

A benthic community biodiversity crisis documented on a Rhaetian carbonate succession from western Tethys (Sicily)

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A biodiversity crisis in the benthic communities was detected on Rhaetian stratigraphic horizons from a western Tethyan carbonate platform. The studied succession consists of a continuous Upper Triassic to Lower Jurassic peritidal limestone organized in shallowing upward cycles cropping out at Mt Sparagio (western Sicily). On the basis of abundance and diversity of the benthic communities in the subtidal facies, the studied section was divided into three informal units. Starting from the base, the Unit A contains very abundant and highly diverse fossiliferous assemblages of corals, very large megalodontoids (up to 40 cm) and large *Triasina hantkeni* (up to 1 mm) among other benthic foraminifera. Upward, Unit B is characterized by a reduction of biodiversity, abundance and shell size of megalodontoids that reach a dimension up to 15 cm and *T. hantkeni* is still present. The top of Unit B is recognized by a distinctive oolitic level. Up-section, after a barren interval rich in calcisphaerae, the absence of the benthic community documented in Units A and B and a bloom of the problematic alga *Thaumatoporella parvovesiculifera* characterize Unit C. Upward, the occurrence of rare specimens of the benthic foraminifer *Siphovalvulina* sp. indicates the gradual recovery of the Jurassic benthic community.

The stable isotope analyses (C, O and S) seem to correlate to the biodiversity crisis between Unit A and Unit B. In detail, a negative trend of $\delta^{18}\text{O}_{\text{carb}}$ values, corresponding to an increase in temperature, matches with the drastic reduction both in dimension and diversity of the megalodontoid families between Units A and B. Between Unit B and C, across the Triassic/Jurassic boundary, a strong positive peak of both $\delta^{18}\text{O}_{\text{carb}}$ and $\delta^{34}\text{S}_{\text{CAS}}$ marks the biodiversity crises observed at the End Triassic Extinction, highlighting a close relationship between climatic changes and mass extinction events.