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Interactive comment on "Fractal Scaling Analysis of Groundwater Dynamics in Confined Aquifers" *by* Tongbi Tu et al.

Anonymous Referee #2

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This study conducted fractal scaling analysis of groundwater level fluctuations in confined aquifer wells by means of Detrended fluctuation analysis (DFA), Multifractal detrended fluctuation analysis (MF-DFA), and Multiscale Multifractal Analysis (MMA), and by investigating the relationship between the stability index and the Hurst exponent. In my opinion, this study provides important knowledge on groundwater level fluctuations with sufficient novelty, and this paper was mostly written well. However, some parts, especially Introduction, need to be improved before publication.

1. P.2 L.8-18: The relationship between this paragraph and this study is not clear. Please add some more explanations or descriptions.

2. P.2 L.25: (MF-DFA(Kantelhardt et al., 2002) -> (MF-DFA, Kantelhardt et al., 2002)

3. P.3 L.20-21: Please add a reference for the sentence: "stability index and the Hurst

exponent are related under certain conditions."

4. P3. L.13-21: I strongly recommend the authors to explicitly explain the differences between existing related studies and this study in order to emphasize the novelty of this study. In addition, please briefly describe the purpose of each analysis here, and explain why the authors used long-term groundwater level data in this study.

5. Equation (1): Please define t.

6. P.4 L.1-3: I recommend the authors to explain in this section why it is important to detect evolving nonstationarities in this study.

7. 3 Data Analysis: How were the two wells selected? Why were only two wells used in this study?

8. Figures 10 and 11: What are the red dot lines in the normal probability plots?

9. Conclusions: Please add the summary of the investigation on the relationship between the stability index and the Hurst exponent.