



Integrated geothermochronology (^{207}Pb - ^{206}Pb , ^{40}Ar - ^{39}Ar , K-Ar, fission-track) of central Anatolian granitoids revealing continent-oceanic island arc and continent-continent collisions in central Anatolia, Turkey

D. Boztug (1), R.C. Jonckheere (2), M. Heizler (3), L. Ratschbacher (2), Y. Harlavan (4), M. Tichomirova (2)

(1) Cumhuriyet Univ, Sivas, Turkey (boztug@cumhuriyet.edu.tr), (2) TU Bergakademie Freiberg, Germany, (3) NM Technology, USA, (4) GSI- Jerusalem, Israel

Middle to Late Cretaceous central Anatolian granitoids intrude the supra-subduction zone-type central Anatolian ophiolite (SSZ-type CAO) and medium-to high-grade metasediments of Central Anatolian Crystalline complex (CACC), and unconformably overlain by Late Palaeocene to Early/Middle Eocene sedimentary rocks. ^{207}Pb - ^{206}Pb single-zircon evaporation age determinations have yielded three sub-groups, resulted from a protracted magmatism, such as (1) Cenomanian-Turonian with a weighted mean age (wma) of 94.9 ± 3.4 Ma, (2) Turonian-Santonian with a wma of 85.5 ± 5.5 , and (3) Campanian with a wma of 74.9 ± 3.8 Ma. The hornblende and biotite ^{40}Ar - ^{39}Ar and K-Ar cooling ages of these granitoids are clustered between ca. 80 and 65 Ma. Such a synchronism between the hornblende and biotite cooling ages are considered to represent a fairly rapid cooling and exhumation of a mid-crustal section in central Anatolia. Apatite fission-track data, dating only the tail end of exhumation processes, reveal an apparent Early to Middle Palaeocene rapid uplift (ca. 57-62 Ma) for these granitoids that is also confirmed by T-t modeling of track-length data. The central Anatolian granitoids are proposed to have generated in a post-collisional setting following the continent (TAP) and oceanic island arc (SSZ-type CAO) collision. The Early to Middle Palaeocene accelerated uplift and accompanying erosional denudation are suggested to be resulted from the continent (TAP)-continent (Eurasian plate) collision due to closure of the Izmir-Ankara-Erzincan (IAE) ocean.