An export production peak in the Red Sea during Termination II triggered by early sealevel rise

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The late Quaternary history of the Red Sea is characterized by sharp increases in sea surface salinity during glacial peaks in response globally low sea levels. These imposed an extremely weak current exchange between the Red Sea and the Indian Ocean through the Bab-el-Mandeb Straights, which given high evaporation rates has been suggested to result in temporal changes in stratification, productivity and subsurface oxygenation of the Red Sea. The combined effect of these perturbations is well dentified in extended aplanktonic zones centered at glacial peaks within Red Sea sediment cores. Yet the dynamics of the transient deglacial transition in the Red Sea are still not well understood.

We report the finding of an organic carbon rich interval near the MIS6/5 transition in a sediment core from the northern sector of the Red Sea (KL23, 24º44.88'N 35º03.28'E, 702 m water depth). This interval is further characterized by a corresponding positive pertubation in U concentrations, and ($^{234}U/^{238}U$) ratios.

These observations are coupled with $\delta^{13}C$ values of foraminifer species sandwiching the studied interval [1], which display a depletion trend indicating an increase in primary production. Combined, the evidence suggests that an increase in primary and export production was closely associated with the initial rise of sealevels from their MIS6 low through Termination II.

Here, we will discuss the oceanographic setting that allowed an increase in export production that overlaps with the aplanktonic zone in this core, in the context of ^{230}Th excess values, sea level changes and paleo-circulation models of the Red Sea.

[1] Geiselhart S., (1998) PhD dissertation, Universität Tübingen