Thanks for the editor's 3 comments that have greatly improved the manuscript.
Here we explained how we corrected the manuscript point by point.
New sentences are shown in blue, and rearranged sentences (the sentence is the same as the previous manuscript but is changed to the position) are in green in the revised manuscript.

Comment1: how is it possible that a basalt that originates from a relatively shallow DMM-EM1 source carries two distinct types of mantle xenoliths, including one derived from subcontinental lithospheric mantle? What does this imply about the tectonic setting and evolution? In response, you write that 'Peridotite xenoliths in the SSM basalt are not directly related to its petrogenesis'; this may be so, but it does not provide an answer to the question that the reviewer has raised. This is especially pertinent given that you state in the (revised) introduction that one of the aims is 'to evaluate the significance of these xenoliths'.
Reply: We rearranged several sentences to discuss how mantle xenoliths were captured in the SSM basalt (13-19 lines of page 7). We prepared a new figure to support the idea (Fig. 10). Then we explained how two types of mantle xenoliths were captured in the SSM basalt as follows: "*Based on our study of the SSM basalt coupled with earlier preliminarily works on peridotite xenoliths in the SSM basalt (Ninomiya et al., 2007) suggest peridotite xenoliths in the SSM basalt seem to be not directly related to the SSM basalt petrogenesis (Fig. 10). One of the two types of peridotite xenoliths is interpreted as fragments of subcontinental lithospheric mantle that were already located before the Japan Sea opening. The other type, which is characterized by residue after open system melting caused by infiltration of LREEs-enriched fluids, may be related to back-arc spreading magmatisms affected by slab-derived fluids/melts (Fig. 10). Further study of peridotite xenoliths and mafic xenoliths is needed to reconstruct the crust-mantle evolution beneath the Japan Sea*".

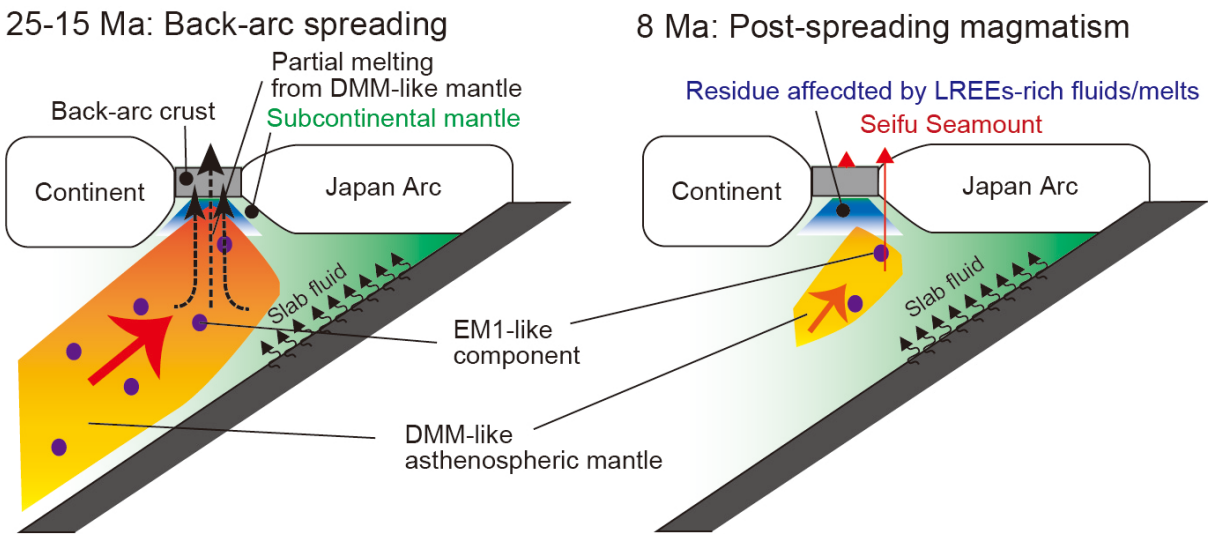

Figure 10: Schematic models showing back-arc spreading magmatism (25-15 Ma) and post-spreading magmatism (8 Ma) in the Japan Sea. The SSM basalt was formed by a low-degree partial melting of spinel peridotite having DMM with a minor EM1-like component during post-spreading magmatism. The SSM basalt contains subcontinental mantle and residue after open system melting affected by infiltration of LREEs-enriched fluids.

Comment 2: In response to Reviewer 1's worry that the isotopic data may be compromised by alteration, I welcome the addition of the data on leached vs unleached samples. You comment that 'although these isotopic compositions are slightly different, alteration has not significantly affected the isotopic data'. Please elaborate on this statement: it would appear that the Sr isotopes, in particular, show offsets between the leached and unleached samples that are consistent with an alteration contribution to the unleached measurements.

Reply: We corrected figure (Figure 6a) including unleached and leached data. The figure clearly shows the slight difference between samples but not significant.

Comments3: it would appear that the Ar/Ar data are not reported: could you please add a table with these data?

Reply: We prepared new Table 3 showing Ar/Ar data.

Thanks indeed for supporting our manuscript with valuable comments.

Addition to this, a new affiliation, JAMSTEC, is added to Tomoaki MORISHITA.

Best regards,

Tomo MORISHITA, corresponding author