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ABSTRACT BOOK

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ACIDIFICATION PROCESSES IN A PERITIDAL CARBONATE SUCCESSION ACROSS THE TRIASSIC/JURASSIC BOUNDARY (SICILY)

Simona TODARO^(1,@), Manuel RIGO⁽²⁾, Pietro DI STEFANO⁽¹⁾, Giuseppe ZARCONE⁽¹⁾,
Vincenzo RANDAZZO⁽¹⁾

⁽¹⁾ Dipartimento di Scienze della Terra e del Mare, Università degli Studi di Palermo (Italy)

⁽²⁾ Dipartimento di Geoscienze, Università degli Studi di Padova (Italy)

[@] simona.todaro@unipa.it

For the first time, a correlation between biostratigraphic events and $\delta^{13}\text{C}$ curve was attempted along an UpperTriassic-Lower Jurassic peritidal limestone succession cropping out in westernmost Sicily. The peritidal carbonates are organized in shallowing upward cycles characterized by subtidal skeletal mudstone to grainstone, intertidal microbial mats and supratidal paleosoils. About 300 meters of this succession covering the Triassic-Jurassic interval were studied in details.

On the base of the macro-and microfossil assemblages from the subtidal facies, four informal units have been recognized along the studied section. Unit R1 (at the base, 111 m thick) is dominated by large megalodonts, rare coral carpets (*Retiophyllia* sp.), calcareous algae and the well-known Rhaetian benthic foraminifer association (among which *Triasina hantkeni*, *Aulotuortus sinuosus*, *Auloconus permodiscoides*). The base of unit R2 (129 m thick) is placed in correspondence of the abrupt disappearance of the large megalodontids that are replaced by smaller and rare specimens, but with no variations of the benthic foraminifer community as compared to R1. Unit R3 (50 m thick) records the disappearance of the small megalodontids but the persistence of the Rhaetian foraminifers, while the overlying unit H1 (10 m thick) records the total disappearance of the typical Rhaetian foraminifers and their replacement by an oligotipic assemblage with *Thaumatoporella parvovesiculifera* and *Aeolisaccus* sp. The boundary between unit R3 and H1 is assumed as a proxy of the Triassic/Jurassic boundary (TJB).

The carbon curve trend was estimated in bulk calcitic samples collected in the upper part of the studied section (ca. 224 m thick) that covers the TJB. The $\delta^{13}\text{C}$ curve is very jagged and two main negative excursions interpreted as “initial” and “main” CIEs have been identified in the upper zone of the Rhaetian beds. The obtained carbon signature is comparable to two (“initial” and “main”) of the three negative CIEs recorded in Late Triassic worldwide as a consequence of the high CO_2 rates related to CAMP volcanism.

In particular, we observed a straight correspondence between the extinction events and the recorded negative carbon isotope excursions. In details, the first (“initial”) CIE matches the disappearance of the large megalodontids and corals. The beginning of the second (“main”) CIE corresponds to the last occurrence of small megalodontids and calcareous algae, whilst the end is associated to the extinction of the Rhaetian foraminifer community. After this second negative carbon isotope excursions (i.e. “main”) a positive trend (ca. +1 ‰) is recorded upward, which is also associated to the bloom of *Thaumatoporella parvovesiculifera* and the gradual recovery of the carbonate factory in the Hettangian beds.