

Interactive comment on “Alkali basalt from the Seifu seamount of the Japan Sea: post-spreading magmatism in the back-arc region” by Tomoaki Morishita et al.

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Thanks very much for the detailed comments. The comments from reviewers improved the manuscript significantly. We hope the revised manuscript would be considered for publication in Solid Earth.

English Reply: English of the revised version has been improved by a commercial English editing service (but not for this response letter).

(1) Why only one sample? Reply: This is the only sample contains the mantle-derived sample. We described the importance of the description of this sample in “Introduction”

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(9-14 lines of page 2).

(2) Modeling for REE pattern. Reply: We modeled calculated melt components between spinel peridotite conditions and garnet peridotite conditions. These results support that the SSM melts might be formed at spinel peridotite conditions with a low degree of partial melting (New Figure 8) (4-8 lines of page 6).

(4) Xenolith information Reply: We briefly summarized xenolith reported by Ninomiya et al. (2017) (5-9 lines of page 3). Our data suggest that peridotite xenoliths in the sample are not directly related to petrogenesis of the SSM basalt (21 line page 6).

Detailed comments. Others: Analytical methods should be described. Reply: We added the minimum necessary description of analytical methods (See analytical methods).

Other comments are related to the introduction Reply: We rearrange and changed introduction as suggested above including several comments from reviewer 2.

Age data in Figure 1: Reply: We added age data in the revised Figure 1.

Table S1 (Now Table 1) Error range of TIMS results Reply: We showed the error of the 2sigma range.

Please also note the supplement to this comment:

<https://www.solid-earth-discuss.net/se-2019-116/se-2019-116-AC2-supplement.pdf>

Interactive comment on Solid Earth Discuss., <https://doi.org/10.5194/se-2019-116>, 2019.

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