The Srednogorie Zone (central and eastern part) revealed U–Pb zircon dates from subvolcanic intrusions and major plutons, supplemented by published Ar-Ar and Re-Os age data for the hydrothermal ore deposits, a general younging of magmatism from 92.1 ± 0.25 Ma in the north (Elatsite deposit) to 78.53 ± 0.15 Ma in the south (Capitan Dimitrievo pluton). The Timok region shows the starting point of the magmatism at 90-86.6 Ma and to end with the intrusion of plutons about 82-78 Ma (see Moll et al., 2010, this volume). Economic Cu–Au mineralizations in both sections are related to subvolcanic/ volcanic suites and are dated in the range of 92 to 86 Ma in Bulgaria and mainly about 86-84 Ma in the Timok zone. The age progression correlates in two profiles (Central-Eastern Srednogorie) with an isotope-geochemical trend (Sr-Nd, Hf-zircon data) of decreasing crustal input into mantle-derived magmas. The age and geochemical trends are explained as a consequence of slab retreat during oblique subduction.

The Cretaceous magmatism continues into the Rhodope Massif. The western Rila batholith gives a zircon age of 69.26 ± 0.26 Ma and a granite at the western border of the Rila batholiths an age of 61± 1.5 Ma (LA-ICPMS) which are interpreted as the time of emplacement; NW of Dospat an U/Pb zircon age of 77 ± 1.3 Ma and further to south at Elatia-Barutin the zircon dating show magmatic age of 55.93 ± 0.28 Ma. The ε-Hf characteristics change from the border Srednogorie Zone/Rhodope Massif of +10 (T-80 Ma) to +2-6 in the central part of the RM and to +1-3 (T-56Ma) at Elatia-Barutin. The crustal input of the Cretaceous/Tertiary magmatism increases to south which is documented by Sr-Nd isotope tracing data and the model of the slap retreatment (Srednogorie Zone) has to be change for the geodynamic interpretation.

Pilot study for artificial recharge of the South-Eastern Mesaoria Aquifer (Cyprus), using tertiary treated wastewater

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In many arid or semi-arid countries, like Cyprus, groundwater is the main source for domestic and irrigation use. The degradation of groundwater resource can be quantitative and qualitative, if the abstraction exceeds the natural recharge rate. For this reason treated water at these areas is a valuable water resource and should be taken into account in designing a rational water policy. Furthermore, the interest in artificial recharge of groundwater using pretreated waste water continues to increase, especially in the semi-arid countries. In this paper, the possibility of artificial recharge in the South-Eastern Mesaoria (Kokkinochoria) aquifer, close to Liopetri village, is examined. This study area is characterised by low precipitation (330 mm) and it is covered by deposits of Nicosia formation, Pliocene aged, which consists of marls and fined to coarse grained calcitic sandstone. The aquifer is developed between the sandstones horizons and sands. The average thickness of the aquifer is up to 80 m and the maximum 120 m. Overpumping during the last decades, through a large number of boreholes, has caused a decline of groundwater level and the occurrence of negative piezometry up to 30 m below mean sea level. As a result, sea intrusion phenomena are recorded for distance up to 1-2 km inland. Therefore, the use of tertiary treated wastewater, which is produced at Agia Nappa-Paralimni treatment plant, is proposed for the application of artificial recharge through boreholes. Adequate pretreatment of the reclaimed water is also considered prior to the recharge, taking into account the final use of the aquifer's water.