



Fact Sheet

Climate Change at a Glance

- **Increased warming:** Eleven of the last twelve years rank among the warmest years in global surface temperature since 1850. The rate of warming averaged over the last 50 years is nearly twice that for the last 100 years. The average global temperature went up by about 0.74°C during the 20th Century with the warming affecting land more than ocean areas.
- **There is more carbon dioxide in the atmosphere:** Carbon dioxide is the dominant contributor to current climate change and its atmospheric concentration has increased from a pre-industrial value of 278 parts-per million (ppm) to 379 in 2005.
- **More water, but not everywhere:** More precipitation has been observed in the eastern parts of North and South America, northern Europe and northern and central Asia in recent decades. But the Sahel, the Mediterranean, southern Africa and parts of southern Asia have experienced drying. More intense and longer droughts have been observed over wider areas since the 1970s.
- **Sea level is rising:** The Intergovernmental Panel on Climate Change is highly confident that the rate of observed sea level rise increased from the 19th to 20th century, and the total 20th century rise is estimated to be 0.17 metre. Geological observations indicate that sea level rise over the previous 2,000 years was far less. The average temperature of the global ocean has increased to depths of at least 3,000 metres.
- **Less snow cover:** Snow cover is decreasing in most regions, particularly in spring. The maximum extent of frozen ground in the winter/spring season has decreased by about 7 per cent in the Northern Hemisphere since 1900, and on average rivers that freeze do so some 5.8 days later than a century ago and their ice breaks up 6.5 days earlier.
- **Glaciers are melting:** Mountain glaciers and snow cover have declined, on average, in both hemispheres, and have contributed to sea level rise by 0.77 millimetres a year from 1993 to 2003. Shrinkage of the ice sheets of Greenland and Antarctica have contributed to a sea level rise of 0.4 millimetres a year between 1993 and 2003.
- **Arctic is warming:** Average Arctic temperatures increased at almost twice the global average rate in the past 100 years. Satellite data since 1978 show that the average Arctic sea ice extent has shrunk by 2.7 per cent per decade.

New Projections Indicate Faster Warming...

- Continued greenhouse gas emissions at or above the current rates would cause further warming and induce many changes in the global climate system during the 21st century that would very likely be larger than those observed during the 20th century.
- The degree of warming depends on the degree of emissions: If carbon dioxide concentrations were stabilized at 550 ppm — double the pre-industrial levels — the average warming expected would likely be in the range of 2-4.5°C, with the best estimate of 3°C, or 5.4°F. A warming of 0.2°C per decade is expected for each of the next two decades for a range of scenarios that do not include deliberate reductions in greenhouse gas emissions.
- Other greenhouse gases contribute to warming and if their combined effect were equivalent to a carbon dioxide level of 650 ppm, the global climate would “likely” warm by 3.6°C, while a level of 750 ppm would produce warming of 4.3°C. Projections depend on factors such as economic growth, population, new technologies and other factors.



...and Greater Consequences

- Warmer global temperatures are already causing profound changes in many of the earth's natural systems. Approximately 20-30 per cent of plant and animal species assessed so far are likely to be at increased risk of extinction if increases in global average temperature exceed 1.5-2.5°C.
- A temperature increase of 3°C during this century would have largely negative consequences for biodiversity ecosystems that produce essential goods and services, such as water and food supply.
- As a result of warmer temperatures, springtime events are occurring earlier, such as increased run-off and peak discharge in many glacier- and snow-fed rivers, "greening" of vegetation and migration and egg-laying by birds. More animal and plant species have also been observed shifting toward higher latitudes.
- More precipitation in the high latitudes: Increases in precipitation are very likely in the high latitudes while decreases are likely in most subtropical land regions.
- Model based estimates for sea-level rise due to ocean expansion and glacier melt by the end of the century (compared to 1989-1999 levels) have narrowed from previous assessments to 18-58 cm. However, larger values cannot be ruled out if recently observed movements of ice sheets were to increase as temperature rises.
- Contraction of the Greenland ice sheet is projected to contribute to sea level rise into the 22nd century and the ice sheet could face complete elimination if global average warming of 1.9-4.6°C is maintained for a millennium. In that case, sea level would rise by up to 7 metres.

