The future of deep time palaeo-climate modelling: bringing the models to the data.

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Recent progress in climate modeling, specifically the development of Earth System models which represent all of the major components of the Earth system have the potential for revolutionizing the use of models in understanding past climate changes. The developments also include the direct modeling of climate proxies, such as oxygen isotopes, vegetation, fire, and dust. Such modeling offers the opportunity for robust model-data comparisons, and allows for rigorous model testing. In addition, such work helps to refine the interpretation of the proxy record. The talk will illustrate these developments and highlight the exciting new opportunities for the combined use of models and data to improve our understanding of past changes.