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Hydrology and Earth System Sciences Discussions

Interactive comment on "Incorporating landscape characteristics in a distance metric for interpolating between observations of stream water chemistry" *by* S. W. Lyon et al.

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General comments

This study focuses on the interpolation of point measurements (water chemistry samples) along a stream network. Authors propose a novel approach for the definition of distance in the kriging interpolation approach, which combines traditional distance metrics with adjustment based on characteristics of local contribution area. The approach is tested over a small catchment located in the Catskill Mountains region using 117 samples. The accuracy of the proposed methodology is evaluated by the "jack-knife" cross validation approach. The results revealed that compound weighting of the met-

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Interactive Discussion

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ric distance with the characteristics of local contributing area has reduced the overall crossvalidation error.

Overall, the manuscript is very clearly and precisely written, well structured and technically sound. The title of the manuscript adequately represents the main objectives of the paper. The objectives and aims are clearly defined and adequately presented. I would suggest just two minor points, which may be taking into consideration:

1) I would suggest to extend the accuracy evaluation section by showing and discussing the crossvalidation statistics in more details. The KRMSE error does not tell much about the bias or extremes of interpolated values in comparison to the at-site measurements. (e.g. cumulative distribution function of the at-site and interpolated characteristics may shed more light on this).

2) The studies of Skoien et al (2006, 2007) present an interpolation approach (TOP-KRIGING) which is developed for the interpolation of hydrologic characteristics along the river networks. It would be nice (but probably not possible) to compare both approaches, but in my opinion at least credible links to these studies (and eventually to studies of Gottschalk e.g. 1993a, b) are necessary.

I propose to accept this manuscript for the publication with minor changes.

References:

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