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Interactive comment on "Environmental signal shredding on sandy coastlines" *by* Eli D. Lazarus et al.

K. Ratliff (Referee)

k.ratliff@duke.edu

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General Comments:
"Environmental signal shredding on sandy coastlines" by Lazarus et al. extends the notion of morphodynamic turbulence, which has previously been explored in unidirectional sedimentary systems, to bidirectional changes in shoreline position over time. This work is relevant to ESurf readers and has important implications for the reconstruction of historic shoreline change, as well as for future long-term shoreline change predictions. The paper is well-written and clearly presented. My only significant question pertains to the sole use of the storm waves as an input flux, rather than the entire wave energy flux time series, when comparing to the daily (Argus) shoreline change dataset (see 'Specific Comments' below).

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Discussion paper

Specific Comments:

- l. 26: perhaps caveat that the “large forcing events” that are shredded are relatively short-term, i.e., those operating on < months time scales
- l. 131-133: The authors use the storm wave threshold (95th percentile of deep-water significant wave height) as a cutoff for the input flux time series. Particularly for the Argus dataset, it would be interesting and informative to compare the daily wave energy flux in its entirety to the shoreline change information (rather than just the storms). Are seasonal time scales evident in the daily wave energy flux time series? If so, this could be an interesting point of comparison (vs. the storm wave energy flux) that could strengthen the discussion of signal perseverance at longer time scales. An additional figure/histogram plotting the distribution of total wave energy for binned wave heights at Narrabeen-Collaroy beach from 2005-2017 could also be useful to illustrate the relative influence of storm waves.
- l. 138: include reference
- l. 226: “if climate-related drivers were to increase future forcing at the seasonal time-scale” – give an example of this – increasing storminess? Perhaps include a reference.
- l. 292-294: Re-word last sentence, as it does not read clearly.
- Figure 3B: Consider shortening x-axis to match 3A – I assume it’s the same range as the Argus dataset, but the mismatch in x-scales between A and B and the data gap could be misleading and/or confusing.

Technical Corrections:

- l. 172: correct spelling of “Ratliff” in reference (no ‘e’)
- l. 204: should reference figure 4B, not C

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