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Drivers of carbon variations in the Eocene

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Reconstructions of atmospheric and oceanic chemistry in the Eocene (56-34 Ma) has been a great challenge in the paleoclimate community, because of the paucity of well-preserved sedimentary archives with well-tuned age models, and the limited availability of refined geochemical tracers. Here, we summarize our recent compilations of seawater pH and derived atmospheric carbon dioxide concentrations (CO_2) from planktonic foraminiferal $\delta^{11}B$ [1], alongside other marine-derived CO_2 records and recent benthic foraminiferal $\delta^{13}C$ and $\delta^{18}O$ compilations [2]. We then explore their relationship to variations in weathering, volcanism, ocean circulation, organic carbon burial and recent box model calculations, to identify the key mechanisms driving changes in CO_2 and climate (i.e. temperature) through the Eocene.

[1] Anagnostou, et al., (2020), *Nature Comm* 11, 1-9.
[2] Westerhold, et al., (2020), *Science* 369, 1383-1387.