

Interactive comment on “Paleomagnetic constraints on the timing and distribution of Cenozoic rotations in Central and Eastern Anatolia” by Derya Gürer et al.

Anonymous Referee #2

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The manuscript by Gürer et al provides a large new paleomagnetic data set from Cretaceous to Miocene sediments from the UlukÄŖŖla and Sivas basins in the central Anatolia. The data set convincingly demonstrate about 30° Oligocene-Miocene counterclockwise rotations in the UlukÄŖŖla basin and the surrounding area. The results are ambiguous from the Sivas Basin. I am not a specialist on paleomagnetism; therefore, my comments will be on the tectonic aspect of the manuscript. However, the paleomagnetic data are precisely given and discussed, and assuming that it is correctly interpreted, the manuscript provides a useful and important contribution to the complex geology of central Anatolia.

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My main criticism is to the sections “Introduction” and “Geological Setting” (pages 1 to 5), which are poorly written, exceedingly complex, very difficult to follow, somewhat unrelated to the rest of the manuscript, and contain some errors. For example on page 2 it is stated that the “the Pontides comprise a Paleozoic crystalline basement...”. However, there are well developed and thick Paleozoic sedimentary sequences in the Pontides, which can be traced for hundreds of kilometers. The error stems from regarding the Pontides as a single tectonic unit. There is also confusion about which two subduction zones are referred to on page 1. More importantly, as the paleomagnetic rotations are Oligocene and Miocene in age, it would be much better to describe and discuss only the Tertiary history of Central Anatolia, rather than dwell on the complexities of subduction zones and Tethyan oceans. This would also increase the impact of the manuscript. I would recommend complete rewrite of this part of the manuscript.

Other comments

1. All structures and localities mentioned in the text should be shown in one of the Figures. I could not locate SarÄŖŖ, GŖrŖn, Malatya, and OvacÄŖŖk faults mentioned on page 5.
2. In the text (page 11) the KÄŖŖÄŖŖkÄŖŖ locality is described as having 13° ccw rotation, which does not tie up with what is shown in Fig. 6.
3. On page 22, it is written that “the Late Cretaceous and the Eocene, when the Tauride rocks were still connected to the downgoing African plate.” In this interval, a Tethyan ocean with a subduction zone (Eastern Mediterranean) was between the African Plate and the Taurides, hence the Taurides were not part of the African Plate.
4. Several of the references in the References list are incomplete, e.g., Granot 2016, Dankers et al., 1978, Barrier and Vrielynck, 2008 Blumenthal 1956....
5. It would be very helpful to provide stratigraphic columns for the UlukÄŖŖla and Sivas basins

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