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The forest as sensor, a case study in data model intercomparison for improved paleoclimatic data assimilation exercises

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The paleoclimatic data assimilation problem requires data (or proxy system) models that map climate models or simulations to the observations. But what level of complexity, generality and formulation is appropriate in the data models, given constraints imposed by limited observations, parameter estimation, and structural uncertainties? To explore these questions, we develop experimental design and narrowly focus on the prediction of forest measures responding to atmospheric moisture, temperature and carbon dioxide levels over the past century. At the meeting, we will discuss ways in which data models with varying levels of complexity and structural independence may be used to simulate common observational targets spanning a wide range of environmental conditions, thereby permitting analysis of their relative merits for use in constraining assimilation products. We call for participation in the development of so-called "data model intercomparison projects" as part of PAGES/DAPS (Data Assimilation and Proxy System) modeling activities.