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Modelling Eocene Climates

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The talk will be a review of the progress of deep-time climate models, and to the extent to which they are able to successfully reproduce climatic conditions during periods of extreme global warmth. We will use the Eocene period as an example. The role of palaeogeographic reconstructions and atmospheric composition will be discussed, as will the ability of models to simulate past changes in atmosphere, ocean, and terrestrial conditions. This will be done in the context of a set of new climate model simulations using the Hadley Centre coupled model. We will use this model to investigate the role of ocean gateways, changing atmospheric composition, and changing vegetation cover in explaining Eocene climate change. The model results will be compared to existing data reconstructions and the reasons for disagreements will be discussed. The model results suggest that all components of the Earth system must be represented before we can have a realistic simulation of this period.