

STRATIGRAPHIC SEQUENCES OF FE-MN CRUSTS RELATED TO THE GEOLOGICAL HISTORY OF MAGELLAN GUYOTS, CENTRAL PACIFIC OCEAN

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Fe-Mn crusts precipitate from seawater onto hard-rock substrates and represent condensed stratigraphic sequences, which reflect the accumulation of metals oxides during the Cenozoic and contain information on the evolution of the oceanic environment and geological evolution of host seamounts. Three Magellan guyots were investigated and stratotype crust sections, which include Late Cretaceous, Eocene, and Miocene-Pleistocene stratigraphic sequences, were found. IOAN and MG-36 guyots formed during the Barremian and Aptian, in the Albian they entered the atoll stage, which ended after Cenomanian submergence. In the Campanian and Maastrichtian, the guyots summits were at a depth favorable for nannoforaminiferal sediment accumulation. Late Cretaceous crusts are represented by breccias, in which the Campanian-Maastrichtian carbonate matrix was replaced by Fe-Mn oxyhydroxides. They have been discovered near volcanic pinnacles, testifying to volcanic activity at the Late Cretaceous. By Early Eocene, guyot summits were near the oxygen minimum zone; on hard-rock substrates Eocene and Miocene-Pleistocene crust precipitation began. The submergence of Dalmorgeologia guyot had a more complicated history. At the end of Late Cretaceous its top was still emergent and only by the end of Paleocene had it submerged to a depths favorable for nannoforaminiferal sediment accumulation. During the Oligocene, the guyot was uplifted and the top again was in shallow-water. The end of the last subaqueous stage coincided with late-stage, Early Miocene volcanism. Those events inhibited the growth of crusts around the summit of the guyot. Fe-Mn precipitation recommenced during the Pliocene-Pleistocene after its submergence to favorable depths.