

Authors' response: Diffusion kinetics of ^3He in pyroxene and plagioclase and applications to cosmogenic exposure dating and paleothermometry in mafic rocks.

We listed several proposed changes to the paper in our responses to RC 1 and RC 2. We have made these changes in the revised text, and here we identify their locations. Note that the line numbers for the main text refer to the revised version. In addition, we discovered an error in the reported storage time for the ROB samples and have made the appropriate correction in the main text (line 173) and updated the model results in section 4.2.1. We also corrected several typographical errors that we discovered in the main text and figure labels (Figs. 3, 4, 6, and 7).

RC 1:

1. Clarification of the overall goal of the paper in the introduction.
 - We added a statement describing the goal of the paper and a description of including pre-experimental conditions in the forward modeling of the diffusion kinetics (Lines 89-100).
2. Justification of the following in the forward MMD model:
 - In section 2.3.2, lines 260-266, we added a discussion on the choice of applying an unweighted misfit statistic for the best-fit optimization.
 - In lines 281-284, we include a statement justifying limiting the optimization to 2-10 domains.
 - In lines 285-286, we include a statement justifying the repeated optimization of 20 times. This was also pointed out by RC 2.
3. Clarification of end-member loss during irradiation and storage.
 - In section 2.3.1, lines 208-213, and section 4.2.1, line 217, we have clarified the differences between the two end-members
4. Clarification of the data point in Figures 2 and 5
 - We have clarified the difference between the grey and colored data points in the figure captions.
5. Errors and technical corrections as noted in the review.
 - We have corrected all errors throughout the main text as noted by the reviewer.

RC 2:

We have addressed all technical corrections and stylistic suggestions throughout the main text as noted by the reviewer.