

## ***Interactive comment on “An autonomous and low-power instrument platform for monitoring water and solid discharges in mesoscale rivers” by Guillaume Nord et al.***

### **Anonymous Referee #2**

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The authors present a setup for a gauging station to monitor water and sediment transport in high temporal resolution. The station is designed for fast responding, mountainous, mesoscale rivers in remote areas. Both processes – water and sediment transport - are difficult to measure especially in these environments and subject to lots of efforts and uncertainties. Thus, the development of appropriate and robust monitoring techniques as well as their combined application is highly recommended and needed. This is also of special interest for process understanding and model parameterization regarding sediments. Several sensors are assembled in one monitoring system, measuring different parameters which serve as proxies or auxiliary variables to derive water and sediment discharge. The system also aims for data storage and

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analysis (some measures of primary statistics), data transfer, and remote supervision and control. Also a user web-interface is provided. The manuscript is very good organized. The technical presentation of the RIPLE system with its several components is comprehensive and supported by meaningful figures and tables. However, a comprehensive presentation of the monitoring results is missing or only available partly. Here it would be good to give the reader an impression, what he/she could expect and how the (raw) measurements look like at least for one flood event. Sure, figure 8 shows some of them, but there are more graphs inside than explained and the legends are not self explaining. It would be beneficial if the authors show more results for the same event for other sensors/variables especially regarding the bedload. Figure 9 to 12 are less informative in this regard since they show other periods in time or aspects of minor interest like Figure 12. Furthermore, I have a few doubts about the English language. I am not a native speaker but some phrases sound a bit strange for me.

Here are some details:

1-19: You can shorten the abstract by removing the information in brackets.

1-23: “The RIPLE platform has been designed . . . “ - I don't understand the meaning of this sentences.

1-28/29: information in brackets not needed in the abstract.

3-4: split the sentence after “. . .the cross section”

3-6: Maybe, start sentence with “But this assumption . . .”

3-9: without returned? → “. . . are analysed in the laboratory to measure . . .”

3-23: aDcp or ADCP?

3-27: “record” instead of “consist in recording”

4-1: “Up to date, whatever the indirect method used, . . . “ → I think an english revision is required.

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4-5: Suggest reversing the sentence: "Knowledge of ..."

5-9: Suggest: "There are studies ..." instead of

6-21: Suggest: "Therefore, they ..." instead of "They therefore ..."

7-28: Suggest: "The camera is an AXIS P1427-E. Its selection based on various criteria such as image quality, ..."

8-25-32: You are using a standard method for deriving discharge from surface velocity measurements. You can also refer to USGS guidelines or ISO norms.

8-29: "depth averaged velocity" sounds a bit crazy since you measure only surface velocities

9-14: see comment 7-28

9-18: What is meant by "bitter points"? Do you mean "control point"?

9-25: What is meant by "sides of flow"? Do you mean "river bank"?

9-32: "... the interval ... is constant ..." instead of "be"

9-34: "...it is not taking movies." instead of "pictures" Or do you use single pictures from this camera too?

10-9: "...to illuminate the water surface." Without "up to"

10-11: "exceeded" instead of "overcome"

10-15: "... processing steps are executed in the laboratory ..."

10-28: suggest "target area" instead of "area targeted"

10-34: suggest to remove "... with no connection to the data logger."

11-25: "... the radar derives the distance separating the radar from the water surface." Sentence is not understandable. Please revise. And what is its relation to the "blind

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area" mentioned afterwards?

12-27: Please add a reference to "PASS".

13-10: "Above some ..." ??? Suggest to rephrase: "If ... thresholds are exceeded,

13-34: "display unit" instead of "Display Unit"

14-28: That's not possible since you write before that the sensor is installed above low flow water levels.

15-1: Please avoid abbreviations in headlines.

16-2: suggest "... of angles less ..." instead of "...with angles of less ..."

16-5: 0.007m → Diameter of 7mm would be really nice. Is this right?

18-1: Suggest: "All procedures ... are presented ..."

19-18: Am I right that the echo sounder is mounted next to the lowest water level looking towards the bottom?

21-19: Suggest: "... the FTP-server ..." instead of "FTP"

22-20: You write "...the platform has worked properly, recording a large data set that will be of great interest for the understanding of sediment transport processes in alpine rivers." Please show an example of this data set at least by visualization of all measured variables for one flood event.

22-29: Please revise "much". Maybe: "... it is also adjustable and transferable ..."

23-15: Suggest: "These measurements must be performed under conditions that are close to the in situ environment in order to avoid subsequent flocculation/disaggregation processes."

24-8: You write "...of the same variables as those measured by RIPLE platform at other points ..." How can bedload and suspended sediments be measured by drone? Please

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revise this paragraph or remove it. You can also place your hints on improvements in remote sensing in the paragraphs before.

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Interactive comment on Geosci. Instrum. Method. Data Syst. Discuss.,  
<https://doi.org/10.5194/gi-2019-33>, 2019.