

Interactive comment on “A revised map of volcanic units in the Oman ophiolite: insights into the architecture of an oceanic proto-arc volcanic sequence” by Thomas M. Belgrano et al.

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This is well described map integrated geology, geochemistry and magnetism data. I really enjoyed reading because your careful treatment of original field evidence in detailed area especially on Alley/Phase 2 magmatism. Volcanic units lost vast of outcrops and block continuity in the Oman ophiolite, and it makes hard to interpret the volcanism and magmatism, but RTP data well cover the weak point as underlying bedrock. This will be helpful information for economic geology of volcanic units but also field trip.

On the other hand, I think that interpretation of the ophiolite genesis still has some problems as indicated below.

1. Comparison with IBM arc Authors indicates similarity between the Oman ophiolite and IBM arc, but I think some are rough discussion. In Table 1, IBM protoarc equivalents are compared with volcanostratigraphy in Oman ophiolite. Please present the reference. If this is your interpretation, please write the reason (geochemistry, chronology or something?). In figure 5 and 6, geochemical data of the IBM arc looks scattered. Discussion 7.6 concludes that “boninitic Alley is compositionally closer . . .Izu-Bonin forearc boninite than north Tonga. . .”, but it is not visible.

2. Genesis of Oman ophiolite You point out that existence of Alley/Phase 2 volcanism comparable to Geotimes/Phase 1 volcanism reinforce subduction-influenced character in the Oman ophiolite. Recently broadly accepted that the Oman ophiolite records both axial and subduction phase magmatism. Mantle diapir is tectonic feature (structural geology) not geochemical/magmatic feature, so your data does not support that point. This manuscript cannot deny the existence of mantle diapir. I think it might be existing even the Phase 1 was subduction-related (e.g. backarc spreading or forearc spreading).

Minor comments

There is some typo. Please double check all company name and area name (BGRM → BRGM, Harami → Sarami?).

I know well that even geological map set (BME, 1987 and BRGM, 1987) not fit each other. How did you see the discontinuity? Based on your original field evidence? It should be shown in Table 1 or manuscript.

Please unify your figure number in figure and manuscript: Figure 3a or Figure 3A?

Figure 4: geochemical reference of V2 type I and II are not shown.

Table S1: What your mean of negative sign (-) in “field character” column? Do you mean that only reliable way to discrimination is geochemical character?

Is your description of “transitional Alley” and “transitional Lasail” geochemical feature

or mappable feature?

Figure 9: (e) → (c); Bar chart is difficult to understand without “All unit”. Do you double or triple count magnetites? I think it is not necessary to show because total sample only 6-14 in each unit.

Figure 10: Please show reference on each zone. Whose Batinah complex, or satellite? Is “major fault zone” corresponds to RTP data same as Figure 1? I think both topographic ophiolite and inferred volcanic bedrock should be shown to support your integrated map. Moreover, put color with “weakly magnetic zones (P26L3)” will be helpful because general reader does not know detailed volcanostratigraphy.

Figure 16: Type locality of boninite lava along Wadi Jizi (Ishikawa et al., 2002; OM16-46C in Kusano et al., 2017) has been changed to tholeiitic Alley? It would be different from Table S2 to geological map. Around Suhaylah village, you mentioned occurrence of ~300 m thick tholeiitic Alley. Representative field photo in Figure 3c resembles to Geotimes lava in other area. Detailed discussion with enlarged RTP map like Figure14 will support your interpretation.

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Discussion paper

