

Model Error, Real World Risk: Probabilistic Pathways but Probably not Probabilities

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Abstract

Modelling climate risk today involves extrapolation with models that are known not to be empirically adequate given past observations. Can we constructively contribute to policy making and decision support, while acknowledging the limitations of our current ability to usefully simulate?

Or should we consciously oversell model output which we expect to have no empirical relevance as "best available information" and offer to "climate-proof" those who fund our research, or purchase commercial products based upon it? The shifting focus of climate science, from the broad brush questions of establishing that anthropogenic climate change was a reality to detailed questions of policy and decisions support, suggests the need for a frank and honest discussion of the current limits of the science in these new goals. All climate is local: What are the space and time scales on which we believe our current models have decision-relevant information? And how is that information best expressed?

This talk will touch on questions of real decision support (cables under the streets of London and New York; the kitchen in The George), ambiguity in existing models (the uncertainty of local change given global temperature change), the quality of the connection at the model/reality interface in the absence of empirical adequacy, and relevant foundational questions on the mathematics of complicated nonlinear dynamical systems.

While attempts to attack the problems discussed may prove rather technical, this talk will aim to pose the central difficulties in an intuitive, nontechnical way, without masking the fundamental difficulties involved.