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The Vardar Zone is a highly complicated suture between units of African and European affinities, which also contains remnants of an oceanic domain. This domain was characterized by extensional opening during the Triassic and Jurassic. In the Upper Jurassic, the oceanic lithosphere was obducted, simultaneously over the continental units of African and European origins, respectively. The remnant of the oceanic crust, however, persisted in the Sava Zone till the Late Cretaceous-Eocene continental collision. During the final closing, the flysch sediments of the Sava Zone were trusted over by the sediments of the Eastern Vardar Zone along a generally NNW-SSE trending fault system, which is called Bela Reka Fault in the Belgrade area. The flysch of the Sava Zone, in its turn was trusted over the Western Vardar Zone. During the Oligocene and Lower Miocene there was an intensive igneous activity in the Vardar Zone. The products of this activity are widespread in the Eastern well as in the Western Vardar Zone, while in the Sava Zone they are known from a restricted area.

To date, we carried out paleomagnetic and AMS studies on oriented rock samples which were drilled at 39 plus nine localities /sites from the Western and from the Eastern Vardar zones, respectively. From these zones Upper Cretaceous sediments and Oligocene-Lower Miocene igneous rocks were studied. The Sava Zone is represented by 16 Upper Cretaceous localities, where marls and marly limestones were collected. The structural observations from the Sava and Eastern Vardar zone lend themselves to interpreting them jointly with the paleomagnetic and AMS results. Those from the Western Vardar Zone provide a general frame by defining the main events with the character and the orientation of the strain field.

The paleomagnetic results from both the Western and Eastern Vardar zones point to about 30° post-Oligocene CW rotation. This rotation is indicated by the primary paleomagnetic signals of the igneous rocks and the secondary magnetizations of the sediments, imprinted during the magmatic activity. This rotation must have occurred after the Lower Miocene (youngest igneous rock exhibiting rotation), but the upper age limit is not yet constrained. Nevertheless, this must be taken into account when interpreting the orientations of the pre-Lower Miocene stress fields. This applies also to the Sava Zone, which was at the time of the igneous activity sandwiched between the Western and Eastern Sava zone.

The sediments of the Sava Zone which were intensively folded during an Upper Cretaceous/ Paleogene compression have secondary magnetizations, which are definitely not connected to the Oligocene-Lower Miocene magmatic activity. They are difficult to date, could have

been acquired before or after the 30°CW rotation of the Vardar Zone. The distribution of the locality mean paleomagnetic directions seem to suggest moderate vertical axis rotations after the acquisition of the paleomagnetic signals. The AMS fabrics, although they are dominantly foliated and the AMS minima are close to the respective bedding planes often exhibit well-defined lineations. Fold axes and AMS lineations are roughly N-S oriented, pointing to E-W compression (in present orientation), which was prevailing during the Latest Cretaceous-Eocene. Eventually, we can conclude that the joint interpretation of the structural and AMS results for the Sava Zone are without problems and suggest that the magnetic fabrics were imprinted during the first deformation phase affecting the flysch of the Sava Zone. In contrast, the acquisition of the paleomagnetic signals was governed by secondary processes, which could have affected the flysch before or after the general CW rotation of the Vardar Zone. This ambiguity leaves ground for alternative interpretation of the paleomagnetic results, which are either a CCW rotation connected to the thrusting of the flysch of the Sava Zone over the Western Vardar Zone or the absence of general vertical axis rotation after the magnetization of the flysch.

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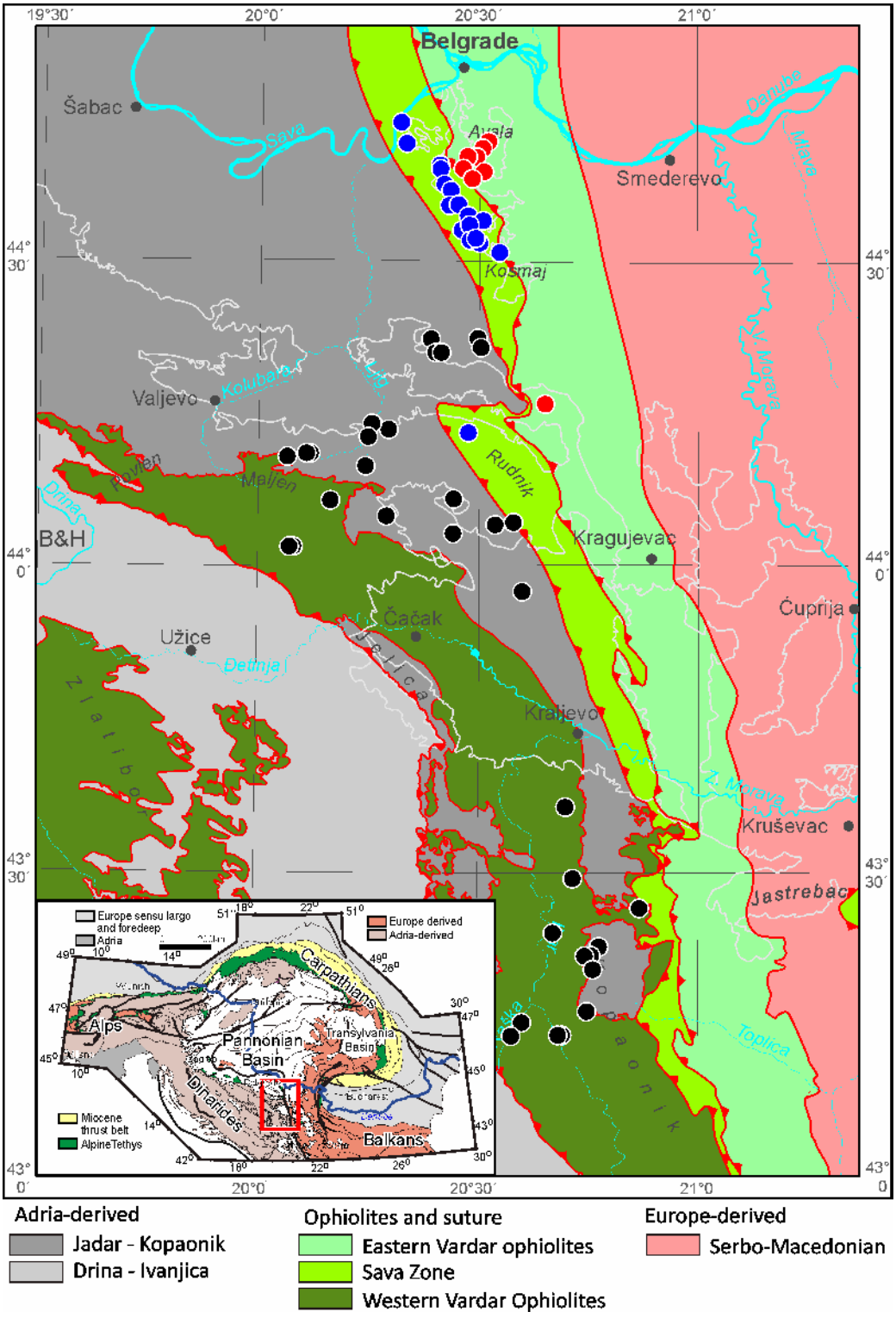

Figure 1: Paleomagnetic sampling localities/sites in the Vardar Zone: black dots - Western Vardar Zone, blue dots - Sava Zone, red dots - Eastern Vardar Zone. The inset shows the position of the study area within the Carpatho-Pannon-Dinaric-Balkan region.