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Earth Surface Dynamics Discussions

Interactive comment on "Assessing the influence of sea walls on the coastal vulnerability of a pinned, soft-cliff, sandy coastline" *by* A. Barkwith et al.

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This paper applies an established coastal evolution model (CEM) to the Holderness Coast (UK) as a means of examining how natural and seawalled reaches of coastline may respond collectively to hypothetical changes in North Sea wave climate. The authors' analysis is the first spatially explicit extension of related but comparatively theoretical research into nonlocal effects of local shoreline hardening along an open coastline (Slott et al., 2010; Ells and Murray, 2012 – full references in the Discussion Paper). The work represents a robust contribution to the field and should certainly appear in the pages of ESurf. However, I wonder how this research might be best

presented, both for clarity and impact. My suggestions here may entail substantial revision.

This manuscript is a companion piece to another open paper in ESurfD (Earth Surf. Dynam. Discuss., 1, 855–889, 2013), which I also reviewed. It's unclear to me why this paper is in the "Frontiers in river, coastal and estuarine morphodynamics" special issue and the other is not. Given their obvious pairing, I urge the editors and the authors to ultimately present these two articles together. (Both would be appropriate for the special issue.)

But that's IF these two articles remain separate. Another possibility here is that the authors stitch their two papers into one.

If the authors are committed to two articles, then this manuscript needs the same kind of attention to structure and organisation that I urge in my review for its companion (Earth Surf. Dynam. Discuss., 1, C397–C401, 2013). The rationale is fine, but I think the argument, explication, and interpretations can be laid out in a more methodical, logical progression. Clarity is the aim. Moreover, this paper will require, as R#1 also notes (Earth Surf. Dynam. Discuss., 1, C389–C391, 2013), enriched descriptions of (1) what the CEM does to drive coastline change, (2) what the authors' ensemble approach involves, and (3) what kinds of insights the ensemble approach lends to this particular application. These steps may seem tedious or redundant given a companion article with so much in common – but in its present form I don't think this paper goes far enough in establishing its own foundation.

Alternatively, there is a strong argument for these two papers to become a single article. Neither paper is overlong to begin with – a merged article would still be a reasonable, readable length. Nearly every figure in this paper has the "defensive" results superimposed on the "naturalised" results from the companion. The manuscripts share the same fundamental motivation. The authors' introduction to and discussion of coastal defences can be folded into an expanded, more inclusive version of the first paper. A

single article could thus examine the spatially explicit morphodynamics of the Holderness Coast in a systematic, comprehensive way, one that starts with the "natural" conditions and complicates them in stages, first with a changing wave climate, then with seawalls in the context of a changing wave climate. The result would be, I think, more solid, substantive, and impactful.

Many companion articles split between a theoretical exercise and a potential real-world application. Here, both papers are rooted in a real landscape to begin with. If the authors envision these articles as a matched pair, then they need to consider how to accentuate the differences that define the manuscripts. But to me, that seems like even more work than integrating the two into one article with a slightly expanded scope. The authors have some challenging decisions to make – but I look forward to the revised product.

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Interactive comment on Earth Surf. Dynam. Discuss., 1, 1127, 2013.