biogeochemical prospecting methods are successfully used for detection of the new mineral deposits in the underlying substrate. This method involves the chemical analysis of some plants and determination of indicator plants for some elements. The aim of this study is to determine plant-soil relationships for the native plant species that grow directly on the Kırka (Eskişehir-Turkey) borate mining area. The information obtained from this study could be used to establish guidelines in order to determine of indicator plant species for Li and Sr. *Genista aucheri* Boiss, *Euphorbia hirsuta* L., *Juniperus oxicedrus* L. subsp. and *Pinus nigra* Arn. plant samples and soil samples of them were collected in and around the Kırka (Eskişehir-Turkey) borate mining area, at 46 stations. Plant and soil samples were analysed for Sr, Li, Cu, Zn, Mn, Co and, Ni, with the flame atomic absorption spectrophotometer (FAAS). In the same way the B concentrations in plants and soil samples were measured the absorbance at 420 nm by spectrophotometer. The Li and Sr contents of plant and soil samples were determined. Then, biogeochemical anomalies of them were investigated. Element contents of the plant samples were compared with the element level of the soil samples, and then indicator plants were founded. Statistical relations were established between Li, Sr values of soil samples and plant species (twigs of *G. aucheri* (n=18, r=0.6214), *J. oxicedrus* (n=24 r=0.7267 and leaves of *J. oxicedrus* (n=20, r=0.8293), *P. nigra* (n=19, r=0.6655) for Li, twigs of *P. nigra* (n=16, r=0.8567) and leaves of *J. oxicedrus* (n=16, r=0.6824), E. *hirsuta* (n=14, r=0.7511) for Sr. Furthermore, correlation analyses were made for determining the inter-elemental relationships between soil (for B, Sr, Li, Cu, Zn, Mn, Co and Ni) and indicator plants. Therefore *G. aucheri E. hirsuta, J. oxicedrus* and *P. nigra* are good indicators of the Li and Sr concentrations in the soil and these species could be successfully used in biogeochemical prospecting, patfinder plants for borat mining and environmental monitoring.

Geological features of Kışla dome structure in South of Isparta and its tectonic evolution, SW Turkey

Özgür N.[1], Yağmurlu F.[2], Kamaci Z.[2], Şentürk M.[2] and Çalışkan T.A.[1]

[1]*Süleyman Demirel Üniversitesi, Research and application Centre for Geothermal Energy and Mineral Resources, 32260 Isparta, Turkey, noezguer@mmf.sdu.edu.tr*
[2]*Süleyman Demirel Üniversitesi, Department of Geological Engineering, 32260 Isparta, Turkey*

Geographic structure named as Isparta Angle in SW Turkey is generated by the folding of carbonate axis in terms of opposite “v” forming Western Taurides in the northern part of the Antalya Gulf. The Mesozoic rocks in the western part of the Isparta Angle form the Beydağları Platform. Besides, the Akseki-Anamas Carbonate Platform forms the eastern side of the Isparta Angle. The rocks in the southern part of the Isparta Angle and in environment of Antalya are composed of allochthonous ophiolithic components and can be considered as Antalya Nappe. On the other side, the allochthonous rocks as Lycian Nappes with ophiolithic components overlie the western part of the Isparta Angle. Moreover, the allochthonous rocks known as Beyşehir-Hoyran and Bozkır Nappes overthrust the eastern part of the Isparta Angle and form the most important nappe system in the area.

Satellite imageries of the area located 20 km south of Isparta indicate a circular dome structure around Kışla. This dome structure has been generated within the Isparta Çayı Formation and the overlying marine clastic series in Antalya Nappes. The radius of this circular dome structure reaches up to 10 km approximately. Two and three dimensional satellite imageries of the study area, the map of tectonic lineaments and the map of surface temperatures prepared using thermal band of satellite imageries (Landsat ETM+) support the existence of a dome structure in the study area.

