

# ***Interactive comment on “Tempo-spatial variation of the late Mesozoic volcanism in Southeast China testing the western Paleo-Pacific Plate subduction models” by Xianghui Li et al.***

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We thank Referee #2 for the critical issues and constructive suggestions. Below are replies to questions one by one.

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The manuscript does a good effect in reviewing the Late Mesozoic volcanic rocks in SE China. I am glad to recommend it to be published on Solid Earth. Meanwhile I hope to point out several issues and suggestions that may help the authors improve their manuscript.

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–(1) There do exist some studies using zircon U-Pb ages to construct tectonic model for SE China during the Late Mesozoic time. They should be introduced in the first part of manuscript.

Reply:

Following Referee #1's suggestion, we have removed this topic in the revision.

–(2) Systematic review and analysis of the chronological data across the whole SE China is necessary to build a good model for tectonic and magmatic evolution of the study region. However, it does not mean putting all zircon U-Pb ages together. Some previous studies, focusing on individual regions, are actually trying to show the “diachronous” evolutionary trend.

Reply:

Yes, there some previous studies at individual regions that suggest “diachronous” evolution of volcanism. However, for these studies, it is hard to distinguish whether these features represent local or regional signature. To avoid this ambiguity, we analyze the chronological data from the entire SE China and investigate the temporal-spatial variations of volcanism with the age data from SE China.

–(3) The configurations and processes of the active continental margin appear to be constrained simply by chronological data. I suggest some geochemical data should be appended to give further constraints. For instance, why some volcanic (authors note: hereafter some words are missed).

Reply:

Geochemical data would be very helpful for constraining the tectonic model. Following Referee #1's suggestion, we have removed the discussion of tectonic model in the revision and focused on the temporal-spatial variations of volcanism in SE China.

–(4) Some studies connect the Late Mesozoic tectonomagmatic processes to the Early

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Mesozoic ones in South China. Show the reasons to separate the two orogenies (Indosinian and Yanshanian orogenies).

Reply:

Traditionally, the Indosinian and Yanshanian orogenies can be distinguished by time in East and Southeast Asia i.e., Indosinian orogeny took place during the Late Triassic-Early Jurassic, and the Yanshanian orogeny happened during the Late Jurassic-Cretaceous. All ages (177-82 Ma) measured in this work and cited from references from study area (see supplementary data Table RD1) show they belonged to the Yanshanian orogeny.

The other criterion is the tectonic unconformity contact of the strata. In SE China, there are few volcanic and / or volcanic-sedimentary records formed during the Late Triassic-Early Jurassic, but abundant extrusive rocks are well preserved in the Upper Jurassic – Cretaceous strata. Actually, unconformable contacts were already described and discussed between the strata which were formed during the Indosinian and Yanshanian orogenies, respectively (summary see in Shu LS et al., 2009, JAE; Li XH et al., 2019, GR), for which it seems dispensable to repeat reasons separating the two orogenies in this paper. All the samples are from the Upper Jurassic – Cretaceous strata in SHTB, in both this work and those citations. For details of samples and strata please refer to the supplementary data (Table RD1).

–(5) The authors argue previous studies only involve a limited geographic region and compile data from more areas. However, show the region why Yangtze Block and western Taiwan is omitted from this study.

Reply:

Our study focused on the late Mesozoic volcanism in SE China that occurred in the Shi-Hang tectonic belt (SHTB) and Coastal (magmatic arc) zone (CZ).

There are few volcanic rocks recorded in the late Mesozoic strata within Yangtze Block,

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though sporadic coeval volcanic rocks were reported in the Lower Yangtze area (Luzong and Ningwu. e.g., Deng et al., 2012, Int. Geol. Rev.; Chen et al., 2014, Lithos; Liu et al., 2014, J. Geochem. Exp.). They have few contributed to the volcanism in SE China, and may not be attributed to the PPP subduction. So did those in Hunan and Hubei in middle South China (Middle Yangtze Block).

There are no volcanic rock materials available in western Taiwan Island and Taiwan Strait, at least, no late Mesozoic volcanic rocks were reported until present. In eastern Taiwan, the Cretaceous-Cenozoic fore-arc basin has been developed without magmatic occurrence (report), leading to no citation of volcanism.

–(6) In the coastal region of Zhejiang University (Authors note: “University” should be province), there are many Early Cretaceous intermediate intrusive rocks, which have good age constraints. The authors may consider discussing these data. This paper focuses on the volcanic rocks. It could become more complicated if combine with intrusive rocks in local place even in the whole SE China. Please see the similar explanation in third part (3).

–A few specific comments: Properly use hyphen and dash in the text. Check through the whole text. Use proper decimal places for zircon U-Pb ages.

Reply:

We have paid much attention for the usage of hyphen and revised accordingly in the revised version.

–Line 24: show what are CZ and SHTB first. Line 90: show the reference or evidence for the starting time. Line 286: 74.0 \_ 0.6 Figure 7: show the vertical scale.

Reply:

Line 24: We have used the original words at the first appearance of the CZ and SHTB. Line 90: The sentence was rewritten and references are added (e.g., Wang et al., 2013). Line 286: It was corrected as  $74.0 \pm 0.6$  Ma. Figure 7: This figure was deleted

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in the new version following the suggestion by the referee #1.

Please also note the supplement to this comment:

<https://www.solid-earth-discuss.net/se-2019-76/se-2019-76-AC2-supplement.pdf>

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Interactive comment on Solid Earth Discuss., <https://doi.org/10.5194/se-2019-76>, 2019.

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