

9-1. - PRECIPITATION AND DIAGENESIS OF CARBONATES IN THE IONIAN DEEP-SEA

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The carbonate mineralogy of Ionian deep-sea sediments differs from that of the open ocean. Normal deep-sea sediments are dominated by biogenous (coccolithophorids and foraminifera) calcite. In contrast, those of the Ionian Sea contain autochthonous unstable magnesian-calcite. (8-12 Mol% $MgCO_3$). Its concentration in the surface sediments varies between 5 and 70% (of total sediment) depending upon local sedimentary conditions. Highest concentrations are found on the Mediterranean Ridge, whereas those in the Hellenic Through are low. Magnesian-calcite is concentrated in the lutite fraction and serves as cement and main constituent of lithic layers and fragments.

A similar occurrence of magnesian-calcite is only known from the Red Sea, presumably caused by high salinities and temperatures. Thus, the intermediate position of the Eastern Mediterranean in terms of hydrographic conditions is probably responsible for the precipitation of magnesian-calcite in Ionian Sea sediments. Periodically throughout the Quaternary, magnesian-calcite precipitation decreased or ceased completely, apparently during periods of hydrographic stagnation which led to the formation of sapropels.

Pore water analysis indicate that the magnesian-calcite "inverts" to calcite with time. As a result, magnesian-calcite decreases with increasing core depth, but total calcium carbonate remains more or less constant.