Reviewer: Anaïs Fabregas
Paper: Morgane Mignot

Summarize the main results of the article in a few sentences:

confirmation that multi-frequency instrument matches the results of the mono-frequency one, so that the multi-frequency instrument can confidently start to be used.

Answer the following questions about the structure of the paper:

Overall content:

1. **Is the overall purpose of the study and /or central question clear?**

Not super clear. We know a multi-frequency instrument is used but not really what for. I think the content of the paper could be better explained, you do not really mention “highly turbulent particle flows” later in the paper.
Goal : check the correctness of the new multi-frequency ACVP in describing sediment transport.

2. **Does the interpretation of the findings answer the overall question of the paper?**

There is very little interpretation of the findings (I guess there wasn’t much time for that in the internship?)

3. **Is every paragraph and sentence in the paper relevant to the overall question?**

   If no, point to some examples: beginning of the results : The high frequencies hydroacoustic intensity profiles included in the range [1.388 MHz – 2.5 MHz] are relevant but the hydroacoustic intensity is too low to be well received by the receptors.” not sure why you mention this. You haven’t talked about frequency ranges earlier in the

paper and we do not know if this is high or low frequency, mono or multi...

4. **Are there portions of the text that could be omitted?**

   If yes, point to some examples: I think some technical details in the method and results could be omitted, they do not help the comprehension of what's going on, and they actually give us so much information that we forget to focus on what the paper actually tries to show.

5. **Is the overall organization of the paper clear and effective?**

   Suggestions for improvement: there is no discussion of the results. Maybe there was no time for that in the internship ? There is a section but there is no actual discussion in it. Also maybe too many equations in the result section, if it's important it should be in the method.

Individual sections:

1. **Does the title adequately represent the content of the paper?**

   I'm not sure, because the paper hardly talks about highly turbulent particle flows (which is about ½ the title).

   Suggestions for improvement: (stop at flux profiling. Although I guess precising which flow we talk about helps for context. But if it's important, should be mentionned again and made clear in the paper).

2. **Does the abstract clearly and concisely summarize the paper and state the main results? Does is contain all needed information (context, need, task, object, findings and conclusion)?**

Yes pretty good, however it should state the result and say that yes, the study confirms that multi-frequency works fine.

3. **Does the introduction provide enough context to the readers? Does it state the need for the work? Does it state clearly what has been done to address it?**

Not super clear at the end of the intro if we're talking about what's been done in a study or if this is what was done by the intern ("Characterisation of its performances and comparison between mono

and multi-frequency instruments were made in the same flow conditions. It allows coherent observations for hydroacoustic intensity, normal velocity and, Reynolds shear stress profiles.")

The intro and abstract both don't have the main results in it so we're not sure where we're going.

4. **Does this paper put the progress it reports in the context of existing published work? Is there adequate referencing and introductory discussion?**

Yes, pretty good !

5. **Are the material and methods used in the study clearly explained? Can you point out what is special, unexpected, or different in the approach compared to existing published work? Does it contain too many technical details?**

Special : Used to be mono-frequency, here we use multi-frequency. It seems to me to be too long and too technical, it's more than 1 full page out of 4.

6. **Is the results sections(s) clearly and concisely written? Are there logical and smooth transitions between sections, subsections and between paragraphs?**

Many formulas that continue to explain what was done instead of presenting the results that were found. Paragraph 7 comes out mentionning a specific bandwidth we haven't talked about before, so we're not sure what to do with this information. Paragraph 12 : we're not sure what to do with the reynold shear stress information. We're not told what it's useful for, there is no explanation/interpretation of the results.

7. **Does the conclusion clearly state the most important outcome of the work? Does it address the questions stated in the Introduction? Does the conclusion just summarize the results or does it interpret the findings and explain what they mean?**

There is no real conclusion, it's mixed with the discussion and it mostly just states the limitations of the work.

8. **Are the interpretations and conclusions adequately supported by the evidence presented? That is, are the**

assumptions valid, is the methodology sound, is the evidence adequate, and do the conclusions logically follow?

I think so, mostly just a confirmation of the validity of the instrument because of the linear correlation between mono and multi. I didn't understand the whole thing but i'm also not an expert.

9. **Are all parts of the text, references, graphics and tables necessary for the new results and main points to be understood?**

We do not know what a free-surface flume is, and figure 2 is supposed to explain it but doesn't have "free-surface flume" labelled on it, so maybe figure 2 isn't necessary or maybe an in-text explanation of figure 2 could have been useful. Maybe we could have used more information on how the instruments were used?

10. **Are the graphics and tables clear and their captions self-explanatory?**

Yes, good captions and clear figures.

- # Sentences and Wording

1. **Can you find grammatical mistakes?**

Page 1 bottom right "sends" should be "sent".
I think "permits" is used incorrectly multiple times(p1), it should be "allows or enables".
P1 "is too much empirical" → is too empirical. (actually that sentence should be rephrased "remains heavily based on empirical measurements": "too much" is saying a little too frankly that this is a bad thing)
p1 abstract : "exposed to under well-known conditions" either "exposed to" or "under"
p1 in the long run

2. **Can you point to sentences that loose you (too long/complex) and do you have suggestions for improvement?**

"Depending of the electric signal sends to the emitter, it emits an acoustic pulse at one specific frequency" we don't know if "it" refers to the electric signal or to the emitter (actually we do because of the

word “emits”, but the sentence isn’t clear). This happens again later in the paper, use of “it” at the beginning of sentences that is not clearly pointing to the subject.

P1 intro : “issues including sedimentary and fishing resources management or shoreline recession are becoming impacted by extreme events.” the list is a bit strange : does “sedimentary” refer to sedimentary resource management ? first in your list you say AND, then you say OR... not super clear

p2 (end method) “The experimental part was followed by an adaptation of computer programs to process raw data, analyse and, interpret hydroacoustic intensities, normal velocities and Reynolds shear stress along the water column.” this sentence is too long and too complex + it contains two lists :
- process, analyse and interpret)
- intensities, velocities, shear stress

3. **Are generally the action in verbs, characters in subjects and subjects near verbs? Can you find counter-examples? Can you point out misused nominalizations?**

I havent noticed it anywhere so I think it was good.

4. **Is the writing cohesive? Does it flow well? Is the part of the sentence that links to the previous sentence at the beginning or the end?**

Yes it’s pretty good. Some improvements :
p1 method “but multi-frequency method could **at the same time**, gives the concentration and the sediment grains size” → “but the multi-frequency method could give **both** concentration and sediment grain size”

5. **Are the paragraphs coherent? Do the first and last sentences of paragraphs match? Can you find counter-examples?**

Yes, the paragraphs are coherent.

6. **Is there an abusive use of passive voice?**

Not abusive but it is used and it does introduce confusion in some places, especially at the end of the intro where we do not know if this is from an article or if this is what the intern did “characterisations […] were made […]”.

7. **Can you find a lot of useless words/phrases?**

Not lots, but some : In a time of climate change, nowadays (intro).

8. **Can you find complex words that could be replaced by simpler ones?**

I haven’t noticed.

9. **Can you find too complex subjects?**

No I haven’t found any either.

10. **Can you find inadequately used adverbs/ repetition/ excessive hedging?**

No.

11. **Is the use of tenses (past/present/future) adequate?**

Yes

- **Other comments?**

Interesting article ! I thought the figures were good and I enjoyed reading it. I guess just watch out for “it” that don’t refer to a clear subject, and just generally make sure everything is extra clear (who did this, passive voice etc).