Sceptics' case melts more

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A clutch of recent studies reinforces evidence that people are causing climate change and suggests debate should now move on to a more precise understanding of its impact on humans.

The reports, published in various journals in recent weeks, add new detail to the theory of climate change and by implication cast contrarians in a more desperate light.

To be clear: there's nothing wrong with doubting climate change; but doubts based on ignorance, a political bias or fossil fuel lobbying don't help.

The basics, well known, are that rising greenhouse gas emissions are almost certainly responsible for raising global average surface temperatures (by about 0.17 degrees Celsius a decade from 1980-2010), in turn leading to sea level rise (of about 2.3 millimetres a year from 2005-2010) and probably causing more frequent bouts of extreme heatwaves and possibly more erratic rainfall.

Vast uncertainties remain about the risk of runaway warming, and the urgency: for example, about what level of greenhouse gas emissions will cause how much sea level rise this century.

The latest studies suggest firmer evidence for a human finger print, for example showing that pollution is largely responsible for a slow cycle in sea surface temperatures in the last century.

Recent studies also cast more light on trends, for example showing that the world has seen hotter years since 1998 (previously held by some as a record); and presenting firmer forecasts for 2050.

And others show lessons from the end of the last Ice Age: for example that rises in carbon dioxide preceded (and, by implication, caused) warming; and that sea levels at one point were rising by several metres a century.

None of these are individually particular clinchers - the problem was already clear - but collectively they pin down uncertainty seized on by sceptics.

Doubt

Climate science was under a cloud after a "climategate" scandal of scientists' emails leaked in 2009 was used by sceptics to suggest that they had deliberately manipulated data - allegations rejected by several public enquiries.

And a major U.N. panel report made a couple of factual errors, most notably saying that all Himalayan glaciers may melt by 2035, which seemed a typographical error meant to read 2350.

In retrospect, it's incredible that these cast doubt on the scientific theory.

Like any theory, climate change is based on probabilities and observations couched in error margins and difficult to prove conclusively.

It's complicated by the poor understanding of runaway effects which could make the planet all but unrecognisable - in warming, desertification and sea level rise - over the next few centuries, distracting from a cool view.

Observations alone of rising temperatures, seas and extreme heatwaves in the past century are enough to demonstrate the problem, coupled with the lack of a plausible, alternative explanation to rising man-made carbon dioxide (CO2) emissions.

Studies

On Wednesday, scientists showed in an article published in the journal Nature that rising CO2 preceded warming at the end of the last ice age.

Previously, only Antarctic temperature data had been used, which appeared to show rising CO2 following temperature rather than the other way round.

Those older results had suggested a complex effect involving warming oceans, rising CO2 and melting ice which together tipped the world out of an Ice Age 20,000 years ago. Now the role of CO2 in driving the global climate change seems clearer.

Separately, scientists publishing in Nature estimated sea levels were rising by about 4 metres a century at one point around 15,000 years ago.

Examining the Earth's more recent history, scientists from Britain's Met Office Hadley Centre showed this week how a new understanding of the impact of pollution on cloud formation explained a slow temperature cycle previously blamed on ocean currents.

They said models could now explain an Atlantic sea surface cooling in the 1970s, and subsequent warming as clean air laws took effect. Various phases of the cycle are linked with droughts in parts of Africa and the Amazon, as well as hurricane activity.

Two weeks ago, publishing in the journal Nature Geoscience, scientists from several institutes estimated warming in the range of 1.4-3 degrees Celsius by 2050 (compared with 1961-1990 levels), a higher upper range than previously found using comprehensive, complex climate models.

Also two weeks ago, scientists from Britain's Climatic Research Unit (CRU) published updated temperature data including observations from more than 450 additional weather stations from the Arctic - made newly available by Russia and Canada.

They showed that 2005 and 2010 were the hottest years in a temperature record dating back to around 1850.

Previously CRU had said 1998 was the hottest year, leading some sceptics to claim "no global

warming this century", to dismiss the urgency of the problem .

On the contrary, the basics of climate change are now understood and serious doubt is left only in the minds of those who cultivate it.

Climate science can now pin down the big uncertainties, about regional impacts, sea level rise and runaway effects, and help to put to work a response.

Reuters

Read more: http://www.theage.com.au/business/world-business/sceptics-case-melts-more-20120406-1wg35.html#ixzz1rDsFS9kj