Thank you for your thoughtful and hypothetical feedback and reminders. Without your guidance, I may have continued to overlook the serious error of submitting my work to Reviewer 1 in Chinese instead of English. I offer you my sincere apologies and heartfelt appreciation for bringing this to my attention!

The second issue you raised concerns a major drawback in the manuscript, as suggested by Reviewer 2, that I should add evidence of organic geochemistry. At the time, I did not include this section in the paper because the results had already been published in another journal in 2021 and the author's thesis. Therefore, I only included citations in the main text. However, in order to support the existence of Type III kerogen in the deepwater area, I have followed your advice and added HI, as well as the ratio of $\sum C_{21-}/\sum C_{22+}$ and C_{27}-C_{28}-C_{29}. These all serve as evidence that Type III kerogen shale was deposited in a deepwater environment (Fig.1).

Currently, there is almost no dispute that the Taodonggou Group mudstones in the Turpan-Hami Basin were deposited in a deep or semi-deep lake environment, as evidenced by their good response to elemental ratios (Li, 2016; Li, 2019; Song et al., 2018; Xu, 2022). However, your suggestion on the relationship between water depth and organic matter type has greatly enlightened me and broadened my perspective. After conducting a literature review on the existing research in the study area, I did not find any studies on gravity flow. However, by reading studies on gravity flow sedimentation in the Fengcheng Formation shale in the Junggar Basin, there is a possibility of gravity flow sedimentation in the Taibei Sag of the Turpan-Hami Basin. Based on studies by Chen et al. (2003), Xu Haoyu (2022), and Yang Wan et al. (2010; 2017) recommended by Reviewer 1, it is believed that there is sedimentation of coarse clastic rocks at the bottom of the Daheyan Formation (the bottom of the Taodonggou Group), and different sedimentary facies can be identified in different areas of the study area. In addition, during the sedimentation of the Taerlang Formation, three sedimentary facies can be identified around the Bogeda Mountains, including the front edge of the fan delta, turbidite fan, and semi-deep lake-deep lake facies (Wang, 2017), indicating the possibility of gravity flow sedimentation in the study area. The YT1 well is located in the southern part of the Taibei Sag, which has always been the sedimentary center of the Turpan-Hami Basin (Jiang et al., 2015; Li et al., 2021). The mudstones in the study area were deposited in a deep-semi-deep lake environment, with the deeper water depth depositing III-type kerogen mudstones and some layers of relatively thin clastic rocks, suggesting that they were influenced by gravity flows

during the early and late stages. However, I cannot provide actual core evidence for this conclusion because the YT1 well in the study area was drilled deep, and cores were only taken in some depth intervals (6110-6116 and 6140-6154), while other depth intervals were recorded by cuttings. The lithology of the cored intervals is basically consistent. Nevertheless, according to Wang Yue's (2017) study, there is evidence of mixing in the study area, which may prove this point.

Furthermore, I will carefully complete the revisions to the manuscript by systematically incorporating your comments and those of the other two reviewers. Finally, I would like to express my gratitude for your valuable insights. Your comments not only broadened my perspective but also provided important inspiration for my future work. I am truly grateful and have no words to express my appreciation.

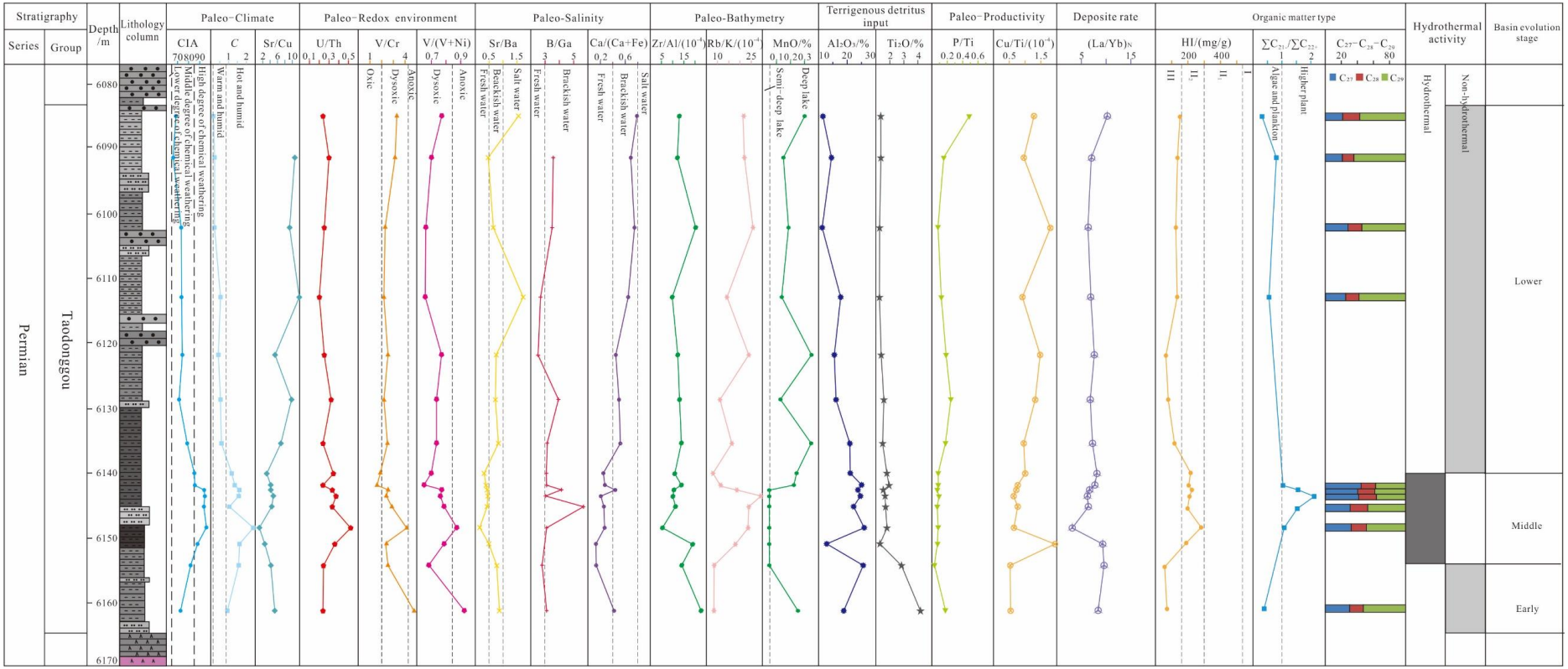

Fig. 1 Geochemical Profile of Well YT1