THE WORLD OCEAN IN CRETACEOUS: A STAGE-BY-STAGE SEDIMENTARY HISTORY

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THE WORLD OCEAN IN CRETACEOUS: A STAGE-BY-STAGE SEDIMENTARY HISTORY1MURDMAA, I.O and 2ZHARKOV, M.A. 1Institute of Oceanology, Moscow, Russia. 2Institute of Geology, Moscow, RussiaThe major oceanic lithofacies of all Cretaceous stages are mapped and their development is traced. As deduced from the facies analysis, the environmental history of “young” Atlantic and Indian oceans differs considerably from that of the “mature” Pacific. Gray laminated organic-rich hemipelagic carbonate ooze and mud accumulated, close to CCD, in the deep North Atlantic basin from Titonian to Baremian, above Late Jurassic variegated carbonate facies. The basin was surrounded by barrier reefs. Black and gray carbonaceous clay (“black shale” facies) deposited, well below CCD, in both North and South Atlantic from Aptian to Turonian. Evaporite basins developed on continental margins. The “black shale” formation ceased in Conjacian, owing to opening of the deep gateway between the South and North Atlantic that led to ventilation of deep waters and to decrease in biological productivity within the pelagic realm. “Black shale” facies also occur in Alpine Tethys and in opening Indian Ocean. However, only rare local occurrences of these facies are noted in the Pacific, where pelagic red clay and radiolarian ooze predominate below CCD throughout the Cretaceous section. Therefore, the “black shale” facies are not marking a global anoxic event, but reflect an early opoening phase of the “young” oceans under the “greenhouse” climatic conditions.