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Met Office warns of catastrophic global warming in our lifetimes

- Study says 4C rise in temperature could happen by 2060
- Increase could threaten water supply of half world population

David Adam, environment correspondent
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Droughts and heatwaves are predicted to spread if average temperatures rise by 2C. The Met Office's study warns global warming could result in a rise of 4C by 2060.

Photograph: Vinay Dithajohn/EPA

Unchecked global warming could bring a severe temperature rise of 4C within many people's lifetimes, according to a new report for the British government that significantly raises the stakes over [climate change](#).

The study, prepared for the Department of Energy and Climate Change by scientists at the Met Office, challenges the assumption that severe warming will be a threat only for future generations, and warns that a catastrophic 4C rise in temperature could happen by 2060 without strong action on emissions.

Officials from 190 countries gather today in Bangkok to continue negotiations on a new deal to tackle global warming, which they aim to secure at United Nations talks in December in Copenhagen.

"We've always talked about these very severe impacts only affecting future generations, but people alive today could live to see a 4C rise," said Richard Betts, the head of climate impacts at the Met Office Hadley Centre, who will announce the findings today at a conference at Oxford University. "People will say it's an extreme scenario, and it is an extreme scenario, but it's also a plausible scenario."

According to scientists, a 4C rise over pre-industrial levels could threaten the water supply of half the world's population, wipe out up to half of animal and plant species, and swamp low coasts.

A 4C average would mask more severe local impacts: the Arctic and western and southern Africa could experience warming up to 10C, the Met Office report warns.

The study updates the findings of the 2007 report of the Intergovernmental Panel on

Climate Change (IPCC), which said the world would probably warm by 4C by 2100 if greenhouse gas emissions continue to rise. The IPCC also listed a more severe scenario, with emissions and temperatures rising further because of more intensive fossil fuel burning, but this was not considered realistic. "That scenario was downplayed because we were more conservative a few years ago. But the way we are going, the most severe scenario is looking more plausible," Betts said.

A report last week from the UN Environment Programme said emissions since 2000 have risen faster than even this IPCC worst-case scenario. "In the 1990s, these scenarios all assumed political will or other phenomena would have brought about the reduction in greenhouse gas emissions by this point. In fact, CO₂ emissions from fossil-fuel burning and industrial processes have been accelerating."

The Met Office scientists used new versions of the computer models used to set the IPCC predictions, updated to include so-called carbon feedbacks or tipping points, which occur when warmer temperatures release more carbon, such as from soils.

When they ran the models for the most extreme IPCC scenario, they found that a 4C rise could come by 2060 or 2070, depending on the feedbacks. Betts said: "It's important to stress it's not a doomsday scenario, we do have time to stop it happening if we cut greenhouse gas emissions soon." Soaring emissions must peak and start to fall sharply within the next decade to head off a 2C rise, he said. To avoid the 4C scenario, that peak must come by the 2030s.

A poll of 200 climate experts for the Guardian earlier this year found that most of them expected a temperature rise of 3C-4C by the end of the century.

The implications of a 4C rise on agriculture, water supplies and wildlife will be discussed at the Oxford conference, which organisers have billed as the first to properly consider such a dramatic scenario.

Mark New, a climate expert at Oxford who has organised the conference, said: "If we get a weak agreement at Copenhagen then there is not just a slight chance of a 4C rise, there is a really big chance. It's only in the last five years that scientists have started to realise that 4C is becoming increasingly likely and something we need to look at seriously."

Limiting global warming to 2C could only be achieved with new technology to suck greenhouse gases from the atmosphere. "I think the policy makers know that. I think there is an implicit understanding that they are negotiating not about 2C but 3C or 5C."

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