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Abstract

IMPROVING PREDICTIONS OF CLIMATE CHANGE:

LIVING WITH AN INCONVENIENT IGNORANCE

The changing focus of applied climate science, from "Is it happening?" to "How will climate change in the future?" suggests significant changes in communication of uncertainty, ignorance, physical insight and systematic simulation error. The fact that structurally different models, displaying a wide variety of systematic errors, produce similar responses in global mean temperature can be considered a strength under the old question, while the very use of anomalies and focus on global mean values limit the decision-support relevance of model output. Forecast information is robust if we expect future models, set the same question, to yield forecast distributions broadly consistent with today's forecast distribution. Today's "Best Available Information" is of little decision-support relevance where extraneous detail which we do not expect to be robust, effectively model noise, dominates. Exactly what model-based information is robust? Not just "better" but reliable enough to be considered relevant? What are the space and time scales on which we can expect robust information in distribution? And how does this vary with lead time? And how do we make it clear that significant increases in our understanding do not, of course, imply a significant increase in our ability to predict details?