

## ***Interactive comment on “Water table fluctuation and its effects on vegetation in a semiarid environment” by L. Duan et al.***

**Anonymous Referee #2**

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The paper investigates spatial and temporal patterns of depth to water table and its relationship with climate, landuse, topography and remotely sensed NDVI for a 10 km<sup>2</sup> area within the Horqin Sandy Land (northern China). This study achieves some interesting field work and has potential practical relevance as the Horqin Sandy land is subject to desertification. However, data analysis needs to be substantially improved.

General comments: 1. As the practical question of this study seems to be to understand desertification processes and its interplay with landuse, climate, topography and water tables, it may be more relevant to explain patterns of remotely sensed NDVI (as a proxy for vegetation cover) rather than water tables. Water table is probably one important factor controlling desertification processes, in particular in shallow water table

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areas.

2. The multivariate and geostatistical analysis tools presented are not well documented. Furthermore, there may be other methods, particularly for the multivariate analysis, that fit the problem at hand better. For example, as different types of variables (categorical and continuous) were used and the independent variables were correlated (water tables and rainfall and PET), Classification and Regression Trees (e.g. Selle et al., 2010) is probably a better choice than multiple linear regression.

Specific comments: P3274, L23: Is groundwater fresh or saline?

References: Selle, B., Thayalakumaran, T., Morris, M. (2010): Understanding salt mobilization from an irrigated catchment in south-eastern Australia, *Hydrological Processes*, 24: 3307–3321.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 3271, 2011.