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Planktic foraminiferal stable-isotopes across the EECO: investigating the coupling between temperature and the exogenic carbon pool (ODP Site 1263, Walvis Ridge)

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The Late Paleocene to Early Eocene warming trend is characterized by a gradual temperature rise of 5-6˚C resulting in the Early Eocene Climatic Optimum "EECO". This warming trend was punctuated by several so-called "hyperthermals", which were geologically brief (<200kyr) episodes of extreme warmth. Recently, a new, ∼4.7 million year (Myr) long, high-resolution benthic foraminiferal stable isotope record of ODP Site 1263 has been presented, which encompasses the peak of the early Eocene "hothouse" (∼49.5 - 54.2 Ma). This record confirms the presence of hyperthermals during and at the termination of the EECO as was previously found for ODP Site 1258. In addition, the record reveals a highly significant linear relationship between ∂^{18}O and ∂^{13}C for these events, similar as for their early Eocene counterparts. This indicates a strong coupling between global warming and the release of isotopically light carbon into the ocean-atmosphere system throughout the EECO. Whilst the coupling between temperature changes and perturbations in the exogenic carbon pool remain stable on short-term time scales, they do not for the long-term trends at ∼52 Ma when a rapid ^{13}C enrichment in carbon data is not accompanied by changes in the oxygen record. It was hypothesized that enhanced carbonate and organic carbon burial rates might be responsible for this shift in average isotopic values during a temporary reduced efficiency of the biological pump. Such a scenario may explain the elevated atmospheric pCO_2 as well as increased weathering rates and runoff. To test this hypothesis, we will present our first (preliminary) stable isotopic results of two planktic foraminiferal species derived from the same samples of ODP Site 1263, which portray changes in surface water (*Acarinina ssp.*) and thermocline waters (*Subbotina ssp.*).