

Review of Zheng et al., EGU sphere

In this paper, Zheng et al present new Mo isotope data for a series of intraplate lavas from NE China. The samples are divided into two suites that have seemingly different mantle sources. Using this as a base for their arguments, a case is presented in which Mo isotopes in lavas with an EM1-style source represent subducted sediment input.

The text is in rather poor shape when it comes to grammar and the paper is not publishable in its current state. I did not attempt to revise this; there are nowadays a lot of AI tools out there and I suggest the authors use a spelling and grammar check program (like Grammarly or alike). At times I was struggling to understand what the authors try to say, so when it comes to this sort of issues, a paper is almost beyond reviewable.

Other than that, the authors follow a classical approach in (a) first eliminating secondary effects, then (b) investigating and excluding crustal assimilation, and (c) finally concluding that the isotope signatures are pristine and reflect that of the mantle source. Overall that is fine, but the approach is not well executed. The discussion is at times very superficial and would benefit from a much more careful approach. Using detailed explanations instead of ad hoc statements would give weight to the study. As an example: an EM1 and FOZO style source is ascribed to the rocks, but this is not discussed in detail or in any way placed into a greater context. Then, this is taken as evidence for sediment input. How?!? As is, it leaves the reader often wondering what the authors try to say, or if statements indeed have a valid justification. A reader should not need to guess or connect dots. As an expert reviewer I could barely follow the logic here, so a broader reader base won't be able to get even a basic message out of the paper.

I think the authors need to get back to the drawing board and carefully reassess their study. The data is convincing and I think the overall story (as far as I can tell) is correct, but the execution is poor and needs much more attention.

Some minor comments

Line 55f – If Mo is not mobilized, why and how would one expect Mo isos of subducted (not subduced) material to be recorded in the mantle ?!

Line 69 – what is a natural advantage of a Mo isotope ?!

Line 76 – EM1 and FOZO are components within mantle plumes. The terminology is misleading here. Do the authors refer to enriched lithospheric mantle components?

Line 158 – use isotopically heavier instead of higher

Lines 172f. Samples cannot observe something...; If you are referring to a negative correlation, you need to give two parameters, not just one.

Line 194 – that was demonstrated in Yang et al., GCA 2015 and Nebel-Jacobsen et al. PrecReas , 2021

Line 220 – the degrees of melting are very different between these tectonic settings.