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First paleomagnetic and magnetic anisotropy results from Montenegro – the coastal area

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In the Southern part of Montenegro three main tectonic units are distinguished. The Dalmatian (South-Adriatic) zone is in the lowermost tectonic position and comprises shallow water Cretaceous carbonates, bauxites, Middle Eocene nummulitic limestones, transitional marls, and Upper Eocene flysch. It is thrusted over by the Budva zone characterized by deep water sediments of Triassic through Paleogene ages with tuffitic layers in the Ladinian. The uppermost unit is the High Karst zone developed in a carbonate platform environment from the Middle Triassic till the end of the Cretaceous. In this unit flysch sedimentation started after the K/T boundary.
From the above units we drilled and oriented in situ a total of 248 samples representing nine localities from the Dalmatian, six from the Budva and five from the High Karst zone, respectively. The harder rocks were drilled with portable gasoline powered, the softer ones with an electric drill. The laboratory measurements, demagnetizations, statistical evaluations of the measurements were carried out using standard methods in the Paleomagnetic Laboratory of the Mining and Geological Survey of Hungary.
From the Dalmatian zone, the Upper Cretacous limestones have diamagnetic susceptibilities, very weak NRM, which either failed to provide statistically acceptable results (two localities) or obtained their remanence quite recently. The five flysch and transitional marl localities have well-defined AMS fabrics as well as paleomagnetic directions. The AMS fabrics must have been imprinted in a NE-SW oriented compressional strain field, which resulted in moderately strong fabrics with NW-SE oriented AMS lineations, perfectly following the Dinaridic trend recognized in Croatia. One locality, the only one with moderate tilt and rather poor statistical characteristics suggest post–Eocene CCW, while those with steep dips have well-defined paleomagnetic directions, which are aligned with the intermediate AMS direction. The positive tilt test, however, provides an overall mean direction with absurdly shallow inclinations, which suggest that we are not dealing with “real” paleomagnetic directions, but maybe with magnetic anisotropy governed NRMs.
The rocks in the Budva zone show a large variation in lithological sense as well as in their magnetic properties. Except a Pietra Verde localitiy, the magnetic susceptibilities are weak, we can not define AMS fabrics, yet most of the localities yielded fairly good paleomagnetic results, which suggest pre-folding age of the acquisition followed by a large CW rotation of unit.
From the High Karst, only a single Lower Jurassic pelagic limestone provided paleomagnetic results

which exhibit CW rotation. The others had weak magnetizations, diamagnetic susceptibilities and no or scattered magnetic signals.

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