Scientists unmask the climate uncertainty monster

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(Phys.org) —Scientific uncertainty is a 'monster' that prevents understanding and delays mitigative action in response to climate change, according to The University of Western Australia's Winthrop Professor Stephan Lewandowsky and international colleagues, who suggest that uncertainty should make us more rather than less concerned about climate change.

In two companion papers published today in *Climatic Change*, the researchers investigated the mathematics of uncertainty in the climate system and showed that increased scientific uncertainty necessitates even greater action to mitigate climate change.

The scientists used an ordinal approach - a range of mathematical methods that address the question: 'What would the consequences be if uncertainty is even greater than we think it is?'

They show that as uncertainty in the temperature increase expected with a doubling of CO2 from pre-industrial levels rises, so do the economic damages of increased climate change. Greater uncertainty also increases the likelihood of exceeding 'safe' temperature limits and the probability of failing to reach mitigation targets. The authors highlight this with the case of future sea levels, as larger uncertainty in sea level rises requires greater precautionary action to manage flood risk.

Professor Stephan Lewandowsky, who is also Chair in Cognitive Psychology and member of the Cabot Institute at the University of

Bristol, said: "We can understand the implications of uncertainty, and in the case of the climate system, it is very clear that greater uncertainty will make things even worse. This means that we can never say that there is too much uncertainty for us to act. If you appeal to uncertainty to make a policy decision the legitimate conclusion is to increase the urgency of mitigation."

These new findings challenge the frequent public misinterpretation of uncertainty as a reason to delay action. Arguing against mitigation by appealing to uncertainty is therefore misplaced: any appeal to uncertainty should provoke a greater, rather than weaker, concern about climate change than in the absence of uncertainty.

More information: 'Scientific Uncertainty and Climate Change: Part I. Uncertainty and Unabated Emissions' by Stephan Lewandowsky, James S Risbey, Michael Smithson, Ben R Newell and John Hunter in *Climatic Change*

'Scientific Uncertainty and Climate Change: Part II. Uncertainty and Mitigation' by Stephan Lewandowsky, James S Risbey, Michael Smithson and Ben R Newell in *Climatic Change*

Provided by University of Western Australia