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Using isostatic scenarios to assess coherence between continuous and instantaneous sea level indicators through the last interglacial

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As a given volume of ice melt will not have a uniform impact on sea level, glacial isostatic adjustment is an essential tool for reconciling sea level indicators taken from multiple locations across the globe.
We generate four ice loading histories based on the continuous ice volume record of de Boer, the δ18O stack of Lisiecki and Raymo, the composite relative sea level record of Waelbroeck, and our Red Sea relative sea level curve.
Using these ice histories we model relative sea level curves for locations where fossil coral sea level indicators have been published and compiled into a standardised database. Although we apply screening criteria to the coral datapoints, preferentially focusing on those samples that are less likely to have undergone diagenic alteration, the fit between the sea level curves and the coral indicators is unsatisfactory. The relative sea level curves do not replicate the duration and amplitude of maximum sea level that is found in the coral record during MIS5e. We therefore explore three isostatic scenarios, whereby ice volume is reduced over the interglacial, the duration of the interglacial is extended, and the duration of the preceding glacial is extended in order to constrain possible explanations for the variations between the different records. We find that the continuous records require either a longer interglacial period or a combination of longer interglacial duration and less interglacial ice volume in order to more closely replicate the coral record.