

Vestiges and Sedimentary Reconstruction of Lower Cretaceous Atolls in Continental Shelf Environment

CSÁSZÁR, G. Hungarian Geological Institute, Budapest, Hungary

Rift type volcanism developed at thinned continental crust conditions in the Mecsek Mountains, Hungary during the Early Cretaceous. Large alkali basalt volcanoes grew above the sea level here, like in the Pacific and Indian oceans. There are fundamental difference between the continental shelf and oceanic conditions. In the first case there was no significant subsidence while in the latter one the volcanism was accompanied by giant swells produced by mantle plume and the a slowly subsiding basement was followed by the production of the Darwin's atolls. The consequence is that owing to the wave actions heavy erosion cut into the body of the volcanic build-ups and they became bordered by sedimentary zones of gravel beach, sandy and silty lagoon and atoll-type ring at the edge of the submarine slope. As there was no accommodation space for forming large and firm atoll ring, a new (Mecsek-type) atoll has developed. Its main character is that both erosional products (basalt gravel, sand, silt and clay) and biota (ostreids, rudists, gastropods, corals, chaetetids, etc.) lived on the shallow platform were transported gravitationally as mass flow, slumping or turbidity current downslope of the volcano and mixed with bathyal or pelagic fossils (brachiopods, ammonites, radiolarians, calpionellids, etc.) Deep water sediments deposited in-between the volcanoes interfingered with the slope sediments.

The subsequent erosion in the Late Cretaceous destroyed the entire volcanic build-ups as far as the roots of the volcanoes and the reconstruction could be made from their vestiges found at their foot and in the basin. The paper will present details of data and reconstruction of the model of the Mecsek-type atoll.