Solid Earth Discuss., 5, C803–C805, 2013
www.solid-earth-discuss.net/5/C803/2013/

Solid Earth
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Interactive comment on "Jurassic–Paleogene intra-oceanic magmatic evolution of the Ankara Mélange, North-Central Anatolia, Turkey" *by* E. Sarifakioglu et al.

Dr. Anma (Referee)

ryoanma@me.com

Received and published: 27 December 2013

This manuscript includes concise but useful compilation of what has been done on the Ankara Melange, new geochronological and geochemical data sets and comprehensive interpretation of origin and development of ophiolitic and metamorphic blocks in the Ankara Melange. The manuscript is written in plain English and presented data seem good in quality. Figures are nicely prepared. I enjoyed reading the manuscript and believe that the manuscript will be a very handy guide and provide a base of argument for those who study the Ankara Melange further. Thus I believe that the manuscript is worth publishing from "Solid Earth".

However, there are still a lot of points I would like to suggest that the authors may want to improve further before the final publication, especially in the Introduction, Regional Geology, and Internal Structure and Tectonic Units of the Ankara Melange sections.

I feel that the present title gives impression that the manuscript deals with formation of melange itself. The title should have more stress on ophiolitic blocks in Ankara Melange. I would suggest title like: "Jurassic-Paleogene Intra-Tethys Sea Magmatic Evolution deduced from exotic blocks of the Ankara Melange, Central Turkey."

The first half of the introduction is spent to explain what has been done so far and rather descriptive, which could be merged in Regional Geology section or other section. The general audience may be more interested in what is the fundamental problem of Ankara mélange, and how you contributed to solve the problem.

The manuscript includes a lot of detailed geological maps which themselves contain a lot of information, but they do not have adequate support in the main text. For example, Fig. 1 is just referred when the authors explain the location of Sakarya continent in the southern margin of Eurasia. The figure contains more information, but there is very few explanation about it. On the other hand, to illustrate the southern margin of Eurasia, the figure is too detailed. Thus the authors failed to use full information included in the figure. Similarly, Fig. 3a, which is a nicely prepared detailed geological map, is used only to illustrate general structures (blocks and matrices in mélange) and stratigraphy (limestone of ophiolite). Again, the figure is too detailed to illustrate such simple relations. The same thing could be said for Figs. 4, 6 and 7.

Figs. 9 and 10 also do not have adequate support in the main text.

I think the authors should start with description of the rocks and then move to interpretation. There are a lot of important statement in the first three chapters. Ophiolite-origin, sea-mount-origin, island-arc-origin classification has been done in this stage as a priori fact, with presentation of new Ar-Ar data. But analytical procedure for Ar-Ar dating is described in the chapter 5, and geochemical evaluation, which is necessary for the

classification by origin, is done in the chapter 6. Thus, the construction of the argument is somewhat awkward.

The authors reported a lot of Ar-Ar data. The sample locations should be indicated in the figures together with age and standard error.

From chapter 4, it seems that description is precise and detailed, and discussion straightforward and good in shape.

I would suggest to delete “unpublished” in line 769 of the latest version. The report (Sarifakioglu et al., 2011) is written in Turkish, but it is a published report. The authors should refer to it properly. It is good to publish a synthesis paper out of domestic mapping projects, that is filled with new data and interpretation.

Ryo Anma University of Tsukuba

Interactive comment on Solid Earth Discuss., 5, 1941, 2013.