Reviewer comments are provided in bold-faced type. All line and page numbers refer to manuscript version with changes accepted.

Author responses are italicized

REVIEWER 1: Janok Bhattacharya

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 reviewer is generally correct here in his characterization of our definition of a delta. But our definition is not so restrictive because many of the deltas in our dataset are single-channeled or in estuaries. Though for these cases single-channeled deltas must have a protrusion and estuarine systems must show evidence of sediment distribution. To make our contribution clearer we have added "along marine coastlines" to the title to make it explicit that freshwater lakes are excluded.

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.

We are not entirely sure what the reviewer is suggesting. But, we suspect he is referring to comparing the storm-dominated against fair-weather waves for a given location to create a nondimensional ratio. But in that case, we are not sure what insight such a ratio would provide given that our simple metric of the highest 1/3 of the significant wave heights (this is probably more representative of storm wave height) provides a suitable reference for understanding delta formation.

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.

This is exactly what we have in mind and why we mention ancient systems in our paper. To make this point more concrete, we present a new version of equation 1 that does not include waves or tides and then we show that the for the cases of the Ferron Fm. presented in Bhattacharya et al., (2016) delta likelihood is high. We have now this section starting on P15L21: " Ancient deltaic deposits comprise significant hydrocarbon reservoirs, and provided our analysis holds through geologic time we could predict the presence of deltaic deposits in the rock record if Qw or Qs can be estimated via other geologic methods. If we use a logistic regression that does not include the limiting effects of waves and tide then equation (1) becomes:

$\ln(\pi delta/(1 - \pi delta)) = 0.0016 + 0.0175 Qw + 0.0345 Qs$ (2)

Using this simplified equation, we can predict the likelihood of delta formation for paleoenvironments where sediment and water discharge are more easily constrained. For example, water and sediment flux

estimates for rivers of the Ferron Sandstone in the Cretaceous Western Interior Seaway of the United States (Bhattacharya et al., 2016), suggests the likelihood of delta formation is 99%. Even though this is somewhat obvious since we know the Ferron contains deltaic deposits, it highlights how our results could be used to predict the presence of deltaic deposits in the absence of outcrop or seismic evidence."

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?

The definition of main river mouth is already provided in the text on P512 and we state that "for rivers with deltas, this is the location of the widest river mouth in the distributary network."

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)?

In this case, we calculate slopes between the river mouth and ALL bathymetric points within a 20-km radius and take the slope as the 75th percentile of all these slopes. This is stated on P8L15-20.