

## Comment on egusphere-2022-631

Anonymous Referee #1

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Referee comment on "New constraints on the tectonic evolution by subduction of the Bangong Co-Nujiang Tethys Oceanic Basin: Insights from magnetic fabric and U-Pb dating of detrital zircon during the Late Jurassic to Early Cretaceous" by Qinglong Chen et al., EGU sphere, <https://doi.org/10.5194/egusphere-2022-631-RC1>, 2022

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This manuscript carried on magnetic fabric and detrital zircons U-Pb dating of the Shamuluo and Suowa formations, with an aim to investigate the subduction and closure of the Bangong-Nujiang Tethys Ocean. The authors proposed that the Bangong-Nujiang Oceanic Basin has been subducting southward continuously since the Jurassic, the switching time of subduction polarity was at 163.5-157.3 Ma, the Bangong-Nujiang Tethys Ocean was closed at 145 Ma, and the central residual oceanic basin completed a continuous northward subduction at 131-102.9 Ma. However, many conclusions and discussions are lack of logicity and robust evidences. Further studies needed for the available data about the Bangong-Nujiang Tethys Ocean. The interpretations seem unreasonable and I don't think this version could be accepted. Hence I recommend a major revision for this manuscript.

General comments:

- The Shamuluo Formation belongs to the Bangong-Nujiang suture zone, rather than the Lhasa Block.
- More evidences should be added to constrain the closure time of the Bangong-Nujiang Tethys Ocean.
- How the subduction polarity reversal is inferred?
- Line 81-83: How the subduction in the Middle Jurassic is speculated from the Early Cretaceous OIB-type basalt?
- Line 87-97: These sentences are lack of logic, and the Mugagangri melange resulted from the northward subduction of the Bangong-Nujiang Tethys Ocean.
- Line 121: an island arc block? Please add references.
- Line 123: The Shiquan River-Laguo Co-Yongzhu-Nam Co-Jiali belt is not shown in the Figure 1.
- Line 125: ocean-continent collision?
- Line 129: marine molasses deposits? Please add references.

- Line 154: gas-liquid inclusions should be marked in the Figure 2d.
- Line 156: dissolution harbors and intragranular micro-fractures should be marked in the Figure 2f-g.
- Line 285: The detrital zircon dating of the Suowa Formation should be added.
- Line 462-465: two blocks?
- Line 710-711: This is a serious problem. In this paper, the detrital zircon dating and provenances analysis of the Suowa Formation are missing, and the location of the Suowa Formation is far away from the Lhasa Block, and the debris of the Suowa Formation should not source from the Lhasa Block and Bangong-Nujiang suture zone.
- Line 716-719: The recycling of the sediments should be considered.
- Line 721-722: How did this conclusion is inferred? In addition, the sorting and rounding of sediments are poor, and the transportation distance is short in collision setting.
- Line 725-727: the combination between Bangong Co-Nujiang Tethys Oceanic Basin and the southern margin of Qiangtang?
- Line 746: Bangong-Nujiang oceanic basin.
- Line 753-755 and 791-793: A figure should be added. And the northward subduction of the Bangong-Nujiang Tethys Ocean had existed at least from the Early Jurassic.
- Line 763-766: How is this speculated? The northward subduction was existed at this time.
- Line 790: The polarity transition time should be discussed in detail.
- Line 816-817: The provenance of the Suowa Formation should be the Qiangtang Block and the Longmuco-Shuanghu suture zone.