



The Tethyan Upper Cretaceous in northwestern Turkey – an integrated study of pelagic sections in northwestern Anatolia and the southern Black Sea coast

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Upper Cretaceous sections in northwestern Turkey record pelagic depositional environments that are characterised by frequent volcanic events. The aim of the ongoing project is to cover a continuous cyclostratigraphic record of the Tethyan Campanian and to date palaeoenvironmental changes and volcanic events.

Cyclic successions of pelagic deposits depicting shales and marl-marly limestone alternations with inter bedded tuff and turbidite layers were logged. Deposits alongside the southern Black Sea coast (in the western Pontide orogen) and in northwestern Anatolia (Göynük and Nallihan area) were examined for geochemistry and mineralogy of tuff beds, as well as for biostratigraphy and palaeoecology.

Three formations of Turonian to Campanian age in the western Pontide area are present; Dereköy, Unaz and Cambu Formation are reflecting different geodynamic phases, i.e. subduction of the Neotethys as well formation of the Western Black Sea basin, overlain by the late Campanian-Maastrichtian Akveren Formation. Planktonic foraminiferal data suggest an age of upper Turonian *Marginotruncana sigali* -*Dicarinella primitiva* to lower Campanian *Globotruncanella elevata* Zone bracketing the first major phase of volcanism (Dereköy Fm.). The second volcanic unit (Cambu Fm.) is of early Campanian age, when spreading in the western Black Sea basin started. Geochemistry of tuff layers confirms magmatic activity of the Pontide volcanic arc from Turonian to Campanian. Discrimination diagrams using immobile elements classify calc-alkaline magma series and basaltic-andesite and basalt rock types.

Northwestern Anatolian sections are located in the Central Sakarya region's Mudurnu-Göynük basin. Upper Cretaceous deposits of Turonian to Campanian age are recorded in pelagic limestones of the Yenipazar Formation. The cyclic pelagic Göynük section covers the Santonian-Campanian boundary, followed by a lower Campanian volcano-clastic unit and overlying turbidites and pelagic shales of late Campanian to Paleocene age.

The combined study of volcanic events with planktonic foraminifera biostratigraphy and cyclostratigraphy allows precise dating of changes in paleoenvironment and in the tectonic setting in the northern Neotethyan realm.