

Where are we today -- 25 years later?

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July 29 marked the 25th anniversary of the Toronto Conference, a “perfect storm” of events that launched the issue of climate change onto the global policy agenda. So where are we today – 25 years later? Part two of a four-part series. Part 1 ran Friday, July 26. Part 3 will appear Wednesday, July 31.

The global level of carbon dioxide, the most important heat-trapping gas in the atmosphere, passed a long-feared milestone in May of this year, reaching a concentration not seen on the earth for millions of years.

Scientific instruments show that carbon dioxide levels had reached an average daily level above 400 parts per million (ppm) — a sobering reminder that decades of efforts to bring human-produced emissions under control are faltering.

For the entire period of human civilization, roughly 8,000 years, the carbon dioxide level was relatively stable near 280 ppm. But the burning of fossil fuels has caused a 41 per cent increase in the heat-trapping gas since the Industrial Revolution, and scientists say the climate is beginning to react, though they expect far larger changes in the future.

Scientists say the atmospheric concentration of carbon dioxide level symbolizes that so far humans have failed miserably in tackling this problem. A continuing rise could be catastrophic. It means humans are quickly losing the possibility of keeping the climate below what people thought were possibly tolerable thresholds.

Climate Science More Certain

In the past 25 years, the science has become more certain, the threats more clearly understood, and the need to reduce emissions more urgent. The Intergovernmental Panel on Climate Change (IPCC), the global community’s scientific authority on these matters, will release its Fifth Assessment Report (AR5) over the next 18 months.

The Fourth Assessment Report (2007) concluded that warming of the climate system is unequivocal. Further support is given for this conclusion in the AR5 through new observations, longer data sets, and more paleo-climate information. Confidence is stronger that many changes in the climate system are significant, unusual or unprecedented.

Widespread warming is observed across the surface of the Earth, as well as in the upper ocean. Each of the last three decades has been significantly warmer than all preceding decades since 1850. It is extremely likely that human activities have caused more than half of the observed increase in global average surface temperature since the 1950s. There is high confidence that this has caused large-scale changes in the ocean, in the cryosphere, and in sea level in the second half of the 20th century. Some extreme events have changed as a result of this anthropogenic influence.

Effects of Climate Change More Foreboding

The drastic melting of Arctic sea ice reached historic lows in 2012 setting off new warnings about the rapid pace of change in the region. The U.S. National Snow and Ice Data Center recorded sea ice in August 2012 covered about 1.32 million square miles, or 24 per cent, of the surface of the Arctic Ocean.

Some scientists are concerned about the larger climate effects of low sea ice conditions. Some think the collapse of Arctic sea ice has already started to alter atmospheric patterns in the Northern Hemisphere, contributing to greater extremes of weather in the United States and other countries, but that case is not considered proven.

What is particularly worrying is that the sea ice is declining much faster than had been predicted in the last IPCC

report on the state of the climate, published in 2007. The most sophisticated computer analyses for that report suggested that the ice would not disappear before the middle of this century, if then. Now, some scientists think the Arctic Ocean could be largely free of summer ice as soon as 2020.

Last summer's continent-wide drought — the worst seen in over a decade— led some residents outside municipal water districts to struggle for water supplies for the most basic of activities. Farmers complained about stunted crop growth. Complicating matters, many of the worst-hit areas have even less water on hand than a year ago, raising the spectre of shortages and rationing that could inflict another year of losses on struggling farms.

Around the world, extreme weather has become the new commonplace, especially last winter. China endured its coldest winter in nearly 30 years; Brazil was in the grip of a dreadful heat spell; and Eastern Russia was so freezing — minus 46 degrees Celsius— that the traffic lights stopped working in the city of Yakutsk.

Bush fires raged across Australia, fueled by a record-shattering heat wave. A vicious storm bringing rain, snow and floods struck the Middle East. In the United States, scientists confirmed that 2012 was the hottest since records began, and in the UK, 2012 was declared the wettest year in England since records began more than 100 years ago.

Each year we have extreme weather, but it is unusual to have so many extreme events around the world at once. Such events are increasing in intensity as well as frequency, a sign that climate change is not just about rising temperatures, but also about intense, unpleasant, anomalous weather of all kinds.