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Modelling of Changes in Marine Carbon Uptake during Warm Climates

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The Paleocene-Eocene Thermal Maximum (55 Mya) is regarded as a suitable analog to future climate changes and uptake of carbon in the ocean. For this time, significant changes in climate and geochemistry have been inferred from temperature proxies and stable carbon isotope ratios. The carbon and nutrient cycles have been incorporated into the community climate system model (CCSM-3) in order to explore effects of a massive carbon release into the atmosphere on changes in the carbon uptake and lysocline. Changes in marine chemistry due to oceanic warming and variations in circulation will be compared to recent future carbon emission scenarios. Moreover, past climate simulations will be analyzed by using the paleoclimatic evidence.