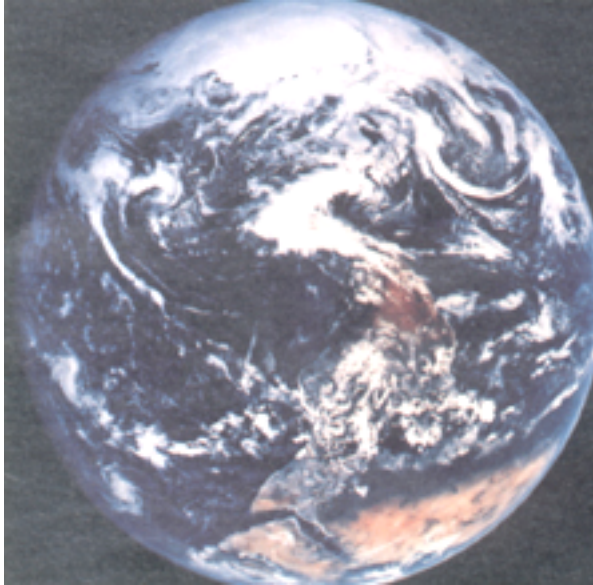


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## The Greenhouse Effect and the Ocean



Planet Earth as seen from space

In recent years, much attention has been paid to the role of so-called "greenhouse gases" in the earth's climate. These gases, most of which occur naturally in abundance, include water vapor, carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O) and ozone (O<sub>3</sub>).

The greenhouse gases rise through the troposphere, the layer of atmosphere closest to the earth (about 11 km above the earth's surface). At this level, these gases, as well as dust and clouds, affect the way heat from the sun is held within the earth's atmosphere, and the way the sun's rays are transformed into energy on the earth's surface.

Over the last century, human activities such as the burning of fossil fuels, factory output, and wide-scale farming may have caused these gases to build up in our atmosphere. It's been predicted that if this buildup continues, temperatures on earth could rise as much during the next century as during the 18,000 years since the last Ice Age.

This could cause familiar weather patterns on earth to change dramatically. What might happen? Now-dry areas could see great increases in rainfall. Areas that now have plenty of water could experience droughts. Global warming could also raise the temperature of the ocean, and lead to melting of polar ice caps. This could result in a rise in sea levels, threatening coastal areas.

Scientists around the world are working together on large-scale studies they hope will help explain how the earth's climate works. Not enough is known yet about how the earth as a system operates. The ocean's role in the process is especially mysterious. Covering 70% of our planet, the ocean, the sun that beats down on it, and the winds that blow over it regulate the earth's climate in ways that are not yet well understood.

To make their studies, scientists are collecting measurements from buoys, research ships, and satellites. They use the information they collect to create computer models they hope will begin to explain and predict large-scale climactic events. The models may help us all make good choices for the future of our planet.