Geophysical Research Abstracts
Vol. 20, EGU2018-14, 2018
EGU General Assembly 2018


# Modelling extinction across Mesozoic hyperthermal events

Alexander M. Dunhill
School of Earth and Environment, University of Leeds, Leeds, United Kingdom (a.dunhill@leeds.ac.uk)

The Mesozoic Era witnessed a number of rapid warming events, known as hyperthermals, which are associated with Large Igneous Province eruptions. During the time of the supercontinent Pangaea, hyperthermals consistently result in mass extinctions as a direct consequence of warming, anoxia and acidification in the oceans. Here, I model determinants of extinction across two hyperthermal extinction events, the Late Triassic mass extinction and the early Toarcian extinction, in comparison to periods of background extinction during the Late Triassic and Early Jurassic. The Late Triassic mass extinction and the early Toarcian extinction resulted in a change in macroevolutionary regime that was not simply an intensification of background extinction rates. During the Late Triassic mass extinction, organisms living at tropical latitudes were predominantly affected as well as organisms inhabiting reef environments with predatory, suspension-feeding, or photosymbiotic lifestyles. During the early Toarcian extinction, photosymbiotic organisms and organisms residing in reef environments in the Tethys Ocean were highly prone to extinction. Despite the differences between Mesozoic and modern oceans, these results highlight the vulnerability of tropical reef ecosystems in a rapidly warming world.