

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, such as the break-up of the supercontinent Pangaea, the End-Triassic mass extinction, and emplacement of CAMP volcanics. A global $\delta^{13}\text{C}_{\text{org}}$ curve for the Late Triassic could provide new clues on this perturbed time interval. In particular, the Norian (ca. 228.0-205.7 Ma) has been defined as a “chaotic carbon interval” in the North America realm, characterized by rapid oscillations of carbon isotope values paired with faunal turnovers. In order to reconstruct a global $\delta^{13}\text{C}_{\text{org}}$ profile for the late Norian, three sections belonging to the Lagonegro Basin (southern Italy, originally located in the western Tethys) have been investigated. The obtained $\delta^{13}\text{C}_{\text{org}}$ profiles show four negative shifts correlatable with those of the North American record, suggesting a widespread occurrence of carbon cycle perturbations. These perturbations also are associated with $^{87}\text{Sr}/^{86}\text{Sr}$ negative excursions, indicating the onset of a Large Igneous Province (LIP) could be the primary cause. The incompatible ages of the CAMP and Wrangellia Late Triassic magmatic provinces lead us to ascribe these recorded isotopic perturbations to the Angayucham province, a large oceanic plateau active ca. 214 Ma \pm 7 Ma, originally located in the northeastern Panthalassa Ocean, and now cropping out in Alaska (North America).