

Interactive comment on “Environmental controls on surf zone injuries on high-energy beaches” by Bruno Castelle et al.

Anonymous Referee #1

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Thank you for the opportunity to review this paper. I have previously reviewed the paper whilst it was under consideration elsewhere. In this previous review round, there was no concern on the scientific quality of the paper, merely the scope of the journal. I am pleased to see all suggestions from initial review round have been incorporated. As such, I have no further suggestions, and am able to recommend that the article proceeds to publication.

In the spirit of open discussion and review, I have pasted my initial review comments below to highlight changes made by the authors in response to review: _____

Thank you for the opportunity to review this manuscript, entitled ‘Environmental controls on surf zone injuries on high energy beaches’. In the contribution, the authors

attempt to link hydrodynamic forcing information with reports on surf zone injuries. Crucially, the authors aim to extend previous research methodologies, typically focussed on rip current incidents, to provide information on shore break waves and surfing-related injury. I find that the conclusions are largely well supported by the data, and feel that the content is worthy of investigation. I would recommend that the authors address some of the following concerns/comments prior to publication: 1. The reporting of incidents by lifeguards underpins all analysis in this manuscript, but very little information is provided on how lifeguards record incidents. While acknowledging the reference to the earlier paper by Castelle, where I note more detailed information to be given, I would expect to see a more thorough overview in the current contribution. Specifically, how do lifeguards categorize an injury? Is there any validation to their recording of factors, such as shore-breaks? What factors inform whether something is recorded as, for example, a shore break injury? Importantly, is this an open-text field on the report form, or is it categorical and the lifeguards are asked to tick all that apply? 2. The authors place much emphasis on swash rips being the cause for an over-representation of rip related injuries at high tide levels (Fig 5d). In its current form, I do not feel that the authors provide sufficient justification for this conclusion. I note that on line 486 they reference a detailed inspection of reports leading them to conclude that 'some' injuries can be directly attributed to swash rips – but in its current form this is a very weak explanation. What percentage of incidents does this 'some' refer to? No indication provided as to whether this is a majority, or even a significant amount, yet much of the discussion then refers back to this explicit link to swash rips. I agree that this is a very likely explanation for these injuries, but do not feel the authors have yet appropriately justified this link in their manuscript. Minor comments/observations: - Use of T02 in the abstract. This is a non-standard term compared to parameters such as T_p/T_z , and therefore I feel if you wish to use it in the abstract, it should be explicitly defined as mean period. - Ln 62 – The 45 % of rip rescues for the UK seems very low (and the link you provide doesn't work so I am unable to validate it myself). Certainly much other published research on this fact (Scott or Woodward [PhD Thesis: Rip currents in the UK: incident analysis,

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public awareness, and education]) suggests a much higher value (Woodward suggests 65%, including the year you cite) – can you justify such a low value here? - Ln 84 – Opening bracket around Lowdon - Fig 6 – both subplots labelled as ‘(a)’ - Fig 8 – state explicitly what you are inferring with the red star - Figure 17 is an important figure in summarising your findings, but I do not find it intuitive in its current form. I still do not understand the direction of the arrows? If you simply wish to infer higher than average, why does the arrow not just point straight up and bold? What does an arrow at 45 degrees infer? Especially when talking about wave period, how can wave period be inferred by a directional arrow? I like the idea of the figure, but feel it needs work in order for it to be instantly interpretable.

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