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Hydrology and Earth System Sciences Discussions

Interactive comment on "Acid-base characteristics of the Grass Pond watershed in the Adirondack Mountains of New York State, USA: interactions between soil, vegetation and surface waters" *by* K. M. McEathron et al.

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Review of paper hess-2012-317

Acid-base characteristics of the Grass Pond watershed in the Adirondack Mountains of New York State, USA: interactions between soil, vegetation and surface waters

General comments

This is an interesting paper. The authors present the correlations between basal area

of some tree species of the northern hardwood forest and soil and surface water characteristics in the Adirondack Mountains. Although the topic should be of interest to forest managers dealing with that kind of ecosystems (with some minor changes in the introduction to explain why the focus was on sugar maple and black cherry), there are however important weaknesses that could harm the acceptance of this paper by the HESS. One of my main concerns is the low "n" value used in the Pearson correlation for the Watershed stream chemistry (Table 5) making hazardous the interpretation of results, particularly in absence of graphics. Moreover, the interpretation of some correlations with P > 0.20 (and up to 0.48) as significant (although the authors choose 0.05 as the significant level – P.10782, L.18), makes also hazardous such interpretation. In this context the conclusions should be wrong or biased.

Specific comments

Abstract

1. L16: put a coma after NH4.

Introduction

1. P10777, L3: Liming could also be a countering force. Otherwise, add "natural" after Countering.

2. P10777, L6: I suggest to add "it is generally recognized that "forests," .

Results

1. Section 3.3: What about black cherry positive basal area correlation with forest floor Ca (r = 0.25, p = 0.071; Table 4)?

2. P10785, L4 and 5: The authors stated that: "a strong negative association between black cherry and pH (Table 4, Fig. 5a, b)" but in Table 4, r = -0.079 and p = 0.55 for the forest floor pH and r = -0.18 and p = 0.20 for the mineral soil pH. Its seems that the association is not so strong!

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3. P10785, L7: Add “DOC” after pH? See Table 5.

Discussion and Conclusion

1. P10785, L22 and 23: But in your study, the correlations of these species and the attributes mentioned in L25 to 27 are not demonstrated for all of these species.

2. P10786, L9: A reference would be suitable at the end of the sentence.

3. P10787: Remove L4 and 5. In table 1, standard deviation is relatively high for NH4 and it seems to have no difference between NH4 values in subwatersheds. So, this hypothesis is highly speculative.

4. Given my general comments and the paragraph (L5 to 16) in P10787, the conclusion in P10787 and 10788 seems to overinterpret the results.

Other

1. See Long et al. (2009) and Moore et al. (2012) to improve the text about nutrient requirements of sugar maple, black cherry and American beech.

Moore, J.-D., R. Ouimet et L. Duchesne. 2012. Soil and sugar maple response 15 years after dolomitic lime application. For. Ecol. Manage. 281 : 130-139.

Long, R.P., Horsley, S.B., Hallett, R.A., Bailey, S.W., 2009. Sugar maple growth in relation to nutrition and stress in the northeastern United States. Ecol. Appl. 19, 1454–1466.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 9, 10775, 2012.