**Reviewer:**

The lack of inner-filter correction here might be problematic here if the water sampled contained any color. The problem is that most of the indices derived from the EEMs rely on the region most affected by the IFE, that is the region typical of the protein-like at low excitation and emission wavelength. In addition to underestimating the contribution of the proteinaceous material overall, you may end up being in a situation where for a similar concentration of these compounds in a sample, your concentration estimate may be quite variable depending solely of much fluorescence is absorbed by the sample itself. Could the authors at least provide absorbance values and what would be the impact of the IFE for the samples they have measurements for (L107)?

L107-109: Without the absorbance, it is hard for me to judge if the IFE is a problem here. The authors should follow the paper of Kothawala et al. 2013 L&O:Methods to calculate the percent fluorescence lost due to the IFE, and provide the reader of by how much their results are likely to vary.

L110: Given the authors can fix the IFE issue mentioned above, I would suggest performing a Parallel Factor (PARAFAC) analysis of their fluorescence data as it is a more powerful tool to deal with fluorescence data.

CLAY: I have the PARAFAC analysis you did and I’ll look at using it in addition to what we’ve already done.

**And here is the associated text:**

Dissolved organic matter quality was characterized using fluorescence excitation-emission matrices (EEMs; Coble *et al.*, 1990; Coble 1996; Cory *et al.*, 2010) measured on a Fluoromax-4 spectrofluorometer (Horiba Instruments, Kyoto, Japan). This technique quantifies humic-like, fulvic-like, and protein-like fractions within the bulk DOM pool, which in turn are generally related to the lability or recalcitrance of DOM pool. EEMs were measured using excitation wavelengths at 10 nm intervals between 240-450 nm at and emission wavelengths at 2 nm intervals from 290-600 nm. Three-dimensional EEMs were then instrument corrected, blank subtracted, and normalized by the water Raman signal (Cory *et al.*, 2010) using Matlab software, but we did not measure absorbance for each sample, so we could not perform the standard inner-filter correction on the EEMs. Therefore these results will be most useful for relative differences across sites and time rather than for comparison to literature values.

The EEMs were used to calculate several DOM quality indices, including the humification index (HIX; Zsolnay *et al.*, 1999; Huguet *et al.*, 2009), the biological freshness index (BIX; Huguet *et al.*, 2009), the fluorescence index (FI; McKnight *et al.*, 2001), and the protein-to-humic ratio (P/H; Coble, 1996; Stolpe *et al.*, 2010). HIX characterizes the humic or autochthonous fractions of DOM (Zsolnay *et al.*, 1999; Ohno, 2002), and it is calculated as the ratio of integrated fluorescence emission intensity between 300-345 nm and between 435-480 nm at 254 nm excitation. Higher HIX values indicate DOM with humic character whereas lower values indicate either less humic or more autochthonous DOM. BIX was calculated from the ratio of emission at 380 and 430 nm at excitation of 310 nm (Huguet *et al.*, 2009). BIX values <0.7 are associated with allochthonous DOM, values 0.8-1.0 are associated with autochthonous DOM, and values >1.0 are associated with aquatic bacterial sources; higher values indicate greater lability than lower values. FI is calculated from the ratio of the fluorescence intensity at 450 nm and 400 nm at excitation of 370 nm. FI values of about 1.9 indicate fulvic acids from microbes and values of about 1.4 indicate terrestrial-origin fulvic acids. Finally, P/H was calculated from the EEMs whereby excitation at 275 nm and emission at 340 nm is associated with protein-like organic matter and excitation at 350 and emission at 480 is associated with humic-like organic matter (Coble, 1996; Stolpe *et al.*, 2010).