

Climate Change Simulation by Tim Palmer

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Professor Tim Palmer talks about his views on simulating and predicting Climate Change

The enormous interest in climate change does not, of course, arise from any inherent fascination in the science of the problem. Rather, interest stems from the perceived way that climate change will affect society. Some people worry about the impact on their freedom and prosperity, of policies that aim to reduce our carbon footprint. Others worry that without policy to curb emissions, the freedom and prosperity of future generations will be impacted even more.

As a scientist I try to separate these from the science issues, especially when speaking in public. I believe that the public's confidence in climate science and climate scientists may increase if it is felt that the scientists can take a mostly disinterested view on climate policy.

From such a disinterested scientific perspective, the threat of substantial, even calamitous, climate change is unequivocal. However, at the same time, I myself do not believe we are yet doing all that is scientifically and technically possible to really understand and quantify the nature of this threat. There is no more challenging problem in computational science than that of simulating and predicting climate. With our current relatively low-resolution global climate models, we are looking at our future climate through frosted and somewhat distorted glass. This is particularly so when we try to simulate and understand regional climate.

We can perhaps learn from numerical weather prediction where the benefits of developing global prediction models with high vertical and horizontal resolution are clear cut (confirmed most recently by predictions of Sandy). Of course, predicting a week ahead at these resolutions is much less computationally demanding than predicting a century ahead.

Just as the nations of the world came together to fund the Large Hadron Collider, allowing

scientists to study the moments after the Big Bang in the sort of detail needed to reveal the workings of mother nature, so the nations of the world should come together to fund the sort of supercomputers that would allow us to simulate the climate of the coming century with much greater reliability than is currently possible. The impact that this will have for mitigation, adaptation and geoengineering policies is likely to be enormous.

Resources:

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