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Hydrology and Earth System Sciences
Discussions

# *Interactive comment on* "Technical Note: False low turbidity readings during high suspendedsediment concentrations" *by* Nicholas Voichick et al.

**Anonymous Referee #1**

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The present manuscript contains a study on the limitations and, most importantly, on the false results that one can obtain using an optical turbidimeter. Results from field measurements and from a laboratory investigation are presented and discussed. The authors use other surrogates of turbidity to compare with the values obtained with an optical sensor. It is surely an extremely useful topic and within the scope of HESS.

The manuscript is thus a valid and neat contribution to the community and it reads as a technical report, the category of submission. The manuscript is generally well written and well organized. I recommend acceptance of the manuscript after solving a few points for improvement and discussion which I present next.



In the title reference to optical probes should be given. I think this is the main focus of the paper, it should be emphasized.

In the abstract, although said in line 11, the authors should somehow stress that their analysis is related with optical probes, only later in line 24 this is clear.

In lines 16-20 it is a bit confusing here the reference to the physical properties of the sediment and later the relation with the fact that some devices do not peg. Rephrase these two sentences.

Lines 32 and 33, the sentence somehow seems contradictory.

In line 104, more details should be given on the physical suspended-sediment samples should be given. Which method was used for these other surrogate measurements?

In figure 4 there is no legend regarding the information presented. What are all the lines and symbols herein represented?

The discussion regarding the dependence of the sediment concentration measurements and the characteristics of sediment in line 174-175 should be more complete. In what sense these are related to the properties of the instrument? This is a crucial point since this may actually lead to improvement of the techniques.

The suggestion given in lines 200-201 is not clear, needs to be improved and more complete.

I suggest to the authors the reading of Gitto et al. (2017), it may give them some useful complementary information.

References: Gitto, A. B., Venditti, J. G., Kostaschuk, R., & Church, M. (2017). Representative pointâĂŘintegrated suspended sediment sampling in rivers. Water Resources Research, 53(4), 2956-2971.

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