

Interactive comment on “The dynamics and export of dissolved organic carbon from subtropical small mountainous rivers during typhoon and non-typhoon periods” by Tsung-Yu Lee et al.

Anonymous Referee #2

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General Comments Overall, this is a well written paper using a long-term dataset to analyze the DOC export flux of three subtropical small mountain rivers in Taiwan. The authors have well highlighted the scientific significance of their study given the location and vulnerability of the system to future changes in climate and that POC rather than DOC is more often studied in these systems. Their approach is well founded and presentation clear and logical. The authors stated main objective was to assess the patterns in DOC with respect to river discharge during both typhoon and non-typhoon periods. The main points, that DOC export flux is strongly controlled by hydrology (e.g. stream discharge) and export occurs disproportionately during typhoons, are well supported and well summarized in the conclusion. Specific comments below indicate

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a few areas where I think the readers would benefit from more information and further discussion from the authors.

Specific Comments I am interested for the authors to further discuss their interpretations of flowpaths and DOC sources within the watershed. For example, you give a [DOC] value for groundwater, but don't show data. You also mention and then refute in-stream processing as source as well as discuss high soil infiltration as a reason for likely high groundwater contribution of low DOC water under certain conditions. I'd like to see further discussion / conceptual model behind these flow paths. Also, are there more studies of yours, collaborators, or others in subtropical watersheds, that are supportive of this?

Regarding methods, I have three specific comments. Each highlights where readers could benefit from more explanation of what you have done: 1. How are typhoon and non-typhoon periods determined? Dates of typhoons are given, but, for example, when is it determined that the receding limb of the event hydrograph transitions from typhoon to non-typhoon hydrologic regime? This decision effects both field sampling that was conducted as well as data inclusion into the two separate DOC rating curves. 2. How frequently was discharge measured? As you use DOC concentration measured either every few days or every 3 hours, how frequently are the discharge records you use the rating curve to 'fill in' for unmeasured DOC points? Also, do your DOC samples (and you have a great, long record!) cover the majority of flow conditions? 3. The authors mention 0.45 micron pore size GF/F filters (line 109). To the best of my knowledge, GF/F filters are 0.7 micron pore size. As this was done as pre-screening prior to analysis this larger pore size does mean some additional constituents would be included in the filtrate (e.g. liquid) portion of the sample. Scientists interested in colloidal fraction of exports, and any other chemical species associated with organic carbon, will be sensitive to this detail.

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