KlimaCampus Hamburg

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KlimaCampus Colloquium

David W. J. Thompson

Quantifying the role of internal variability in climate change

Internal climate variability gives rise to substantial uncertainty in projections of future climate change. One popular method for estimating the uncertainty in future climate due to internal climate variability is to run "large ensembles" of climate change simulations, in which all aspects of the experiment set-up are held fixed from one ensemble member to the next but for small changes in the initial atmospheric state. The spread in future climate predicted by the various ensemble members thus provides an estimate of the probabilistic distribution of possible future climate states due entirely to the internal variability of the model. In this talk, I will outline an alternative approach for assessing the role of internal variability in future climate change based on a simple analytic model and the statistics of the unforced climate variability. It is argued that large-ensembles provide seemingly little information on the role of internal variability in future climate that cannot be inferred from a relatively short, unforced climate simulation. It is further argued that the role of internal variability in future climate change is best estimated not from climate change simulations, but from the statistics of the observed climate.

David W. J. Thompson from the Colorado State University is invited by Bjorn Stevens from the Max Planck Institute for Meteorology

Bundesstraße 53, Room 22/23 (ground floor)