

# The Ontong Java Plateau volcanisms and oceanic deoxygenation prior to the Oceanic Anoxic Event 1a: evidence from Mo isotope

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The Oceanic Anoxic Event 1a (OAE 1a, ~120Ma) documents profound environmental and climatic changes including widespread oceanic anoxia [1]. The emplacement of the Ontong Java Plateau in the Pacific Ocean is often implicated as the trigger of OAE 1a [2]. However, because only a few studies directly linked volcanic activities to the marine redox conditions, and most redox indicators were severely altered by volcanic input, whether Ontong Java Plateau volcanism was the direct driving factor of marine deoxygenation is still under debate [1, 3].

Here, new geochemical data from DSDP Site 463 and ODP Site 866A in the Pacific Ocean near the Ontong Java Plateau are reported, which resolve three volcanic phases in both sections. High-resolution  $\delta^{98}\text{Mo}$  records indicate that oceanic deoxygenation started before OAE 1a and were simultaneously with volcanic phase I. Considering the lack of evidence of continental weathering enhanced preceding OAE 1a, oceanic deoxygenation was probably initially driven by Ontong Java Plateau volcanisms instead of continental weathering. During OAE 1a, ocean maintained anoxic/euxinic conditions and the coeval global seawater  $\delta^{98}\text{Mo}$  value was estimated to be around or greater than 2.1‰.

[1] Jenkyns (2010), *Geochemistry Geophysics Geosystems* 11, 1-30.

[2] Percival, Tedeschi, Creaser et al. (2021), *Global and Planetary Change* 200, 1-18.

[3] Bauer, Bottini, Frei et al. (2021), *Geology* 49, 1452-1456.