

Interactive comment on “New insights on the early Mesozoic evolution of multiple tectonic regimes in the northeastern North China Craton from the detrital zircon provenance of sedimentary strata” by Yi Ni Wang et al.

Anonymous Referee #1

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The timing for final closure of the Paleo-Asian Ocean and onset of subduction of the Paleo-Pacific Plate beneath Eurasia is a very important topic in eastern Asian geological researches, but is still poorly constrained. In this manuscript, the authors presented new detrital zircon U-Pb dating and Hf isotopic data of the Early Mesozoic strata in northeastern North China Craton, with an aim to constrain their deposition ages and provenances. The authors proposed that onset of subduction of the Paleo-Pacific Plate beneath Eurasia occurred during the Early Jurassic and the final closure of the Paleo-Asian Ocean likely occurred in the Middle Triassic. The zircon U-Pb ages and Hf

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isotopic data are in good quality. Therefore, the manuscript is worthy of publication in Solid Earth Discussions after a moderate revision. My comments and suggestions are listed below: 1. In several places (Page 1, Line 10; Page 2, Lines 24-25), the authors mentioned their using detrital zircon data "to reconstruct the early Mesozoic tectono-paleogeography of the region". This is a very difficult task. Although the detrital zircon U-Pb data presented in the manuscript is good in quality and valuable, there is no any field data from sedimentary analyses (such as paleocurrent direction, sedimentary facies). Therefore, I don't think that the authors can reconstruct the early Mesozoic tectono-paleogeography only by their limited detrital zircon data from the early Mesozoic strata. 2. In the Abstract (Page 1, Lines 11-13, 16-17, 19-20), Conclusions (Page 16, 7-10) and sections "5.3 Provenance of early Mesozoic strata in the northeastern NCC" and 5.4 Reconstruction of the early Mesozoic tectono-paleogeography of the northeastern NCC", the authors tried to use the percentages of detrital zircon U-Pb ages to give a quantitative analysis of sedimentary provenances. However, since zircon is only a very minor mineral in the sedimentary rocks, 42% detrital zircons with characteristics of the northern margin of the NCC do not mean that the 42% sediments were sourced from the northern margin of the NCC. Therefore, I don't think you can give a quantitative constraints on the sedimentary provenances of early Mesozoic sedimentary rocks. 3. Page 2, Lines 16-17: Words "poorly constrained" are better than "relatively unconstrained". 4. Page 3, Line 17: Neoproterozoic mafic magmatism around 900 Ma have been identified from the NCC in recent years by many studies (Liu et al., 2006, Chin. Sci. Bull. 51, 2375–2382; Gao et al., 2010, Geol. Bull. China 29, 1113–1122; Peng et al., (011, Lithos 127, 210–221; 2011, Gondwana Res. 20, 243–254; Wang et al., 2012, Sci. China Earth Sci. 55, 1461–1479; Zhang et al., 2016, Precambrian Research 272, 203–225). 5. Page 5, Lines 5-16: Is this the volume percentage of minerals? If then, please change "%" to "vol. %". 6. Page 16-25: In the reference list, the authors list almost 22 papers from their group. I suggest the authors add some relevant references from other groups. 7. Figure 10: Check the strata column of Xiabancheng Basin. Xingshikou and Nandaling formations are common in the

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Xiabancheng Basin, but is not shown in the strata column.

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