Responses to the comments of Prof. Patrice Rey:

The paper's title, abstract, and introduction are not well aligned with its actual scientific content, and should be revised accordingly. In my view, the core contribution of the paper is a detailed synthesis of the Hadean–Archean magmatic evolution of Eastern Hebei within the North China Craton. In contrast, the discovery of a 2.45 Ga trondhjemitic gneiss and its implications for the 2.45–2.20 Ga tectono-magmatic lull (TML), although interesting in their own right, are of secondary importance.

First, an age of 2.45 Ga lies at the commonly accepted boundaries of the TML, and therefore does not directly address the lull sensu-stricto. Second, high-grade metamorphism (~990 °C at ~850 MPa) at ~2.49 Ga, syn-tectonic granitoid emplacement at ~2.47 Ga, and associated crustal thickening have already been documented in the region. Against this background, the occurrence of a 2.45 Ga trondhjemitic gneiss is not unexpected, and in my opinion does not warrant being highlighted in the title as a primary finding.

The introduction is particularly problematic, as it focuses almost exclusively on the tectono-magmatic lull, creating a mismatch between the framing of the study and the core of the paper. This emphasis is confusing, given that the bulk of the manuscript is devoted to earlier Hadean–Archean crustal growth and reworking processes. It is also remarkable that the introduction tends to discredit the existence of this lull.

I therefore recommend that, i) the title be refocused on Hadean–Archean crustal evolution of the Eastern Hebei region; ii) that the introduction be rewritten to reflect this central theme, and iii) that the 2.45 Ga magmatic event should be presented as a subsidiary observation rather than the conceptual anchor of the study, or alternatively extracted from this paper and put into a shorter paper solely focusing on this discovery (the discussion about the petrogenesis of the trondjemite is interesting and nicely written, but a bit outside the main scope of the paper). Such relative minor revisions would significantly improve the coherence and impact of the manuscript.

The core of the paper is easy to follow, and it presents a comprehensive synthesis of the magmatic and metamorphic evolution of Eastern Hebei.

Response: Many thanks to the reviewer for these thoughtful and constructive comments. After careful consideration, we fully agree with you that a comprehensive synthesis of the Hadean–Archean geochronological framework and crustal evolution of Eastern Hebei is of great scientific significance, as it would provide a critical window into the early tectonic evolution of the North China Craton. Actually, the current conclusions of the crustal evolution of Eastern Hebei are mainly based on previous research findings, and this study has made little contribution. In the revised manuscript, we have removed the Eoarchean to Mesoarchean crustal evolution that was based largely on previous studies, and retained the late Neoarchean to early Paleoproterozoic crustal evolution which is closely linked to the studied 2.45 Ga rocks. In future work,

we plan to improve this part by incorporating additional new data and integrate them with the existing data. This will allow us to present a more comprehensive and self-contained synthesis of the crustal evolution of Eastern Hebei, which we intend to publish as a separate paper.

In addition to the crustal evolution, another focus of this paper is the newly recognized ca. 2.45 Ga trondhjemite in Eastern Hebei. Our study has shown that the 2.45 Ga trondhjemite shows similar whole-rock geochemical and zircon Hf-O isotopic characteristics to the late Neoarchean (ca. 2.55 Ga) thickened lower crust-derived TTG rocks, combined with their close spatial association, indicating a close petrogenetic link between the two rock types. A complete rock record from 2.55 to 2.45 Ga is of great significance for understanding the tectonic transition from the Archean to the Paleoproterozoic in the North China Craton. Another reviewer suggested that we should focus on the origin of the 2.45 Ga trondhjemite and its relationship with late Neoarchean magmatism.

After careful consideration and taking both reviewers' comments into account, we have decided to refine the part of crustal evolution and publish it separately, while this study focuses on the ca. 2.45 Ga trondhjemite and its link to the 2.55 Ga magmatism. The specific revisions are as follows:

(1) Title revision: The title has been changed to "Discovery of 2.45 Ga gneissic trondhjemite in Eastern Hebei, North China Craton".

(2) Introduction revision: The introduction has been completely rewritten to focus on the late Neoarchean and early Paleoproterozoic rock records of the North China Craton.

(3) Abstract and Discuss revision: The part of TML, geochronological framework, and Eoarchean to Mesoarchean crustal evolution have been removed. In contrast, the petrogenetic link between the ca. 2.45 Ga trondhjemite and ca. 2.55 Ga TTG rocks were added.

We thank the reviewer again for the insightful guidance, which has greatly helped us improve the focus and quality of the present manuscript.

Minor Comments:

1. The trondjhemite shows a strong, pervasive foliation. What is this fabric related to? Is there any metamorphic zircon or overgrowth which could be dated?

Response: Many thanks for the reviewer's comment. The pervasive foliation observed in the trondhjemite is interpreted as a secondary feature related to post-magmatic metamorphic overprinting, rather than a primary magmatic fabric. The zircon grains from the trondjhemite sample exhibit distinct core-rim textures in the CL images (Fig. 4). The cores preserve oscillatory zoning typical of an igneous origin, whereas the rims are bright and featureless, consistent with a metamorphic origin. These observations collectively indicate that the rock has indeed undergone a subsequent metamorphic event. However, the metamorphic rims are too narrow to be reliably targeted for zircon U-Pb dating. Consequently, precise metamorphic ages of the studied trondhjemite are not presented (**see Lines 133-135 and revised Fig. 4**).

2. The paper refers to Yao et al., 2017, which should be Yao and Zhang (2017).

Response: Sorry for our negligence and thanks for reminder. The citation has been corrected to “Yao and Zhang (2017)” as suggested (**see Lines 71-72**).