

## ***Interactive comment on “Spatial and temporal variability of heavy metals in streams of the Flint Creek and Flint River Watersheds from non-point sources” by I. Abdi et al.***

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The interpretation of the reported findings is difficult due to a lack of details. Fully realising that not all details of an extended project can be presented within the limits of a single journal paper, it is considered essential to amplify the paper in some respects.

More detail has to be provided regarding the experimental design. Did the three sampling locations in each catchment have independent drainage areas, or did their drainage areas overlap to any extent? Can Table 1 not be extended to provide data for each sampling location? What does “Each sampling location was selected to represent maximum drainage area for each location” (line 21 page 28) mean? Samples

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were taken bi-weekly (line 14 page 33), but this term can mean either twice a week or once every two weeks. Knowing from Table 3 that there were 15 samples taken at each site, this means that the monitoring period extended for either 7.5 weeks or 30 weeks – in both cases significantly less than a year, thus way short of a complete annual cycle. Can conclusions therefore be reached regarding temporal variability?

There is some confusion regarding the main objectives of the investigation. Two objectives are stated in the abstract: “The purpose of this investigation was to assess the impacts of spatial and temporal variability on heavy metals and pH as a result of land use/land cover changes and provide a baseline for future water quality study from non-point sources in two watersheds.” The data does provide a baseline (Tables 3 and 4), albeit very broad, thus meeting the second objective. The first objective, however, is not addressed at all. There is neither data nor conclusions about land use / land cover changes – in fact, the statistical analysis implicitly assumes a stationary environment, even after demonstrating the variability in rainfall. Moreover, it is not clear what the eventual findings (no temporal / spatial variability, with some exceptions) really suggest to the authors. To add to the confusion, it is stated (line 9, page 32) that the null hypothesis (there being no difference) was rejected, which contradicts the rest of the paper.

The referencing should be cleaned up. The paper lists 28 references, while the text only refers to two. The paper refers to streamflow data (line 26, page 30) which is never reported on.

In summary, I suggest that the authors clearly focus their objective at the start, filter and refine the relevant information from their data sets (this was clearly a part of a larger, multi-dimensional project) and use it to make unequivocal conclusions. It would then add significant value to our body of knowledge.