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Tectonic evolution of the suture zone between Dinarides and Carpatho-Balkan: Field evidence from the Kopaonik region, southern Serbia

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The “Kopaonik block and ridge” unit (Karamata and Kristić, 1996) outcrops in a N-S trending mountain range of up to 2000m elevation, intruded by the Kopaonik and Željin granodiorites. At its eastern rim, a suture zone (Sava belt) separates two ophiolitic complexes: Western Vardar and Eastern Vardar. The Oligocene (to Miocene?) granodiorite bodies intruded into continental basement units and their Mesozoic cover. Contact metamorphism, which led to spectacular skarn formation in the vicinity of the granodiorite, obscured the regional (medium?) low-grade metamorphic overprint. Triassic shales, marls and carbonates are overlain by a Jurassic ophiolitic mélange and obducted ophiolites (Western Vardar). These ophiolites are unconformably overlain by a belt of “Senonian” flysch (“Upper Cretaceous of the Kopaonik block” of Dimitrijević, 1997) which contains large olistoliths, including ophiolitic blocks, and which we regard as a suture zone. This weakly metamorphosed N-S-trending suture zone, is considered as the southern prolongation of the Sava belt and juxtaposes the Kopaonik block with the East Vardar ophiolites. The latter are covered by Lower Cretaceous and literally unmetamorphic flysch (“Paraflysch”). In a recent model Schmid et al. (2006) suggest that the Upper Cretaceous of the Kopaonik block is the surface expression of an east dipping Cretaceous/Paleogene suture between Adria (including Kopaonik) and Europe (Carpatho-Balkan).

Our study addresses the tectonometamorphic evolution of the Kopaonik region and its late-stage cooling and exhumation history. Based on structural mapping and available

literature data four phases of deformation were distinguished:

D1 produces a penetrative foliation and stretching lineations, which are refolded by D2-structures that produce NE-dipping axial planes. The D2 structures are a prominent feature in map view. We interpret these two deformation phases to be associated with the E-directed subduction of the internal Dinarides underneath the pre-existing Carpatho-Balkan orogen in Latest Cretaceous to Early Paleogene times. Chevron folds with N-S-striking, sub-vertical axial planes represent D3. This deformation phase affects the entire study area. D3-structures are seen to be crosscut by apophyses related to the supposedly Oligocene-age granodiorite body. D4, on the other hand, is restricted to the proximity of the granodiorites and shows sub-horizontal axial planes. We suggest a genetic relationship to the intrusion of the granodiorite and infer syn-intrusive extension, as evidenced by brittle to brittle/ductile normal faulting. This succession of tectonic stages needs further refinement by detailed structural observations and thermochronological data.

References:

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