

Interactive comment on “Technical note: Effects of iron(II) on fluorescence properties of dissolved organic matter at circumneutral pH” by Kun Jia et al.

Anonymous Referee #1

Received and published: 9 June 2020

The authors present a characterisation study on the effect of dissolved Fe(II) on the fluorescence properties of organic matter dissolved in groundwater. The study is novel and the experimental observations are well performed. This makes the manuscript suitable for publication. However, the paper does not fit well to the HESS audience as this audience is less focused on analytical geochemistry. The paper refers to the second scope of HESS: it is noted that one groundwater sample is used for characterisation which makes spatial or temporal characterisation not that strong. To me, the paper would better fit in Appl Geochem or Chem Geol or so. I leave it to the editor to decide on this.

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Having said this, I have three major comments. Other comments are more specific comments that refer to these three major comments are annotated in the pdf version of the manuscript.

First, the relevance of high Fe in groundwater is not illustrated. The authors use Fe concentrations up to 300 mg/L. This is a very high value that is rarely found in groundwater, especially when it has a neutral pH. The authors should thus present their paper within the framework of high-fe groundwater: what has been observed and for which hydrological conditions.

Second, the authors discuss that the effect of Fe(II) on the fluorescence properties is due to aqueous complexing but do not elaborate on this. They should pay more attention to this and discuss why this effect is so strong for Fe(II). Might one expect a similar effect for dissolved Ca which is more omnipresent. If not, what makes Fe(II) so unique besides Fe(III) and Al(III)?

Third, as said before, the paper is oriented towards analytical chemistry. To make it understandable for the HESS audience, they should explain specific details of the technique, etc. Now, the paper will not reach the HESS audience as the relevance is not well illustrated (comment 1) and the text is too technical.

Please also note the supplement to this comment:

<https://www.hydrol-earth-syst-sci-discuss.net/hess-2020-150/hess-2020-150-RC1-supplement.pdf>

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2020-150>, 2020.

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