$\delta^{238}U$ reconstructions of global ocean oxygenation during OAE 2

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Uranium (U) isotopes are a relatively new and promising tracer for reconstructing past oxygenation in the ocean. The fractionation of U is strongly controlled by changes in redox, whereby the heavier isotope is preferentially enriched in organic-rich sediments under anoxic conditons.

The Cenomanian–Turonian Ocean Anoxic Event 2 (OAE 2) at about 93.5 Ma is characterised by high atmospheric CO_2 and global warming, enhanced silicate weathering and widespread deposition of organic-rich black shales under anoxic conditions associated with global perturbations in the carbon cycle.

Although organic matter burial is linked to changing redox conditons in the oceans, recent studies have highlighted the potential for basin-scale factors to override the global signal [1]. Furthermore, the distribution of redox conditions in the global oceans at this time remain poorly constrained.

Here we present high-resolution uranium isotope ($\delta^{238}U$) records of organic-rich mudrocks from the Western Interior Seaway (USA) from two intervals spanning OAE 2 to assess potential local versus regional and global redox changes and elucidate the chemical evolution of the oceans at this time

We compare these new $\delta^{238}U$ records with other published records from the same interval from the proto-North Atlantic Ocean, and other periods of organic-rich mudrock deposition to assess the nature and extent of global ocean oxygenation during periods of extreme climatic perturbation.

[1] Eldrett, Minisini and Bergman (2014), *Geology* **42-7**, 567-570.