Jurassic Rhodopes

The Rhodope Massif has been regarded either as an ancient crystalline mass that underwent only limited transformations during the Phanerozoic tectonic evolution, or alternatively as an Alpine nappe stack built of Phanerozoic formations. Both approaches consider the massif without taking into account the evolution of the surrounding Hercynian and Alpine domains.

During the past decade U-Pb studies on zircons from the Rhodopian metamorphic basement (e.g., Ovtcharova et al., 2004; Froitzheim et al., 2014;
own unpublished data) reveal the presence of Late Jurassic anatectic events (Figs. 1 and 2) irregularly distributed within the dominant Hercynian metagranitoids and migmatites (with Cadomian relicts). These events are concentrated mostly in two well-defined areas: the North-Rhodope antiform and the South-West Rhodope synform. Both areas are built up of rocks of the Boykovo and Bachkovo gneisses and leucocratic gneisses associated with quartzites. These rocks are covered by the Lukovitsa Varied Formation and the Asenovgrad Carbonate Group. Jurassic ages that span between ca. 160 and 149 Ma in these two areas come exclusively from the Boykovo and Bachkovo gneisses. The latter bear traces of repeated anatexis (Zagorchev et al., 2015). Jurassic ages from samples in the Eastern Rhodopes are irregularly distributed amongst the predominantly Palaeozoic ages within gneisses of the Rupchos Group and the Prerhodopian supercomplex. The same time span is characterized in the Tethyan and peri-Tethyan realms (e.g., Tchoumatchenco, 2006; Sapunov, Metodiev, 2009) of the future Balkanides (Fig. 2) by a profound tectonic and basinal reorganization (Zagorchev, Tchoumatchenco, 2017), with the initiation and gradual expansion of the Nish-Troyan flysch trough. The Oxfordian to Tithonian zircon ages in the Rhodopes metamorphics reflect the deep metamorphic processes related to middle-crust collisions and thickening followed by gradual uplift and northward thrusting during the Nish-Troyan trough evolution.

References


