



Upper Cretaceous to Paleogene tectonostratigraphy of NE Adriatic region: geodynamic implications

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The External Dinarides and its Adriatic foreland represent a part of the Alpine orogenic system which is situated in the NE Adriatic region - central part of the Adriatic microplate (Adria). The region is characterized predominantly by more or less deformed successions of pre-orogenic Triassic to Eocene platform carbonates and overlying syn-orogenic clastics. Differing interpretations of the Mesozoic to Cenozoic evolution of the region are still matter of debate. This is evident in opposing regional paleogeographic models that are proposed by various authors: single carbonate platform unit (Adriatic=Adriatic-Dinaridic carbonate platform) versus two carbonate platform units (Adriatic and Dinaridic) separated by Budva-Cukali basin. Also, estimates of shortening during generally NE-SW Tertiary compression, that resulted from the development of the Dinaric chain, differ substantially. A "conservative" single-platform model involves minor shortening predominantly due to folding and faulting along steep reverse faults. The most speculative two-platforms model involves significant shortening obtained by folding, thrusting and nappe stacking, which resulted from complete underthrusting of the inter-platform basinal unit.

Neither low-quality seismic nor borehole data provide evidence for an underthrust inter-platform basinal unit. However, lateral stratigraphic differences within Upper Cretaceous to Paleogene shallow-water carbonate successions, and the presence of isolated outcrops of contemporaneous basinal carbonates, suggest different pre-orogenic subsidence.

Analysis of Upper Cretaceous to Paleogene stratigraphic data from both outcrops and boreholes allows the evaluation of the regional distribution of major lithostratigraphic units. As a result, three tectonostratigraphic units are recognized: Mid-Adriatic, NE Adriatic and SW Dinaridic units. Basinal carbonates appear in isolated outcrops be-

tween the Adriatic and Dinaridic units. However, their stratigraphic range is still unknown and their original position is doubtful. That is why the region is here referred to as the Adriatic-Dinaridic carbonate platform(s). The tectonostratigraphy is used as a basis for a new hypothesis on the Mesozoic to Cenozoic evolution of the region that is presented with the aim to stimulate further investigations of each discussed element.

Generally, Adriatic and Dinaridic segments probably interact as major crustal entities of the Adria. Recognized tectonostratigraphic units represent sedimentary cover deposited on the segments. Upper portions of the SW Dinaridic and NE Adriatic units were affected by progressive, southwestward verging, predominantly thin-skinned early orogenic deformations. The regional map view depicts an arcuate Dinaridic thrust front, which is probably a consequence of differential propagation of the deformations. It could be related to evaporite horizons which characterize sedimentary sequences of the affected units, and/or to differential elevation and possibly differential horizontal movements of crustal fragments separated by transverse faults. The latter is inferred from recent position of buried platform margin recognized on the Adriatic segment. The collision zone of the Adriatic and Dinaridic segments was/is characterized by late orogenic thick-skinned compressional uplift (exhumation), related gravity gliding, and still active escape tectonics. These processes mask primary thin-skinned deformations. The Mid-Adriatic unit rested in the Adriatic foreland that is characterized by active strike-slip tectonics and vertical salt movements. Shortening within and between Adriatic and Dinaridic units and segments is still undefined. Therefore, the question of general paleogeography of the region and the original NW extent of the Budva-Cukali basin remains open.