Estimate of influence of U, Th and K radiogenic heat on the Marmara Region and lithosperic structure

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The natural radioactive nucleids with long half life in the earth are Uranium, Thorium and Potassium and they contribute to the heat produced in the crust. During decay process of the radioactive nuclides in rocks, emission of α, β, γ particles transform into radiogenic heat. The amount of radiogenic heat per time generated from rocks can be determined by concentration of the radioactive nucleides in the rocks and it is independent of forms, tempereture and pressure of the rocks. Concentrations of radionuclides in the samples can be determined by gamma ray spectrometer or some concentrations were obtained from chemical analysis.

The radioactivity concentrations of U, and Th, K in the soils of the Kestanbol granite area are relatively high, but these values are regarded as typical for the region. The high concentrations are determined from Kozak in the Çanakkale Region. The contributions of radiogenic heat production to lithosperic temperature were discussed.

In this study radiogenic heat production values were estimated from U_{238}, Th_{232} and K_{40} concentrations from a variety of granitoid rocks in Marmara region and radiogenic heat rate contributed to lithosperic thermal structure was obtained for Çatalca, Kestanbol and Çanakkale.

Cenozoic granitoids in the Dinarides of southern Serbia: age of intrusion, isotope geochemistry, exhumation history and significance for the geodynamic evolution of the Balkan Peninsula

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The Dinarides represent a complex orogen consisting of thrust sheets that contain ophiolitic as well as Adria-derived continental material. These thrust sheets are situated in a lower plate position with respect to an upper plate formed by the Tisza and Dacia Mega-Units with European affinities. The area around the Kopaonik massif in southern Serbia exposes the two innermost Dinaridic composite nappes, namely the Drina–Ivanjica and the Jadar–Kopaonik–Studenica composite thrust sheets. In the latest Cretaceous to Early Paleogene these innermost Dinaridic thrust sheets collided with the already existing (pre-Turonian) Carpatho–Balkan orogen that is a part of the Dacia Mega-Unit and constitutes the upper plate of the complex collision zone. A separating suture zone (Sava Zone) runs along the eastern rim of the innermost Dinarides that is along the internal limit of the Jadar–Kopaonik–Studenica composite thrust sheet and separates the Dinarides from the Carpatho–Balkan orogen. The metasediments of the Kopaonik and Studenica Metamorphic Series and the overlying Western Vardar Ophiolitic Unit were intruded by Cenozoic granitoids. Available structural data indicate that the intrusion of these plutons post-dates three phases of compressive deformation (D1–D3), the latest associated with thrusting in the internal Dinarides and suturing with the adjacent Carpatho-Balkan orogen.

Two age groups for the Cenozoic granitoids in the Dinarides of southern Serbia were determined by high precision single grain U–Pb dating of thermally annealed and chemically abraded zircons: (i) Oligocene ages (Kopaonik, Drenje, Željin) ranging from 31.7 to 30.6 Ma and (ii) Miocene ages (Golija and Polumir) at 20.58–20.17 and 18.06–17.74 Ma, respectively.