



Late Norian $\delta^{13}\text{C}_{\text{org}}$ record in the Tethyan realm: New clues on the complex Late Triassic carbon cycle from the Lagonegro Basin (southern Italy)

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The Late Triassic (ca. 237-201 Ma) is characterized by complex and extreme environmental, climatic and biotic changes (e.g.: the break-up of the supercontinent Pangaea; the humid event known as the Carnian Pluvial Event; the End-Triassic mass extinction; the emplacement of the CAMP volcanism). A global $\delta^{13}\text{C}_{\text{org}}$ curve for the Late Triassic would provide new clues on this perturbed time interval and would have the potential for global correlations. In particular, the few available data from North American successions define the late Norian (ca. 220-206 Ma) as a “chaotic carbon interval”, with rapid vacillations of the carbon isotope values paired with low faunal diversity. Our goal is to reconstruct a global $\delta^{13}\text{C}_{\text{org}}$ profile for the late Norian, as a contribution to the construction of a more complete global carbon isotope curve for the Late Triassic. For this purpose, we analyzed three sections from the Lagonegro Basin (southern Italy), originally located in the western Tethys, on the other side of the supercontinent Pangaea respect to the North America. The obtained $\delta^{13}\text{C}_{\text{org}}$ profiles show four negative shifts correlatable with those of the North American record, suggesting that these carbon cycle perturbations have a widespread occurrence. These perturbations are associated with negative shifts of the $87\text{Sr}/86\text{Sr}$, indicating that these global $\delta^{13}\text{C}_{\text{org}}$ and $87\text{Sr}/86\text{Sr}$ negative excursions were possibly caused by emplacement of a Large Igneous Province (LIP). The input of volcanogenic CO_2 to the atmosphere-ocean system is supported also by the ^{12}C enrichment observed, as well as by the increase of atmospheric pCO_2 inferred by different models for the Norian-Rhaetian interval. This Norian magmatic activity may be ascribed to the Angayucham province (Alaska, North America), a large oceanic plateau active ca. 214 Ma \pm 7 Myr, with an estimated volume comparable to other two Late Triassic LIPs: the Wrangellia and the CAMP.