



Ideas Changing the World

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Better Model, Less Warming

A newer, more sophisticated climate model has lost more than 25 percent of its predicted warming. The change resulted from a more realistic simulation of the way clouds work, resulting in a major reduction in the model's "climate sensitivity," which is the amount of warming predicted for a doubling of the concentration of atmospheric carbon dioxide over what it was prior to the industrial revolution, says Patrick J. Michaels, a senior fellow with the Cato Institute.

And to what do we owe this large decline in the modeled climate sensitivity? According to a new paper by Masahiro Watanabe and colleagues in the current issue of the *Journal of Climate*:

- Avastly improved handling of cloud processes involving "a prognostic treatment for the cloud water and ice mixing ratio, as well as the cloud fraction, considering both warm and cold rain processes."
- In fact, the improved cloud scheme -- which produces clouds that compare more favorably with satellite observations -- projects that under a warming climate low altitude clouds become a negative feedback rather than acting as positive feedback, as the old version of the model projected.
- Instead of enhancing the carbon dioxide-induced warming, low clouds are now projected to retard it.

Is the new model perfect? Certainly not. But is it better than the old one? It seems quite likely. And the net result of the model improvements is that the climate sensitivity, and therefore the warming projections (and resultant impacts), have been significantly lowered. Much of this lowering comes as the handling of cloud processes -- still among the most uncertain of climate processes -- is improved upon. No doubt such improvements will continue into the future as both our scientific understanding and our computational abilities increase, says Michaels.

Source: Patrick J. Michaels, "Better Model, Less Warming," *Cato-at-Liberty.org*, January 6, 2011.

For text:

<http://www.cato-at-liberty.org/the-current-wisdom-better-model-less-warming/>

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