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Interactive comment on "A standardized database of Marine Isotopic Stage 5e sea-level proxies on tropical Pacific Islands" *by* Nadine Hallmann et al.

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I think the tropical Pacific islands are a key area for sea-level reconstruction. I was curious to see the data delivered by these islands for the late Pleistocene. I was puzzled by the approach used here: the sea-level indicator is a coral-reef terrace; its IR is determined from the average water depth of a single coral species; the two selected databases (OBIS, IUCN) used to determine the average water depth provide similar, but in some cases also very different minimum and maximum living ranges for individual species. As a result, the IR of the indicator range from 2.7 m to 30.0 m. For the Yucatan peninsula Simms (2020) uses the same indicator and determines an IR ranging 1.0 – 9.1 m because his corals grow in Atlantic waters and he follows Hibbert et al 2016. For Rovere et al. (2016) the IR of the terrace range from the lower low water

down to the "end of forereef" and the wave-breaking depth, respectively. Knowing that the islands are different in terms of their geological setting, the generalised indicator ("coral reef terrace, general description") prompts questions. Do the Pacific tropical islands all show a coral-reef terrace and is the flat surface of the individual terrace indeed the surrogate for the contemporary sea level? Low-lying reef islands (e.g. Marshall Islands) are often characterised by net gain of sediment mostly through ocean over-wash especially during highstand (e.g. Tuck et al. 2019; Geology). For the Tuamotu atolls Camoin et al. (2001) describe three different facies zones that would characterise the reef flat, each with a slightly different relationship to energy and nutrient supply, hence local parameters. Do these facies zones respond coherently to the change of accommodation space? The spur and groove studies (e.g., da Silva et al., 2020; Coral Reefs) do not support this idea. The reef terrace may be a useful indicator when the uplift is faster than the eustatically-induced change of accommodation space. Therefore, using a coral terrace for calculating the uplift rate of an emerging shelf situated at the plate boundary (e.g., Huon Peninsula) may be a reasonable approach. Gino de Gelder and others show that the hypothesis can be tested. Looking at the studies of Grigg (1982), Perry et al. (2011, 2012), Tuck et al. (2019), Montaggioni et al. (2019), Masselink et al. (2020) or Duce et al (2020; QSR) – all draw a highly divers picture of coral-reef islands. This suggests that the palaeo-sea level should not be calculated from a single datapoint and that the reef terrace should not be the sole indicator. One size doesn't fit all.

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