

The Detrital Record of Collision between the Anatolid-Tauride and Arabian platforms within the Malatya region (SE Turkey)

Fatih Karaoğlan (1), Di-Cheng Zhu (2), and Raymond Jonckheere (3)

(1) Çukurova Üniversitesi, Geological Engineering Department, Adana, Turkey (fkaraoglan@cu.edu.tr), (2) University of Geosciences Beijing, School of Earth Sciences and Resources, Beijing, China (dchengzhu@163.com), (3) TU Bergakademie Freiberg Department of Geology, Freiberg, Germany (raymond.jonckheere@geo.tu-freiberg.de)

The Southeast Anatolian Orogenic belt was formed as result of the convergence between Anatolian (Eurasia) and Arabian platforms during Late Cretaceous to Miocene period. In this study, detrital samples from the Late Cretaceous, Eocene and Oligo-Miocene units exposed in Malatya Basin are subjected to zircon U-Pb and apatite Fission track analyses to date the magmatic activity and exhumation processes in the source area and to reconstruct the paleogeography of the region. The basement rocks from Paleozoic to Jurassic is outcropped in the region. The magmatic rocks, formed at various episodes in various tectonic settings such as Arabia-Nubia shield, Bitlis-Pütürge massifs, Malatya-Keban massifs, ophiolites, arc magmatics, and collisional to post-collisional volcanism. The age span varies between pre-Cambrian and Quaternary. The Malatya region comprises late Cretaceous and Eocene sedimentary rock together with the Oligo?-Miocene Malatya Basin.

The zircon U-Pb geochronology is used to determine the source distribution and source change in time. Any change in the source area can be expressed as erosion, tectonic denudation and/or a new component in the source area. The zircon U-Pb ages indicate at least 10 different magmatic events in the source area.

The oldest magmatic event occurred during \sim 3000 Ma, whereas the youngest one occurred during 2-4 Ma. The age of tuff interbedded with the sandstones of the Boyaca fm limit the formation age of this unit to \sim 18 Ma. The similar U-Pb ages with the deposition ages of the Malatya Basin indicate a fault controlled sedimentation during basin evolution.

The Fission track data gathered from the Eocene to Miocene stratigraphy within the Malatya and Darende Basins indicate four different cooling episodes in the region; Paleogene, Eocene and Oligo-Miocene and Mio-Pliocene.

This work was supported by TÜBİTAK (project no: 112Y347) and Çukurova University (project no: FBI-2014-2742)