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# ABSTRACT BOOK

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# Exploring the reef coral-neritic carbonates of southern Pakistan during the Late Oligocene Warming Event

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The Oligocene-Miocene boundary marks a critical juncture characterized by remarkable alterations in the global climate. The transition from the relatively warm conditions of the late Oligocene to the onset of the Mi-1 glaciation, heralds changes in the composition of neritic carbonates and in the distribution patterns of zooxanthellate reef corals. In fact, while numerous Oligocene neritic carbonate successions worldwide feature abundant reef corals, our preliminary investigations, on a limited dataset primarily sourced from Europe, Iran, the Indo-Pacific, and the Caribbean, indicate a temporary decrease in their significance as carbonate producers after the Oligocene, reaching a minimum around the middle Miocene.

Herein, we aim to elucidate the dynamics of the upper Oligocene coral-bearing units of the Southern Khirthar fold and thrust belt (S Pakistan), focusing on the understudied Jhill Limestone Unit (Gaj Formation). Through the analysis of four selected sections, the skeletal assemblages reveal a dominance of coralline algae, large benthic foraminifera (including *Miogypsinoides*, *Miogypsina*, *Spiroclypeus*, *Nephrolepidina*, and *Archaias*, alongside *Operculina*, *Sorites*, and sporadic *Eulepidina*), and reef corals (e.g., *Hydnophora*, *Acropora*, *Porites*). Reef corals are represented by colonies that form small patches in three out of four investigated sections, locally dominating the assemblages. Large benthic foraminifera suggest deposition during the Late Oligocene, potentially Shallow Benthic Zone 23, indicative of the Late Oligocene Warming Event, thus challenging previous assertions indicating a Burdigalian age for the Gaj Formation in the study area. These refined stratigraphic constraints facilitate comparative analyses of these coral-bearing shallow-water carbonates with analogous units from European and Indo-Pacific regions, providing a bridge between the two bio-provinces and a better understanding of the response of reef coral carbonates to past warming events.

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