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High resolution carbon isotope data of Triassic-Jurassic key sections in the western Tethys realm

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Significant fluctuations in organic carbon-isotope values are recognized in key Triassic-Jurassic boundary sections in Europe and North America. These records are characterized by two pronounced negative carbon-isotope excursions which coincide with major biotic turnovers in both the marine and terrestrial realm.

We show new high resolution stable carbon isotope data from several proximal to distal Triassic-Jurassic boundary sections in the Eiberg Basin (Austria) within the western Tethys realm. This marginal basin formed during Rhaetian time on top of a widespread carbonate platform along the Tethyan passive margin. The Triassic-Jurassic transition interval in these records is characterized by two distinct negative shifts of up to 7 per mille in the bulk organic carbon isotope signature. A corresponding 2 per mille negative shift is recognized in the carbonate carbon signature. These fluctuations in the marine carbon records are thought to be related to changes in the global carbon cycle, which resulted from massive input of CO_2 during deposition of the Central Atlantic Magmatic Province, the largest igneous province on earth. Perturbations of the carbon-isotope signature could be also influenced by changes in vegetation and/or influx of terrestrial organic matter. The high resolution organic and carbonate carbon isotope data together with preliminary compound specific and biomarker results enable us to better understand changes in the global carbon cycle.