

Interactive comment on “Improvement for the multi-scale periodic characteristics revealing of precipitation signals and its impact assessment on soil hydrological process by combining HHT and CWT approaches” by S. P. Yu et al.

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Dear referee,

Thank you for reviewing our manuscript. We appreciate all your invaluable suggestions and comments. We have modified the manuscript accordingly, and detailed corrections and explanations are listed below point by point. We believe that by presenting and publishing the interim results other scientist can apply the findings and discussions can be started to further develop the new methods.

C3052

Referee 1#’ comments: This paper conducts a detailed analysis of the multi-scale periodic precipitation signals and its impact on the soil hydrological process at the Chinese coastal reclamation region. The author improved the CWT with critical fine-scale mode mixing problem by combining the EEMD-based HHT method which seems appropriate and innovative. The results are reasonable and provide a directly theoretical guideline for forecasting precipitation trends and evaluating the impact of the precipitation trend on the future soil hydrological process. It is a valuable paper and should be published with only minor suggested modification. We don’t think the author can get the conclusions that “the surface soil EC (10 cm layer) decreased significantly with the precipitation increase” and “the 50 and 100 cm layers soil EC dynamics were in keeping with the precipitation dynamics” from Fig.7. The correlation between soil EC and precipitation seems to be not significant. We suggest the author give further analysis and more verification data.

Author’s response: Following the referee’s suggestion, we have given further analysis and more verification data. “The surface soil EC (10 cm layer) decreases significantly with the precipitation increase and increases with the precipitation decrease, with a significant correlation coefficient of 0.76 under the 0.01 confidence level ($P=0.004$) by the logarithmic function fitting (Fig. 7(b)).” “The positive correlation coefficient of 0.63 between the 50 cm layer soil EC and precipitation is significant under the 0.05 confidence level ($P=0.029$) by the logarithmic function fitting ($y = 0.271\ln(x) + 4.939$), while the positive correlation coefficient of 0.44 between the 100 cm layer soil EC and precipitation is not significant under the 0.05 confidence level ($P=0.173$) by the logarithmic function fitting ($y = 0.146\ln(x) + 4.708$).”

Please also note the supplement to this comment:

<http://www.nat-hazards-earth-syst-sci-discuss.net/2/C3052/2015/nhessd-2-C3052-2015-supplement.pdf>