Interactive comment on "Linking dissolved organic matter composition to metal bioavailability in agricultural soils: effect of anionic surfactants" *by* M. C. Hernandez-Soriano and J. C. Jimenez-Lopez

Mostofa KMG Mostofa

mostofa@tju.edu.cn

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Author: Firstly, 'fluorescence components' is a well accepted term, please refer to Fellman et al, 2010: Fellman, J. B., Hood, E., and Spencer, R. G. M.: Fluorescence spectroscopy opens new windows into dissolved organic matter dynamics in freshwater ecosystems: a review, Limnol. Oceanogr., 55, 2452–2462, 2010. This is a highly cited manuscript (114 cites, web of science) and their authors are well recognized as leading experts in the field. We have therefore refereed to this article and related work in this manuscript.

Reply: Some reviewers did not think so much on some issues and they ignored. This can be a fact in that case. You should apply your knowledge or ask about it to several authors to clarify this issue for example, Coble, Yamashita, Stedmon, etc. For example, when we use fluorescent DOM (FDOM) or chromophoric DOM (CDOM), we did not say "absorbance components" for absorbance spectra that should be the term. If you are interested, you can arrange a discussion by sending email to all mentioned Scientists including me that we can discuss in that regards all together.

Author: A PARAFAC analysis seeks to identify the main components that can represent the variance in DOM fingerprints for a particular system studied. This was not the objective of our study. It is rather obvious that the fingerprint of a particular sample can be compared with components attributed to pool of compounds (humics, quinone-like, etc) by established models - please refer to Fellman et al 2010 and 2009 in the reference list, Zhou et al 2013, Miller et al, 2009: indeed, the 'reduced quinone-like component' is also well described in those cites. Therefore, there has been no 'misinterpretation' - it is a simple comparison of fingerprints for specific samples to components derived from general models.

Reply: I did not find such author's explanation author in the reference paper (Reference: Fellman et al 2010). Table 2 (Fellman et al 2010: see below) shows that my comment is correct. This is absolutely wrong information about "reduced quinone-like component" that you cannot say about that from general FDOM components using EEM-PARAFAC. All other citations from this Table are also indicated that author is wrong.

Author: Finally, the remark about the presence of 'organic ligands' in the DOM is a bit confusing. The molecules present in the DOM carry varied functional pools which indeed can act as ligands for metals. We could suggest a substantial number of articles on the topic, for instance: Characterizing the interactions between trace metals and dissolved organic matter using excitationôÄĂ emission matrix and parallel factor analysis. Y Yamashita, R Jaffé - Environmental Science Technology, 2008 Complex-

ation of trace metals by adsorbed natural organic matter JA Davis - Geochimica et Cosmochimica Acta, 1984

Reply: Author write "The molecules present in the DOM carry varied functional pools which indeed can act as ligands for metals". This is wrong in terms of DOM. DOM includes mostly humic substances (fulvic and humic acids), mostly 90% in soils. Others 10% DOM are composed of low molecular weight DOM that does not make any complexation. Humic substances (fulvic and humic acids) are composed of many functional groups in their molecular structure, not carry them. They are part of the molecular structure. So, now author can realize by himself that "organic ligands" are not a proper term in the case of DOM. Some papers they are mistaking and reviewers are not thinking so much in that issue. If author background is chemistry, it will be easy to understand in that regards. Reviewer's background is also a factor in that regards.

Thank you. Regards, Khan M. G. Mostofa

Table 2

Characteristics of the eight individual components identified by the PARAFAC model in this study.

Comp.	Ex/Em maxima (nm)	Fluorophore name	Description
1	<250/450–470	A[1], 1[2], 2[3], 1[4], 1[5]	Widespread UVC humic-like fluorophore, but is most common in wetlands and forest streams
2	330/456–480	C[1], 4[2], 1[3], 2[4], 2[5]	High molecular weight and aromatic humic-like fluorophore
3	290/510	3[4], 5[3], 3[5]	Humic-like fluorophore, correlated with aromatic C content
4	240/384	12[3]	Humic-like fluorophore, correlated with aliphatic C content
5	240/414	3[2], 5[5]	Widespread UVC humic-like fluorophore
6	275/462	7[3]	Humic-like fluorophore
7	280/330–340	T[1], 7[2], 8[3], 4[4], 8[5]	Tryptophan-like, fluorescence resembles free tryptophan
8	275/304–306	B[1], 8[2], 13[3], 7[4], 9[5]	Tyrosine-like, fluorescence resembles free tyrosine

References: 1. Coble (1996); 2. Stedmon and Markager (2005); 3. Cory and McKnight (2005); 4. Yamashita et al. (2008); 5. Fellman et al. (2009b).

Fig. 1.