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Paleogeography of the Coniacian–Maastrichtian Ages of the Late Cretaceous

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Abstract—Global lithologic–paleogeographic maps were compiled for the Coniacian, Santonian, Campanian, and Maastrichtian ages of the Late Cretaceous. Main features of paleogeography of continental and oceanic hemispheres of the Earth and ocean–continent transition zones during the second half of the late Cretaceous are considered. Continental hemisphere was divided into two asymmetrical segments: the northern segment of the Laurasian continent and the southern one, comprising isolated Gondwanan blocks. In the terminal Late Cretaceous, the sublatitudinal Tethys was divided, after the formation of integrated Atlantic Ocean, into two autonomous parts: the Caribbean basin in the west and the Late Cretaceous Tethys in the east. The oceanic hemisphere was occupied by the Pacific, whose central part represented a deep pelagic zone where abyssal basins widened and deepened. Most significant global paleogeographic transformations occurred in the peripheral zones of the Pacific and Tethys and also in continents bounding these basins.

Key words: *paleogeography, Coniacian, Santonian, Campanian, Maastrichtian.*

INTRODUCTION

The paper is devoted to a consideration of global lithologic–paleogeographic maps first compiled for the Coniacian, Santonian, Campanian, and Maastrichtian ages of the Late Cretaceous (Figs. 1–4). It continues the brief characterization of global maps compiled for every age of the Cretaceous to reveal sedimentation settings, paleogeography, and paleoclimatic zoning during the epoch of the warm biosphere. In our previous publications (Zharkov *et al.*, 1995, 1997), lithologic–paleogeographic maps compiled for the Berriasian, Valanginian, Hauterivian, Barremian, Aptian, Albian, Cenomanian, and Turonian ages of the Late Cretaceous were discussed. All the maps, including those presented in this paper, were compiled using the same approach, which was described earlier (Zharkov *et al.*, 1995).

The main principle of our methodical approach is to use the autonomous legends for each of five paleogeographic realms that existed during the Cretaceous: (1) pelagic zones of oceans; (2) continental slope/island arc foot and peripheral zones of oceans; (3) shelf and epicontinental seas; (4) humid zones and areas of continents; and (5) arid sea basins in interior and coastal areas of continents.

As a result, continental and oceanic regions, as well as transition zones between them, were distinguished. This also allowed us to discriminate land areas, shelf and epicontinental seas, and humid settings on continents, as well as central pelagic, peripheral hemipelagic, and island-arc zones in oceans. Magmatic and sedimentary–volcanogenic rock complexes are recognized according to their formation in either continental or oceanic settings. Magmatic rock associations of marginal–continental and intracontinental settings are distinguished on continents, whereas those of mid-oceanic ridges, intraplate seamountains, islands, plateaus, and island arcs are defined in oceans.

Compiled maps demonstrate peculiar features of the general distribution of basins with carbonate, terrigenous, glauconite-bearing, phosphate-bearing, black shale, evaporitic, chalk, and coal accumulation, as well as settings of bauxite and kaolinite formation on continents and in shelf and epicontinental seas during every age of the Cretaceous. They also provide an opportunity to clarify general patterns of distribution of hemipelagic, pelagic, and anoxic black shale deposits in oceans, and also of magmatic and sedimentary–volcanogenic complexes in oceans, continental margins and continents.

As noted in previous publications, it is impossible to consider paleogeographic and paleoclimatic peculiarities in the distribution of all the distinguished sedimentation and volcanism settings for separate ages, including those of the second half of the Late Cretaceous, in one paper. Therefore, when analyzing the paleogeography of the Cretaceous, one should pay attention only to some aspects of a principal significance. In this paper, we consider only two issues:

(1) main features of global paleogeography of the second half of the Late Cretaceous;