

Colloquium Atmosphere and Climate**Prof. Bjorn Stevens****Max Planck Institute for Meteorology, Hamburg**

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**Earth system models — physics and fantasies**

Earth system models are about as old as the automobile. Since the very beginning, and almost by definition, these models have mixed physics with fantasy to create images of future worlds. In outlining the evolving balance between the two, and the factors that determine it, I will describe the frontiers of present understanding, insights we can still hope to glean, and fantasies we may wish to pursue. I will aim to present my ideas in ways that encourage discussion on more general topics, such as the role of modelling versus simulation, and authority versus reason, in research programmes designed to advance understanding of complex systems.