

Interactive comment on “A Surface Kinematics Buoy (SKIB) for wave-current interactions studies” by Pedro Veras Guimarães et al.

Anonymous Referee #2

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The manuscript describes a novel low-cost surface kinematic buoy, the SKIB system, composed of a GPS and an accelerometer. The intention is to capture waves, currents and their interactions. The paper is structured as a method paper (introduction, parameters, setup including in situ and field validation, an exemplary field application, and conclusions) and well written. I see a couple of minor issues, that can be improved, however in general I consider it publishable after inclusion of the following aspects.

Minor issues and suggestions:

Title: I would not try to use upper cases for the abbreviated SKIB, but to stick to lower cases (also throughout the text). It confuses the reader and it is easy to guess why SKIP was chosen as a systems name. Additionally I am not sure, if double plural is correct for the last two words or if it should read "...for wave-current interaction studies"

C1

Abstract: Well written and structured. Contains all essential information. I suggest to quantify the outcomes in lines 8 and 9.

Introduction: L21: What do you mean by "short instrumented spar buoy"

Measurable parameters and processing: L11: Why a linear interpolation and not any other function?

Buoy design and validation: Page 4, L18: Who is T. T. Janssen and why mentioning here? Page 4, L19: Provide paper reference instead of internet link. Page 5, L1ff.: The description of the mechanical design is rather short and not suited to follow, if someone wants to repeat your experiment. Please provide more information on the mechanical design (drawing in the appendix?) and also specify, what alternatives had been tested respectively, why this design is the best. Page 5, L4: figure 1.b and 2.a,b.

Subsection heading: SKIB electronics (be consistent using upper/lower cases in headings)

Page 5, L13: 2.5 VDC Page 5, L15: programed (you used American English throughout the text) Page 5, L16: the Xbee module was not described/mentioned before Page 5, L17: the 802.15.4 specification seems not necessary here Page 5, L20: ...are mounted... Page 5, L21: ... vacuum-sealed (see figure 1). Page 5, L23: In those buoys the IMU SBG Ellipse were used, set to an... Page 5, L28: The laboratory tests...

Figure 1: Explain STM and SBG in caption. Explain SKIP meaning in caption. A figure with caption should be understandable in its own. "Micro-controller board..." Figure 2: BBWAVES is mentioned here for the first time and not explained in the text.

Page 8, L7: Who can something follow 3 methods? Why not restrict to one citation?

Table 1: ...height... (not high). Check text, this happened 3 times in the manuscript.

Page 10, L9ff: You state that parameters overlap within confidence intervals. True for Hs but really close. Please comment.

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Page 10, L11: The largest difference. . . Page 10, L11: associated (doubled) Page 11, L9: . . .with RSME. . . (in figure 4, you use RSME not RSMD) Page 11, L19: measured (doubled)

Figure 4: Please explain NRSME.

Wave evolution in current gradients: Figure 6: Here you name the region: “Four channel” while in the text you name it “Chenal du Four”. Be consistent.

Page 14, L1: Figure 8 is mentioned in the text before figure 7.

Figure 7: Axis fonts used differ from other figures.

Figure 8: ..The color of the lines follow. . . ??

Summary and conclusions: Page 17, L2: Can you quantify “low-cost”? Either here or before in the text. You talked about the sensor cost but never mentioned the whole system.

General comment: This section is rather short and could be improved by a deeper reflection on the implications and applications of the SKIB, its next steps and further improvements.

References: Not consistent in using abbreviated or full journal names, e.g. for J. Phys. Oceanogr.

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