A high-resolution record of sediment deposition in the Gulf of Aqaba, Red Sea, during the last ~5000 years

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The Gulf of Aqaba is a narrow and deep basin at the northeastern tip of the Red Sea. Sedimentation is dominated by biogenic and aeolian material, as well as by material delivered by various wadis surrounding the Gulf. Here we present paleoenvironmental proxy records from a 108 cm gravity core, recovered at 720 m water depth at the northern end of the Gulf. Radiocarbon dating shows that this core covers the last 5000 years. Bulk sediment elemental composition (determined by ICP-MS), foraminiferal abundances, and nitrogen isotopes will be discussed in the context of environmental and hydrographic variability. The carbonate content ranges between 25–45%, and generally covaries with changes in planktonic foraminiferal abundances (0–50/wet gram of sediment). In contrast, both nitrogen concentrations and sedimentary*^{15}N are homogenously low (0.040% ± 0.002 and 5.00‰ ± 0.27, respectively) throughout the core, possibly suggesting a decoupling of carbonate production and nutrient availability. The most prominent interval within the core is an instantaneous event deposit at 96–87 cm (ca. 5190 ± 35 years BP) containing allochthonous material in a fining upward sequence. This period is tentatively ascribed to a turbidite triggered by an earthquake. Sediment flux directly sampled by co-located sediment traps deployed since 2014 shows that sedimentation is dominated by sporadic, short-lived flux events on the order of days. These events transport large quantities of terrestrial material, manifested by the down core Mg/Ca (and Fe/ Al) record, which displays an inverse relationship to the carbonate (%) record. Several stratigraphic periods will be discussed in attempt to reconstruct recent geological and paleoceanographic patterns influencing the Gulf of Aqaba.

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