Decoding signals of biotic change in ancient records: The problem of rate scaling

Pincelli M. Hull[1] and the BioDeepTime Project Members

[1]Yale University, Department of Earth and Planetary Sciences, New Haven, CT, USA

The planet is ever changing and so too are the living communities that inhabit it. As a result, the fossil record records paleo-environmental dynamics and paleo-community across events spanning a range of severity – from background dynamics to responses to hyperthermals. In such records is the promise that we might begin to understand the dynamics and limits of biota during intervals of rapid global change. How much change is too much? How fast does global warming need to be in order in result in (mass) extinction? In this talk, I will address a major problem complicating the application of ancient records, and their lessons, to the modern biodiversity crises. The BioDeepTime project was formed several years ago to examine the dynamics and scaling of biodiversity dynamics in modern and ancient records, and has begun to map out issues of rate scaling and dynamics across realms, clades, and times. These early results from BioDeepTime provided bracketing context for reconsidering inferences across ancient hyperthermals.