

## “Climate Change”

Climate change is with us. A decade ago, it was conjecture. Now the future is unfolding before our eyes. Canada's ~~Inuit~~ see it in disappearing ~~Arctic ice~~ and ~~permafrost~~. The shantytown dwellers of Latin America and Southern Asia see it in lethal storms and floods. ~~Europeans~~ see it in ~~disappearing glaciers~~, ~~forest fires~~ and ~~fatal heat waves~~.

Scientists see it in ~~tree rings~~, ~~ancient coral~~ and bubbles trapped in ~~ice cores~~. These reveal that the world has not been as warm as it is now for a millennium or more. The three ~~warmest years~~ on record have all occurred since 1998; 19 of the warmest 20 since 1980. And Earth has probably never warmed as fast as in the past 30 years - a period when natural influences on global temperatures, such as ~~solar cycles~~ and ~~volcanoes~~ should have cooled us down. Studies of the ~~thermal inertia~~ of the oceans suggest that there is more warming in the pipeline.

Climatologists reporting for the UN ~~Intergovernmental Panel on Climate Change~~ (IPCC) say we are seeing global warming ~~caused by human activities~~ and there are ~~growing fears~~ of feedbacks that will ~~accelerate~~ this warming.

### Global greenhouse

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People are causing the change by burning nature's vast stores of ~~coal~~, ~~oil~~ and ~~natural gas~~. This releases billions of tonnes of carbon dioxide (CO<sub>2</sub>) every year, although the changes may actually have started with the ~~dawn of agriculture~~, say some scientists.

The physics of the "~~greenhouse effect~~" has been a matter of scientific fact for a century. CO<sub>2</sub> is a greenhouse gas that traps the Sun's radiation within the ~~troposphere~~, the lower atmosphere. It has accumulated along with other man-made greenhouse gases, such as ~~methane~~ and ~~chlorofluorocarbons~~ (CFCs).

If current trends continue, we will raise atmospheric CO<sub>2</sub> concentrations to double pre-industrial levels during this century. That will probably be enough to raise global temperatures by around 2°C to 5°C. Some warming is certain, but the degree will be

determined by feedbacks involving ~~melting ice, the oceans, water vapour, clouds and changes to vegetation.~~

Warming is bringing other ~~unpredictable~~ changes. ~~Melting glaciers~~ and precipitation are causing some rivers to overflow, while evaporation is emptying others. ~~Diseases are spreading. Some crops grow faster~~ while ~~others see yields slashed~~ by disease and ~~drought~~. ~~Strong hurricanes~~ are becoming more frequent and destructive. Arctic sea ice is ~~melting faster~~ every year, and there are growing fears of a ~~shutdown~~ of the ocean currents that keep Europe warm for its latitude. Clashes over ~~dwindling water resources~~ may cause conflicts in many regions.

As natural ecosystems - such as ~~coral reefs~~ - are disrupted, biodiversity is reduced. Most species ~~cannot migrate fast enough~~ to keep up, though others are ~~already evolving~~ in ~~response to warming~~.

Thermal expansion of the oceans, combined with melting ice on land, is also raising sea levels. In this century, human activity could trigger an irreversible melting of the ~~Greenland ice sheet~~ and ~~Antarctic glaciers~~. This would condemn the world to ~~a rise in sea level~~ of six metres - enough to ~~flood land occupied by billions~~ of people.

The global warming would be more pronounced if it were not for ~~sulphur particles~~ and other pollutants ~~that shade us~~, and because ~~forests~~ and ~~oceans~~ absorb around half of the CO<sub>2</sub> we produce. But the accumulation rate of atmospheric CO<sub>2</sub> has increased since 2001, suggesting that nature's ability to absorb the gas could now be stretched to the limit. Recent research suggests that natural CO<sub>2</sub> "sinks", like ~~peat bogs~~ and ~~forests~~, are actually ~~starting to release~~ CO<sub>2</sub>.

Source:

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<http://www.newscientist.com/article/dn9903-instant-expert-climate-change.html>>