CONGRESS PAPERS
ORAL PRESENTATION

IMSEC 2022

7th International Mediterranean
Science and Engineering Congress

Bildirini No: **29**, Sayfa: **94-94**

Origin and geodynamical implications of basaltic rocks intercalated in the Miocene turbiditic deposits around the İskenderun Basin (Eastern Mediterranean / Turkey)

Ahmet Can Akıncı [1], Nusret Nurlu [1], Ayşegül Güney [2]

[1] Çukurova University, Faculty of Engineering, Department of Geological Engineering, 01330 Adana, Turkey; acakinci@cu.edu.tr
[2]Aksaray University, Faculty of Engineering, Department of Geological Engineering, 68100 Aksaray, Turkey; ayildiz@aksaray.edu.tr

Abstract: We report a detailed investigation and the geodynamical implications of a basaltic lava flow, which was observed for the first time, that is intercalated in the early–middle Miocene turbiditic sedimentary rocks (Karataş Formation) exposed near the İskenderun Basin (southern Turkey). In order to reveal the age and origin of the basaltic rocks, we systematically obtained clastic samples from the measured sedimentary section (including the basaltic lava flow) from around Ceyhan (east of the Adana city). Forty different species belonging to 14 calcareous nannoplankton genera were identified in the samples representing the Langhian–Tortonian (middle–late Miocene) time interval. Considering the stratigraphic distribution of the calcareous nannoplankton species in the section, the age of the basaltic lava flow is determined to be Serravallian (middle Miocene). The basaltic rocks present exclusively minor magmatic evolution and have a restricted compositional range. Analysed in situ major element contents (from electron microprobe analysis, EMPA) for minerals (plagioclase, olivine and clinopyroxene) hosted by late Miocene basaltic rocks showed that these volcanic rocks originated in an intraplate setting. Geochemical analyses indicate that the examined olivines have Fo (forsterite) compositions between 57.81% and 83.83%. The EMPA contents (primarily based on pyroxenes) verified that the studied late Miocene volcanism was related to Pleistocene basaltic rocks of the Delihalil–Turunçlu volcanism could originated in two possible tectono-magmatic environments: 1) collisional folding and a change from regional compression to strike-slip or 2) intraplate affinity. Accordingly, we suggest that the tectonic environment of the late Miocene basaltic lava flow is similar to the tectonic environment of the extensive Delihalil volcanism located close to the studied region. This may extend the initiation of the regional basaltic volcanism back to the middle–late Miocene; previously, this initiation was considered to have occurred in the Pleistocene–Quaternary.

Keywords: İskenderun Basin, Karataş Formation, basaltic lava, calcareous nannoplankton, mineral chemistry

* İletişim Yazarı / *Corresponding author*.