



Which impact had CAMP volcanism on the latest Triassic Earth System?

Jan Landwehrs (1,2), Georg Feulner (2), Matthias Hofmann (2), and Michael Wagemann (1)

(1) University of Vienna, Department of Geodynamics and Sedimentology, Wien, Austria (jan.landwehrs@univie.ac.at), (2) Potsdam Institute for Climate Impact Research, Research Domain 1: Earth System Analysis, Potsdam, Germany

In the latest Triassic, Earth's climate and biogeochemical cycles were severely perturbed by pulsed volcanic activity of the Central Atlantic Magmatic Province. Here, we present an effort to model aspects of the late Triassic climate and the impact of volcanogenic carbon and sulfur emissions.

The conducted simulations suggest that the simultaneous emission of carbon and sulfur during one pulse of volcanic activity could have caused strong interannual temperature fluctuations, overprinted by a transient cold period and followed by long-term global warming. The temperature changes at the locations of Late Triassic coral reefs are evaluated against the thermal limits of modern corals. A significant spread of marine anoxia, directly driven by warming, is not predicted for the examined scenarios. In contrast, the simulated ocean acidification and specifically the pronounced reduction of the carbonate saturation in the Tethys Sea would have hampered marine calcification.

We furthermore discuss work in progress on how the representation of characteristics of the Late Triassic marine carbon cycle can be improved in further modeling. This is also linked to ongoing investigations dealing with the question, how the Mesozoic revolution of the marine carbon cycle may have changed the Earth System's sensitivity towards perturbations similar to the end-Triassic volcanism.