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Ocean Science Discussions

Interactive comment on "Predicted ripple dimensions in relation to the precision of in situ measurements" *by* Knut Krämer and Christian Winter

Anonymous Referee #1

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This submission discusses the estimation of ripple height, orientation and wavelength from detailed measurements of bed topography. The methods of measurement and estimation are as often carried out; the aim here is to assess precision (repeatability) and possible accuracy of the results, especially if conditions are changing so that the statistics of bedforms are not in equilibrium. Comparison is made with predictions from empirical formulae from the literature, for various conditions of waves and currents which were also measured.

This represents thorough work in which the limitations of the measurements and estimates are well discussed, along with the accuracy that "might" be expected. [No absolute estimate of accuracy was possible because there is no known "truth" for the

variables estimated.] It looks to me as though this work should be useful – at least cautionary. However, its value would be clearer to a non-specialist (such as myself) if there were clearer statements of aims (in the Introduction) and how this advances on previous work (in the Discussion).

Although the use of English is generally good (and certainly appears so), there are several sentences where it was a struggle to follow the grammar and where the meaning would certainly be clearer with some simplification and re-ordering. This will have to be done by the authors and not left to copy-editors to guess what is intended.

Detailed comments.

Page 1

Line 9. I don't like "precision of detection". Either precision of some measurement or threshold of detection.

Lines 11-12. This sentence lacks mention of variations to which "up to a factor of two" applies.

Lines 20-21. "expressed . . parameter" gets in the way of the rest of this sentence. It could be a separate sentence (in parentheses).

Page 2

Line 16 ". . modelling and assessment . ."

Page 3

Somewhere near the end of the Introduction (top of page 3) should be a more explicit statement about the aim of this paper (before lines 4-9 saying what was done).

Line15. Unclear why Fig. 1 is referred to here.

Page 5

Lines 3-5. This sentence is too complex and (I think) grammatically incorrect: "is ex-

ceeded" is redundant given the symbols "$\geq$"? "respectively" is too far from the things being ordered. Break up the sentence, perhaps by defining lp and lmax in a separate sentence.

Line 6. Re-arrange (maybe split) this sentence. I think "where . . time" refers to the target shape and not to nadir.

Lines 12, 13. Echos do not have "slopes". Are you referring to the intensity as a function of distance as plotted in figure 3.

Line 20. "can be" – "was" if this is what you actually did. It reads like a good idea deserving careful description.

Page 6

Line 4. I don't think η, λ have been defined; they could probably be replaced by words, or bring forward the definitions from line 16.

Line 15. The "phi" symbol should immediately follow "orientation".

Line 30. "every deployment" is unclear. Probably not "deployment" but a briefest statement of what is the "ensemble".

Page 7

Line 8. "(trough)" (typo).

Lines 10-12. This could be clearer. Is a crest the extreme maximum between any up-crossing and the next down-crossing of zero? If crests are defined dependent on zero-crossings, why not more directly use the average of distance between successive up-crossings of zero (or down-crossings of zero)? Presumably the result would be almost the same.

Lines 28-29. So12w and So12c terminology implies separate predictors for ripples under waves and for ripples under currents. Then (line 29) "are used" but what exactly

is applicable to mixed forcing conditions?

Page 8. Units need to be stated for the dimensionally inconsistent equations (4), (5).

Page 11.

Line 4. ". . more pronounced than for Nikuradse roughness using (11); (12) results in . ."

Line 23. This sentence is incorrect. Replace one "of" by ","?

Figure 8. There are two lines for Fl88 in (a) and Ya85 in (b). Please explain in caption – refer to (4), (5) and (3)?

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