



Zeppelin DB: A 30-Year Voyage Through People and Publications

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Temporal records of stable carbon isotopes and carbonate accumulation using early Paleogene sediment fantastically framed a major hole in our view of global carbon cycling. Specifically, a large pool of carbon greatly depleted in ^{13}C (and ^{14}C) existed somewhere in the shallow geosphere but outside of the traditionally defined exogenic carbon cycle (the ocean, atmosphere, and biosphere). The reservoir was realized from examination of records on multiple time scales, from the 14 Myr Paleocene-Eocene $d^{13}\text{C}$ oscillation to carbonate accumulation across the PETM and other hyperthermal events. Fluxes to and from the reservoir related to variations in environmental change, notably ocean temperature, and to perturbations in other geochemical cycles, notably oxygen and sulfur. Although circa 2021 the paleoceanographic community now recognizes the importance of seafloor methane systems, the journey to this realization moved slowly from crucial observations in 1991. It took 10-15 years to pass each of several milestone concepts. Even by 2016, almost all models regarding the PETM remained divorced from surrounding time, almost all views of organic carbon decomposition ignored sea-level, ocean temperature and the geotherm, almost all efforts at coupling the global carbon and sulfur cycles lacked AOM, and almost all literature omitted tectonic rearrangements. Zeppelin DB aimed to couple Paleogene geochemical cycling and seafloor methane systems, and this documentary records the voyage toward final docking in terms of people and publications.

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