

***Interactive comment on* “Last interglacial sea levels within the Gulf of Mexico and northwestern Caribbean Sea” by Alexander R. Simms**

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The Author presents a detailed summary of last interglacial shorelines around the Gulf of Mexico.

It is clear that many of the studies reviewed for this paper, particularly those of the US Gulf coast did not contain or reported low quality data, specifically palaeoshoreline age control and elevations, and therefore challenging to extract meaningful data to include into the WALIS database.

What was missing is a more detailed description of shoreline/coastal geomorphology, particularly along the siliciclastic dominated US Gulf coast. It is important when comparing the elevations of modern and LIG shoreline elevations, on make inferences on

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last interglacial sea level elevations, that the formations are comparable, i.e., comparing the elevations of a LIG barrier island and modern barrier island is reasonable, but directly comparing a LIG strand plain and modern barrier island is not. It was not made clear in the manuscript that when comparing the average elevations of modern and LIG shorelines that you are comparing like for like. It was also not made clear how the average elevations of modern and LIG coastal geomorphic features were calculated.

Also missing from the manuscript is any detailed description of the sea level indicators used in the calculations of LIG sea level's and their indicative ranges. There was no mention of the influence of GIA along the Gulf of Mexico coast and how this along with neotectonics may result in smaller or larger differences in the relative height difference between modern and LIG shorelines.

While the figures are fine it would be better if there was high resolution DEM imagery or even a topographic profile of the modern and adjacent LIG shorelines so the reader is able to make an assessment on how similar or different they are geomorphically, and whether it is as simple as comparing the relative height difference between the two shorelines or if they are sufficiently different having formed under different metocean/sediment supply regimes that a more nuanced analysis of the indicative range of these sea level indicators is made.

I have made additional comments in the attached PDF file

Please also note the supplement to this comment:

<https://essd.copernicus.org/preprints/essd-2020-253/essd-2020-253-RC2-supplement.pdf>

Interactive comment on Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2020-253>, 2020.

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