A compound specific carbon isotope record for the late Permian to Early Triassic

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The end Permian biotic crisis is one of the most severe extinction events in the history of the earth. Records of the late Permian extinction event are characterized by a negative shift in the carbon isotope curve of both organic matter and carbonates. It is suggested that atmospheric change in CO_2 at this time result from a large igneous province in Siberia. However, most records displaying this shift are bulk organic matter isotope values ($\delta^{13}C_{TOC}$). Since the start of the extinction is characterized in many marine settings by the onset of anoxia, it coincides with a sharp increase in marine productivity and organic matter accumulation on the sea floor. This change in palynofacies to a relative higher contribution of marine derived organic carbon also affects the $\delta^{13}C_{TOC}$ record.

Here we will determine the carbon isotopic composition of plant-derived long chain *n*-alkanes stored in low mature sediments covering the late Permian to Early Triassic. The sediments were deposited in a shallow marine environment in the Barents Sea and were recovered from the Finnmark plateau by drilling. The long chain *n*-alkanes (C_{25}-C_{35}) show a strong odd-over-even dominance, indicating that the alkanes likley derive from the leaf-waxes of higher terrestrial plants (i.e. trees). Compound-specific isotope analyses help to identify the influence of CO_2 on the $\delta^{13}C_{TOC}$ record independent of the source of organic carbon, and thus enable estimating the size of the atmospheric carbon-isotope shift.

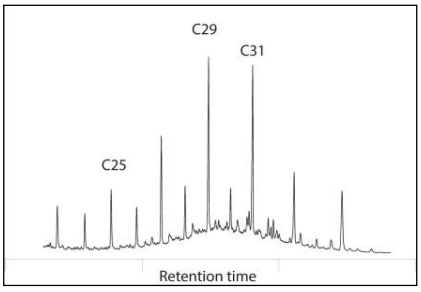

Figure. Long chain *n*-alkanes in Early Triassic shale. (core 7128/12-U-01, 93.3 m)