

Review of manuscript #2025JD03420. Round II

December 7, 2025

I thank the authors for their thorough response and work done to address my comments.

Comments

1. The overall framing as a study of QBO impacts on the global monsoon is somewhat confusing. The title and Introduction strongly suggest that the main focus will be on QBO modulation of the global monsoon systems themselves, yet several of the key results concern boreal winter teleconnections involving the NAO and PNA. These patterns are important in their own right, but they do not directly affect the North American or East Asian monsoons at the time when those monsoons are active, so the link to “global monsoon” is not always clear. I think the manuscript would benefit from either (i) making a more explicit and physically motivated connection between the diagnosed NAO/PNA anomalies in DJF and monsoon-related diabatic heating (or including more direct analysis of austral summer monsoon regions), or (ii) adjusting the title and Introduction to emphasize that this is a study of QBO modulation of tropical convection and NH winter teleconnections under ENSO-neutral conditions, rather than of global monsoon rainfall per se. Clarifying this framing would make the main claims easier to identify and follow.
2. Even in the revised version, I still find it hard to extract 2–3 clear, headline conclusions that are not confirmations of previous studies. The Introduction, Results and Conclusions mention several themes (QBO impacts on the global monsoon, UTLS pathways distinct from Holton–Tan, neutral-ENSO conditions, NAO/PNA responses), but these are not distilled into a small set of explicit take-home messages. As a reader, I remain unsure what I am meant to remember as the key new findings beyond the general statement that “the QBO influences regional monsoon behaviour and some NH teleconnections.” some of which is well described in papers that are cited in the introduction. If possible, I would encourage the authors to clearly articulate 2–3 central claims and to structure the presentation of the results around those specific claims a little bit more bluntly.
3. I think there should be a citation on line 45 to back up the claim that the QBO affects monsoons this way, since I don’t think it’s a given for most people.

4. I find the revised introduction to be somewhat difficult to follow. The text tends to wander between themes: it begins by stating that both ENSO and the QBO can influence the global monsoon, then later steps back to define the QBO, describe its pathways and impacts, and then returns again to QBO–monsoon and QBO–ENSO relationships. In addition, the manuscript repeatedly refers to a “UTLS teleconnection pathway” proposed by Kumar et al. (2024), independent of the Holton–Tan mechanism, without ever clearly describing what this mechanism entails. I suggest reorganizing the Introduction so that the concepts (global monsoon, ENSO, QBO, and the UTLS pathway of Kumar et al. 2024) are each introduced once, in a logical sequence, with a concise explanation of the mechanisms that are central to the present study.