The rocks in the investigated area can be divided into two groups within a geological map of scale in 1:25000: (i) autochthonous-paraautochthonous and (ii) allochthonous rocks. The autochthonous-paraautochthonous rocks in the area consist of Davraz Formation (Early-Late Jurassic carbonate rocks), Beydağları Formation (Early-Late Cretaceous carbonate rocks), Yazır Limestone (Aquitanian reef limestone) and Ağlasun Formation (Burdigalian flysch). The allochthonous rocks in the region are composed of rock components forming

Antalya and Yavuz nappes. Antalya Nappes are represented by Isparta Çay Formation (Early-Middle Triassic stratified chert and plaquette limestone) and rocks in ophiolite melange. In the region, the rock units in Antalya Nappes overlie the carbonate rocks of Beydağları Formation in the southern part of the investigated area tectonically. Besides, the Eocene turbidites known as Yavuz Nappes, form the other important allochthonous unit in the region. The Eocene units belonging to Yavuz Nappes and overlie the Miocene (Aquitanian to Burdigalian) units tectonically.

On the other side, the dikes and subvolcanic domes of trachytic (5,45 ± 0,21 – 5,77 ± 0,22 Ma) and lamproitic (6,75 ± 0,25) composition are located in various points of the study area. These volcanic formations are located in Antalya-Isparta volcanic belt of N-S strike mostly. By a tectonical interpretation of the investigated area, the area was affected by two various compressional tectonic forces, namely N-S and E-W. The time interval from Late Cretaceous to Early Pliocene contains compressional tectonic features in N-S direction dominantly. After Early Pliocene time, the area was affected by compressional tectonic features in E-W direction. These compressional tectonic features affecting the study area and developing after each other and in various directions are the tectonical reasons which led to the formation of the Kışla Dome. On the other side, subvolcanic dikes and domes in the Kışla Dome area reflect a magmatic activity in the same age with the Kışla Dome which is supported by age determinations of volcanic rocks and their equivalent plutonic rocks such as syenite xenolithes (trachyte: 5,77 ± 0.22 Ma and 24.000 ± 2.000 a; Syenite: 4,92 ± 0,9 Ma).

Radiolarian biostratigraphic dating on Middle Triassic basalts in western part of Neotethyan oceanic basins

Ozsvárt P.

Paleontological Rersearch Group of the Hungarian Academy of Sciences, H-1083 Budapest, Ludovika tér 2, ozsi@nhmus.hu

Early rifting-related submarine volcanics and related deep-sea sedimentary units, including radiolarites of the Western Tethyan orogenic belt, provide important clues to the geodynamic evolution of the Mesozoic Neotethys. Stratigraphic dating of these rocks is especially difficult due to the absence of stratigraphically useful macrofauna. However, radiolarian micropaleontologic investigation has proven that this group is particularly useful for biostratigraphic dating in such sequences where the deep-sea sedimentary units (i. e. radiolarian cherts, cherty limestones, etc.) are connected with volcanics. Radiolarian-rich sedimentary units are widespread in Neotethyan units ranging in age from Triassic to Cretaceous and geographically from the Iberian to southern Tibet and western Thailand despite the restricted outcrops and limited available biostratigraphical evidence of radiolarites associated with volcanic rocks in Neotethyan oceanic basins. The aim of this study is to present new radiolarian biostratigraphical data from several localities in the northern Pindos and Othrys Mountains, Greece, where radiolarites directly overlie basalts, and from several localities from Bükk-Darnó area in NE Hungary. The radiolarian biostratigraphic dating suggests that the westward propagating Neotethyan rifting started earlier in the Hellenidic domain than in the Circum-Pannonian region. In the former area pelagic sedimentation began in the Late Scythian and oceanic crust was already formed in the Late Scythian?–Anisian time, whereas in the latter region (which was located in the northwest end of the later Neotethys Ocean) pelagic sedimentation began only in the Middle–Late Anisian, but formation of new oceanic crust is not documented before the Ladinian.