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# Episodic perturbations of end-Permian atmosphere recorded in plant spore chemistry

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The largest marine Phanerozoic extinction occurred 251 million years ago at the end of the Permian period with a contemporaneous major reorganisation of terrestrial. Previous work suggests the eruption of the Siberian Traps large igneous province could have generated substantial volumes of ozone depleting substances; the result being a partial collapse of the stratospheric ozone layer, and commensurate increase in ultraviolet-B (UV-B, 280-315nm) radiation. Increased UV-B flux would contribute additional pressures to an already stressed environment and flora and fauna.

Here we present data utilising a new biogeochemical proxy for UV-B radiation to analyse clubmoss (lycophyta) megaspores to track UV-B radiation across the end-Permian interval. Our biogeochemical data when combined with published work on spore and pollen mutations suggests a highly dynamic global atmospheric system, oscillating between episodes of high and low UV-B flux, most likely driven by pulsed eruptive phases of the Siberian Traps.