

# **Dissolved trace metals and Pb isotopes across dust storm events in the oligotrophic waters of the Gulf of Aqaba, Red Sea**

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Dust is considered an important source of macro- and micro- nutrients to distant oligotrophic oceans. However, the impact of short-term (daily) dust storms on the oceanic water column is very poorly known due to the typical low sampling resolution in open ocean environments. The Gulf of Aqaba (GoA), Red Sea, is a deep oligotrophic water body surrounded by hyper-arid deserts with no major tributaries, limiting terrigenous influxes, except for frequent dust storms. The north GoA is highly accessible and therefore provides a unique opportunity to study the direct impact of dust on the water column chemistry and biogeochemical cycles across major environmental perturbations.

Here, we report a highly resolved time series of dissolved trace metal concentrations (Al, V, Mn, Co, Ni, Cu, Zn and Cd) and the isotopic composition of Pb along vertical profiles sampled prior, during and after discrete dust storms, as well as rain events, floods and water column mixing events that occurred between 2016 - 2018.

The combined results provide insights into the role of settling dust particles as a source or a sink for specific elements, and are further considered in the context of the regional source end member compositions (e.g., Sahara dust), as well as local sources and sinks, which are characterized based on the spatial distribution of surface seawater compositions, water column particulates and local seafloor sediments.