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Hydrology and Earth System Sciences Discussions

Interactive comment on "A spatial neural fuzzy network for estimating pan evaporation at ungauged sites" *by* C.-H. Chung et al.

Anonymous Referee #1

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The paper is devoted to an important issue of building a regional evaporation estimator by meteorological variables, a problem that still is not given enough attention in publications. A novel approach that integrates a spatial neural fuzzy network with the kriging method to estimate pan evaporation with special attention to ungauged sites is proposed in this study. The results were very encouraging (reliable and accurate in estimating the spatial distribution of evaporation). It is well written and offers interesting information for researchers dealing with data-driven tools for hydrosystem issues. I recommend this paper to be accepted for publication after the following problems are addressed.

(1) Page 9677 Lines 23-25 The authors stated that "A number of studies have inves-

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tigated the applicability of neural networks with geostatistics and provided promising results", which sounds closely related to the main idea of this study. I would suggest considering a slight re-wording on this sentence and/or more specifically enhanced explanation of the novelty of this study and the main difference between this study and other related studies.

(2) Page 9679 Lines 21-22 It is interesting to learn how to select the emphatic weight and what its impact is.

(3) Page 9681 Lines 22-25 The estimated evaporation should be clearly defined.

(4) Page, 9682, L 14-19 How to determine three subsets from 19 stations to develop ANFIS models?

(5) In the Conclusions Section, the authors claim that the AK model can estimate evaporation at ungauged sites without using meteorological variables. The roles of ANFIS and kriging in the AK model should be explained in more detail.

(6) Tables (a) The unit of daily evaporation in Table 2 should be changed. (mm/day) (b) Tables 3 & 4: The unit of RMSE should be addressed.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 9675, 2011.