

Conclusive proof that polar warming is being caused by humans

October 30 2008

New research by the University of East Anglia (UEA) has demonstrated for the first time that human activity is responsible for significant warming in both polar regions.

The findings by a team of scientists led by UEA's Climatic Research Unit will be published online by the *Nature Geoscience* this week.

Previous studies have observed rises in both Arctic and Antarctic temperatures over recent decades but have not formally attributed the changes to human influence due to poor observation data and large natural variability. Moreover, the International Panel on Climate Change (IPCC) had concluded that Antarctica was the only continent where human-induced temperature changes had yet to be detected.

Now, a newly updated data-set of land surface temperatures and simulations from four new climate models show that temperature rises in both polar regions are not consistent with natural climate variability alone and are directly attributable to human influence.

The results demonstrate that human activity has already caused significant warming, with impacts on polar biology, indigenous communities, ice-sheet mass balance and global sea level.

"This is an important work indeed," said Dr Alexey Karpechko of UEA's Climatic Research Unit.

"Arctic warming has previously been emphasized in several publications, although not formally attributed to human activity. However in Antarctica, such detection was so far precluded by insufficient data available. Moreover circulation changes caused by stratospheric ozone depletion opposed warming over most of Antarctica and made the detection even more difficult.

"Since the ozone layer is expected to recover in the future we may expect amplifying Antarctic warming in the coming years."

Citation: 'Attribution of polar warming to human influence' by Nathan Gillett (UEA/Environment Canada), Phil Jones (UEA), Alexey Karpechko (UEA), Daithi Stone (University of Oxford/Tyndall Centre for Climate Change Research), Peter Scott (Met Office Hadley Centre), Toru Nozawa (National Institute for Environmental Studies, Japan), Gabriele Hegerl (University of Edinburgh), and Michael Wehner (Lawrence Berkeley National Laboratory, California) is published by *Nature Geoscience* on Thursday October 30.

Source: University of East Anglia

Citation: Conclusive proof that polar warming is being caused by humans (2008, October 30) retrieved 23 March 2023 from <https://phys.org/news/2008-10-conclusive-proof-polar-humans.html>

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