

Interactive comment on “Exhumation of metamorphic rocks in N Aegean: the path from shortening to extension and extrusion” by R. Lacassin et al.

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Dr Wijbrans brought a thorough review about Ar-Ar analytical procedure and interpretation. Here, we briefly discuss his major points and we summarize the changes that will be done in the revised version of our paper.

Dr Wijbrans is right when he claims that precise temperature and age of reheating cannot be appreciated directly from the age spectra alone. Indeed, it is well known since early work (Turner, 1968) that, even if only diffusion is considered, diffusion gradients are asymptotic and profile resolution cannot be extended to the point of appreciating really the age of reheating. However, in our case what is important, and agreed by Jan Wijbrans, is that it is probable that no significant reheating over 350°C happened after

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40 Ma. The text will be adjusted to insist of this fact alone.

We fully acknowledge that the use of Renne et al. (1998) value for Fish Canyon Tuff (FCT) standard should be the fixed base for interlaboratory comparison. Although this has a trivial effect on the present dataset, we shall recalculate all data to the correct age of FCT, and change tables, figures and ages in the text.

The interpretation of K-feldspars profiles was indeed misleading as initially written. In fact MDD modelling was done on the feldspar dataset in an earlier period of our work, but rapidly dismissed given the textural complexity of the rocks and their likely multistage thermal history. The misleading part is that we kept the MDD tables in the feldspar data while they were not used anymore. This point will be made clearer in the text by stating that simple volume diffusion is not appropriate in our case and that we interpret the K-feldspar spectra as resulting from a mix of old cores and recrystallized rims.

Regarding the application of plateau criteria, recent publication by our group (for example Valli et al., 2007) shows that plateaus are indeed alive and well for us also, even in metamorphic rocks. The use of pseudoplateaus was developed in the light of feldspar data from which selected steps are used with the assumption that they have a geochronological meaning when associated with their thermochronological history, even if they don't strictly obey the plateau laws, especially since the amount of ^{39}Ar extracted from those steps is usually much lower than that required by plateau criteria. In our paper, the original phrasing was not appropriate and we shall now state that pseudoplateaus can be used as meaningful averages in the cases where small alteration or small loss is suspected.

Several other minor points were raised by Jan Wijbrans and will be addressed as follows: 1/ White micas are muscovites, small (about 120 microns in diameter) but probably unaffected by recoil. 2/ We now use liquid nitrogen, but at the time of these analyses liquid air was used.

Note: Renne et al. (1998) reference given by J. Wijbrans is not that of the original paper, but that of a corrigendum. The good reference is given below.

References:

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