Mesozoic ophiolites in the Eastern Carpathians (Romania)

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Apart from the Triassic ophiolites of Dobrogea, the Romanian Mesozoic ophiolites are related to the Tethys ocean. According to Sandulescu (1994, 2004) they can be divided to:

– *The Transylvanides:* comprise the ophiolites in the Eastern Carpathians (Middle Triassic to Late Jurassic ocean floor, island arc and intraplate basalts), the ophiolites of the Southern Apuseni Mts. (Middle Jurassic ocean floor ophiolites and Late Jurassic-Early Cretaceous? SSZ island arc volcanics) and those from the Transylvanian Depression basement (Late Jurassic SSZ-island arc volcanics).

– *The Pieninic klippes:* occur in the Maramures area and contain only small fragments of basalts and tuffs which are believd to be of Late Jurassic age.

– *The Outer Dacides:* include basaltic and gabbroic rocks associated with the Black Flysch nappe and the Ceahlau nappe as well as their presumed continuation in the Southern Carpathians, i. e. the ophiolites from the Severin nappe.

In the following we will deal only with the ophiolites of Transylvanides and those in the Black Flysch. The former occur in the Rarau and Haghimas synclines and in the Persani Mts. Most of the occurrences are obviously olistoliths in the Cretaceous wildflysch of the Bucovinian nappe, larger bodies are believed to be individual tectonic entities called Transylvanian nappes by Sandulescu (1975). The age of these ophiolites is debatable, many of the olistolith bodies are clearly associated with Middle-Triassic limestones in particular in the Persani Mts. On the other hand, Late Jurassic age for at least a part of the ophiolite bodies is not ruled out yet.

Most of the individual occurrences along the Eastern Carpathians are only basalts, quite often brecciated, containing limestone clasts. Other blocks consist almost exclusively of highly serpentinized ultramafics. An outcrop near Varghis in the Persani Mts. displays besides ultramafics with possible ultramafic cumulates, also a preserved sheeted dyke complex. In the Persani Mts. trachyandesites are closely associated with the ophiolites. Only a limited number of basic and ultrabasic rocks were analysed until now (Cioflica et al., 1965; Russo-Sandulescu et al., 1983 a. o.), exhibiting a wide variation in geochemistry and possible tectonic settings.

Ophiolitic rocks occur also in the Black Flysch in the Maramures Mts. (Eastern Carpathians), where they are closely associated with Cretaceous flysch sediments. Petrographically, they are mostly massive lava flows, pillow lavas, tuffs and sometimes doleritic bodies. Gabbros on the one hand and more intermediate to acidic rocks on the other hand, are occasionally found. The volcanics are metamorphosed in the greenschist facies (chlorite, epidote, actinolite), additionally blue amphibole is reported from occurrences in the Rica valley (Russo-Sandulescu et al., 1983). The few available geochemically analyses indicate rifting environment for the basalts.

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