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Interactive comment on “DOC concentrations and spectroscopic characteristics in surface runoff from contrasting wetland ecosystems: a case study in the Sanjiang Plain, Northeast China” by L. L. Wang et al.

Anonymous Referee #1

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Overall comments:

This manuscript is an original work and the subject of this manuscript falls within the general scope of this journal. This manuscript presents the difference in DOC concentrations and its spectroscopic/aromatic characteristics of surface runoff among the seven types of wetlands in the northeastern China. Since DOC is an important carbon sink and carbon leaching from land ecosystems to aquatic ecosystems is far from certain, this study could help more accurately quantify regional/global carbon budgets.

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It is also interesting to know that degraded wetland and paddy land have lower DOC concentrations compared to natural wetlands though the authors did not give any solid explanations. The authors' interpretations and conclusions are relatively sound and justified by the experimental data. The description of materials and methods is sufficiently informative. The results are well organized but not clearly represented due to confusing expressions, which are also the major weakness of this manuscript. In addition, more concise and focused analyses are needed. Overall, I'd like to accept the manuscript but make a major revision. Specific comments/suggestions are provided as below:

Specific comments: 1) There are many confusing sentences making some sections of this manuscript not understandable. Here I only mention several places as shown below. Native English speakers are required to make a thorough revision on the manuscript. 2) P 7920, Line 24-26: This sentence is very confusing, please rewrite it. 3) P7922, Line 17-19: is it "last two decades" or "past 50yr"? Both have been used in a sentence. 4) P7924 Line 14: could you add the definition/explanation of degraded wetland here? It is defined according to waterlogging duration and water level or others? 5) P7925 Line 10-11: "humic acids have a greater reddish colour than fulvic acids" should be "humic acids are much redder than fulvic acids". "higher wavelength" should be "longer wavelength"? 6) P7926 Line 6: should be "by the one-way analysis of variance (ANOVA)" 7) P7926, Line 14: delete " $48.73 \pm 3.26 \text{ mg/l}$ " 8) P7926, Line 17-18: this sentence can be incorporated into previous one and delete "7.08...". 9) P7926, Line 19-24: The highest or lowest values could be only in one month for one site. It's not reasonable to list a range or several values. In addition, have significance tests been used to test if these values are really significantly lower or higher than other values? 10) P7926 Line 25 to P7927 Line 1-4: these two sentences are overlaid with previous sentences. "monthly maximum" is the same with "the highest monthly". They need to be deleted or rewritten. 11) P7927 Line 9: SUVA₂₅₄ has been used as the abbreviation of "the specific UV absorbance". No need to use the full name again. 12) P7927 Line 10: "between" should be "among" 13) P7927 Line 16: "in 2010 than occurred in

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2009” should be “from 2009 to 2010”. 14) P7928 Line 5-10: difficult to understand. Need to reorganize. 15) P7928 Line 7-10: The numbers such as 0.30, 0.27, and 0.32 seem not significantly different. Since no significance tests were shown, you can not draw a conclusion that the C/C ratio of one site is higher than another. Same problems occurred in other paragraphs in comparing the difference among different sites. 16) P7928 Line 13-16: need to rewrite. 17) P7930 Line 9-12: this implication might not be correct since there are some insignificant relationships between different wavelength DOC absorbance. 18) P7930 Line 17-20: the numbers for DOC concentrations are not necessary to show here. Suggest deleting them. 19) Page 7930 Line 21-25: the authors try to owe the difference in DOC concentrations to the geographic difference in the two phialiform wetland types. This means that the water sampling places or timing are the most important factors determining the difference in varied wetlands, which further implies that they are no intrinsic difference in DOC among these sites. Then I will doubt if the sampling methods in this study could really represent the DOC and its spectroscopic characteristics in these varied wetlands. I'd like to see other explanations to the difference between them. 20) P7930 Line 22-end of this paragraph: One explanation could be the difference in SOM (Table 1). CLPW has much higher SOM content and CAPW, and both phialiform wetlands have higher SOM contents than other wetland types. Since DOC is a product of SOM, SOM content might be the major cause of the difference. 21) Page 7931 Paragraph 4.3: This paragraph delivers that degraded wetland and paddy land have lower DOC concentrations compared to natural wetlands though the authors did not give any solid explanations. Does this mean that DOC leaching to water body will be decreased after land use change from natural wetland to rice paddy land? Or will human management practices (e.g., fertilizer use, soil dry-up and irrigation) reduce DOC concentrations in water bodies around the rice paddy land? This is very interesting. I hope the authors can offer detailed explanations on it. 22) For figures/Table captions: the full names should be stated for the abbreviations of the 7 types of wetlands. For example, Table 2 and Fig. 3. 23) Fig. 1 is not clear enough. Please use obvious color to mark the study region in the China's map. 24) Fig. 2: this

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figure could not be correctly represented. How could one axis represent both air temperature and precipitation? Need to redraw it. 25) Figure 4, 5, 6: please also indicate if the values between different wetland sites are significant using label letters such as “a, b, c”.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 9, 7919, 2012.

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