

CORAL FRAMEWORKS: BIOHERMAL, BIOSTROMAL, RUBBLE – WHAT PALEOECOLOGICAL SIGNIFICANCE?

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A key factor in geologists' and paleontologists' interest in coral- and calcifying sponge-dominated systems is their ability to build coherent, three-dimensional structures that preserve well in the geological record. Since these structures are built by living organisms that react actively to their environment, the deposited frameworks obviously have the potential to encode environmental conditions. The modern ocean knows three types of coral frameworks: incipient frameworks, bioherms (reefs), and biostromes (coral carpets). Other common facies dominated by reef-related fauna are coral-dominated non-frameworks (coral thickets) forming rud- to floatstones and coral or framework rubble that can be re-deposited to form reef-like structures.

This presentation deals with examples from the modern ocean (Red Sea, Arabian Gulf, Caribbean, Pacific) and points out depositional and therefore ecological and environmental similarity in fossil systems. These examples come from the Miocene Paratethys in Austria, where coral biostromes and bioherms similar to those presently found in the Caribbean and Arabian Gulf occurred, the Alpine Jurassic of the Northern Calcareous Alps, where rubble accumulations somewhat similar to those presently found in the Caribbean exist, and the Austroalpine Palaeozoic, where patch reefs, incipient reefs, and coral biostromes reminiscent of those found in the modern Caribbean and Pacific were formed. Applying an actualistic approach, it is attempted to use the similarities in framework types to draw inferences about the ecological and framebuilding functioning of the ancient coral systems and their environment.