

Cutting greenhouse gases by 70 percent this century would spare the planet the most traumatic effects of climate change, including the massive loss of Arctic sea ice, a study said Tuesday.

The cuts would also prevent huge losses of permafrost and a significant rise in the sea level, said the study to be published next week in Geophysical Research Letters.

"This research indicates that we can no longer avoid significant warming during this century," said Washington, who ran a series of global supercomputer studies.

The planet's average temperatures have warmed by nearly one degree Celsius (1.8 degrees Fahrenheit) since the pre-industrial era. Most of the warming is due to emissions from greenhouse gases, chief among them carbon dioxide, the study noted.

Those gases have increased from a pre-industrial level of about 284 parts per million (ppm) in the atmosphere to more than 380 ppm today. Recent studies have found that temperatures would reach the threshold for dangerous climate change if they rise by an additional one degree Celsius.

If carbon dioxide emissions were to plateau and maintained at 450 ppm -- cited as an attainable target by the US Climate Change Science Program if dramatic emissions cuts are enacted -- global temperatures would rise by 0.6 degrees Celsius (one degree Fahrenheit) by the end of the century, the study said.

But if emissions were allowed to continue their current trend, temperatures would rise by almost four times that amount, to 2.2 degrees Celsius (four degrees Fahrenheit).

The researchers pointed to several major benefits from cutting carbon dioxide emissions.

Holding emissions at 450 ppm would translate to sea levels rising by 14 centimeters (5.5 inches) instead of 22 centimeters (8.7 inches) due to thermal expansion.

Arctic ice volume would shrink by almost a quarter in summertime and stabilize by 2100, rather than shrinking at least by three-quarters and continuing to melt.

The researchers also found that the climate system would stabilize by about 2100, rather than continuing to warm.

"This study provides some hope that we can avoid the worst impacts of climate change--if society can cut emissions substantially over the next several decades and continue major cuts through the century," Washington said.

European Union nations have agreed to cut their greenhouse gas emissions by 20 percent by 2020 from 1990 levels, rising to 30 percent if the rest of the developed world -- mainly the United States and Japan -- agrees to follow suit.

During the 2008 US presidential campaign, Barack Obama vowed to match the European Union's mid-century objectives of cutting CO2 emissions by 80 percent.

But as president, Obama has offered a more modest goal for 2020 of returning the United States to 1990 level emissions, a reduction of about 14 percent from current levels.

Obama's promise of a leading US role on climate change broke with his predecessor George W. Bush's stance, which had long frustrated Washington's EU partners.

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