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Marine Anoxia during Large Igneous Province formation at the Triassic-Jurassic transition?

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The extend of marine anoxia varies largely through earth history. Modern ocean anoxia occurs both in coastal (e.g. Gulf of Mexico, Black and Baltic Sea) and open ocean regions. Its extend is however limited relative to ocean anoxic events (OAE's) in earth's past. Some events of wide-spread ocean anoxia coincide with massive volcanic phases and the emplacement of large igneous provinces. These events are also marked by widespread ecosystem instability and extinctions in the marine realm and they allow the study of strong perturbations in global geochemical cycles in relation to ocean anoxia and biodiversity changes.
We studied an expanded marginal marine sedimentary sequence from St Audries Bay (UK), which comprises the end-Triassic mass extinction (ETME), at ∼201.4 Ma. The ETME coincides with the onset of Central Atlantic Magmatic Province (CAMP) volcanism and a strong negative perturbation in continental and marine C-isotope records. It is succeeded by ongoing volcanic activity and continuously depleted carbon isotope values throughout the first stage of the Jurassic. Marine anoxia at the Triassic-Jurassic transition is however controversial. Restricted circulation and anoxic conditions are suggested for marginal marine sedimentary basins in the western Tethys Ocean, the western Germanic basin and the eastern Panthalassa Ocean. Fully oxygenated conditions may however have predominated in open ocean regions. The sedimentary sequence at St Audries Bay, following the ETME, is marked by a continuous ∼3 million year astronomically paced sedimentary record with precession-scale black shale occurrences. High resolution elemental data allows discussion on the duration and extend of ocean anoxia in relation to massive volcanic activity and biological recovery in the aftermath of the end-Triassic mass extinction.