Interactive comment on "A global delta dataset and the environmental variables that predict delta formation" *by* Rebecca L. Caldwell et al.

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This is a very well written and constructed paper that uses global dataset of discharge (water and sediment), slope, wave-power and total range to predict the likelihood of delta formation along a coastline. A delta is defined where there is either a shoreline bulge or distinctive distributary channels, such that estuaries would be largely excluded from the analysis. Single-channel deltas are thus largely excluded as well as lacustrine deltas.

The paper shows that deltas are more likely along coastlines with high discharge and low wave power and to a lesser extent low tidal range. It would be nice to compare storm-dominated versus fair-weather waves. The paper mentioned ancient systems.

But made no attempt to test the logistic regression against an ancient example. We have published S2S analysis of a number of Cretaceous systems. I think it is probably fairly robust to estimate slope and sediment and water discharge, wave and tidal power may also be tractable. Conversely, the presence of a delta could be used to predict wave and tidal regime of Qw, Qs, and S are known. It might be good to expand this part of the discussion to include some of these ancient systems.

I was a bit confused as to the meaning of "the main river mouth", especially as it applies to systems that may have hundreds of terminal distributary channels like the Lena Delta? When calculating slope, the authors state that the search far away from the shoreline, but I wasn't clear how far away? Is it some scaled distance from the river mouth (e.g., 10-100 x river mouth width)?

The paper would certainly benefit from a greater consideration of ancient systems, but the authors could leave this as ore of a discussion point and see if some of us who work on ancient systems can apply the algorithms develop in this paper.

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Please also note the supplement to this comment:
https://www.earth-surf-dynam-discuss.net/esurf-2019-12/esurf-2019-12-RC1-supplement.pdf