



Paleomagnetic Results from Mesozoic and Cenozoic rocks along the Izmir-Ankara-Erzincan Suture Zone in North- Central Anatolia

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Abstract

In northern Turkey, the area between the Sakarya Zone and the Central Anatolian Crystallization Complex (CACC) were separated by Izmir-Ankara-Erzincan Suture (IAES) zone which is the remnant of the northern branch of Neotethys ocean. It was reported that during the closure of the IAES in Late Cretaceous the northward drift of the CACC and its eventual indentation into the Sakarya zone produced a crustal deformation defined by thrusts and reverse faults, mainly in the boundary between the indenting CACC and the Sakarya zone. Previous paleomagnetic studies carried out in the eastern part of the Pontides and the Sakarya zone showed that paleomagnetic declinations could reflect the deformation of the curvature of the IAES.

In order to define the tectonic deformation of the northern part of the CACC, we present new paleomagnetic data from 53 different sites which include Mesozoic to Cenozoic sedimentary and volcanic rocks. The Lower Cretaceous sedimentary rocks from 9 different sites around the eastern part of the suture zone show counterclockwise rotation of 30° and a paleolatitude of 22°N . The Upper Cretaceous results from 37 different sites indicated that while large clockwise rotations occurred between 100° and 190° in the eastern limb of the bend, a progressive decrease of counterclockwise rotations occurred between 100° and 15° in the western limb of the bend from SW to NW. In contrast, small clockwise and counterclockwise rotations were obtained on the flat-lying sites of the suture zone. These rotation pattern are consistent with the geometry of the IAES in the northern Turkey. The paleolatitude in Late Cretaceous was calculated as 24.5°N which is consistent with the Eurasian paleolatitude. The Middle Eocene results obtained from 7 different sites inside of the CACC showed counterclockwise rotations in the order of 30° and 10° with relative shallow inclinations after the tilt correction which indicates that the deformation in Middle Eocene mainly produced in the Sakarya zone as well as the CACC due to the indentation process of the CACC.