

## ***Interactive comment on “A small volume multiplexed pumping system for automated, high frequency water chemistry measurements in volume-limited applications” by Bryan M. Maxwell et al.***

**Anonymous Referee #1**

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### Article Summary

The authors describe the use of a novel pumping system that uses bidirectional flow to sample pore water using a spectro-lyser with an in-line cuvette. The paper is well written and detailed, and I commend the authors on their approach that captures both temporal and spatial variability, which is by no means an easy feat. I particularly enjoyed the inclusion of the woodchip bioreactor experiment. Additionally, the authors take good care with their design scheme and descriptions to ensure that a user could set up a similar device. Please see my detailed, mostly minor, comments below, which

C1

I hope the authors find insightful and useful.

I would recommend a minor revision of this manuscript.

### Major Comments

I have no major comments for this manuscript.

Minor Comments:

### Line-by-Line Comments

### Highlights/Abstract

Page 1.10: The authors state that their MPS system was previously reported, but this phrasing seems awkward without direct reference to the citation.

Page 1.20: “The technology is most promising”. . . I would mention at what spatial scale (i.e., I presume reach scale or transect style studies) and perhaps temporal scale your technology would be best for.

### Main Text

Section 1.1 Page 2.10: “Multiplexing” can mean different things across disciplines. I would just be very clear how you are using that term here.

Section 1.1 Page 2. 15: Do you mean soils or sediments here? Either way, both should be mentioned given your application.

Section 1.1 Page 2.25: If one of the challenges is tube clogging, it would be useful to describe at some point the limitation of the instrument. For example, if the system has high organic matter, would that system be a candidate for your instrument? Are there ways to avoid tube clogging to make it work in that type of system?

Section 2.3 Page 5.5: “Although this is admittedly undesirable. . .” Can you describe in greater detail the solutions to minimize risk here?

C2

Section 3.2 Page 9.15-20: I really enjoyed the discussion of the short circuiting of the reactor.

Figures/Tables

Figure 1: Please also include the lettering system in your figure description.

Figure 3-4: The symbols are slightly difficult to distinguish. Putting the y axis on a log scale might help.

Would it be possible to include a picture of your experimental setup in the SI?

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2018-220>, 2018.