



METADATA

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Abstract

This book presents the basic concepts of BioGeosciences. The geobiological interactions related to biotic and abiotic processes and their impact on Earth's geological history are described and analyzed. Also, the active role of microfossils in the biogeochemical processes connecting the biosphere, geosphere, hydrosphere and atmosphere is thoroughly described. The use of microfossils in paleoenvironmental, paleoceanographic and paleoclimatic research is documented and several case studies from the geological records of the Mediterranean and the Greek area are presented. The modern systematic classification of Cenozoic Calcareous Nannofossils is examined in detail and the updated Cenozoic Calcareous Nannofossil biozone systems are presented. The contribution of Coccolithophores to the transport of biogenic calcium carbonate and the quantification of particle fluxes using the sediment trap method is discussed. The relationship of Coccolithophore fluxes with the function of the oceanic biological pump is also presented.

A brief historical review is made concerning the research efforts that shaped the systematic classification of benthic foraminifera, and the basic categories of morphotypes and their living microenvironments are analyzed. Particular emphasis is placed on the development and use of biotic indices to monitor and assess the quality of coastal marine ecosystems. The criteria for identification, description and classification of benthic foraminifera are described, together with their ecological adaptations, and an extensive description of the main genera diagnostic characters is provided. The basic outlines about the biology and lifestyle of planktonic foraminifera are presented, as well as the factors affecting their distribution in the oceans. The most recent biozone system for the Neogene-Quaternary Mediterranean is analyzed, as also the indices developed to estimate the palaeoceanographic conditions, when using the ecological characteristics of planktonic foraminifera assemblages, are concisely described.

