## General comment

The manuscript represents a substantial contribution to scientific progress in regard to the link between Pacific ENSO and Indian Ocean ENSO. The conclusion reached in this paper brought substantial new proof concerning the lack of impact of ENSO on the central Indian ocean warming.

The manuscript is on average well written, title clearly reflect the contents of the paper, the abstract does provide a concise and accurate summary of the study. The method used in this paper are thorough, with multiple validation techniques to study both the instrumental data and the coral-derived data.

One modification could be to re organize a bit your result section - you might want to do less sections but more structured sections.

## Specific comments

- l104: "ENSO Indices" There is in my opinion more recent ENSO time series that you coul have. Why did you chose to use only "old" reconstructions?

- l137: "concentration of approximately 8ppm Calcium". I'm a bit surprised by this value. Usually with 0.6 mg of carbonate powder in 6mL you are getting 50ppm of Calcium. Additionally, Villiers et al. (2002) that you are citing above recommend analyzing between 40 to 60 ppm of Ca.

- l140: Can you, please, indicate why you did not use any CRM such as JCp-1? Can you, please, be more specific and give the mean % of recovery ± SD and the N values

- l149: "We assigned the highest Sr/Ca value to the SST minimum of each year and interpolated linearly between these anchor points to obtain a time series with equidistant time steps" Which software did you use? Why only interpolate between two consecutive high values? Why not between two lows or between one high and one low as it is usually the case?

- l193: I would have liked to see how you determine the annual mean (average between two max Sr/Ca) ? and how did you determine the standard error?

- l218: Can you please explain how and especially why you decided to detrend the record?

- l223: You should not cite Figure 7-9 while talking about ENSO event frequency, those figures are not at all giving information on frequencies.

- l228: I'm confused l226 you indicate that El Nino events occurs every 5 years between 1965 and 1995 and l228 you mention a recurrence time of 3.6 years ...

- l229: Can you please indicate here which threshold you used when considering an anomaly and therefore considering that it is an El Nino or La Nina year?

- l240: Using data from Quinn (1993). I do believe that there is more up to date studies on ENSO events... I would feel more confident in your results if you had compared to multiple studies.

- l241: "error of each coral age model". What values did you use as a bracket for the age model uncertainty?

- l242: "we added negative SST anomalies occurring in years after the El Niño years to the composite." I do not understand - are those considered La Niña-like events?

- l266: "the greater sensitivity of the corals to reef-scale". Can it reflect also issues with the calibration you used to convert Sr/Ca to SST?

- l301-032: "However, … "Something is wrong with this sentence. How could differences between means are not significantly different with one p value of 0.9 and one of 0.07 …. Additionally, does that mean that the decrease in amplitude of the negative anomalies are not statistically significative?

- l322-323: Can you please develop a bit more on this idea.

- l325: "comparable". Comparable to what? You also need to be consistent, you have been using the term "coral composite" and know you are using "Chacos coral"... it is a bit confusing, we are wondering if you are not referring to something else ...

- l344: You mean the frequency because the strength of the events are different, there is no change in strength of ENSO events in your study during the 20th century (Figure 9).

## Technical corrections

You need to change all the reference of the Supplementary figures as they are wrongly numbered in the text
You need to change the numbering of the Supplementary Figures legends.
You need to cite Figure S1 in the text

- l37 : "There are only some studies including Sr/Ca measurements for SST reconstructions (e.g. Pfeiffer et al., 2006), while few studies included Sr/Ca measurements for SST reconstructions (e.g. Pfeiffer et al., 2006)."There is a problem with this sentence. You wrote twice the same idea.

- l39: "Most studies are focusing on either the western or the eastern Indian Ocean (Abram et al., 2003; Watanabe et al., 2019) and/or are sampled at only bimonthly … " Be careful it is not the study that are sampled at bi monthly resolution but the coral.

- l51: "The modern core was included in a composite reconstruction of large-scale SST (Pfeiffer et al., 2017) and the core top (1950-1995) was shown to record SST variability at Chagos on grid-SST scale (Pfeiffer et al., 2009)." I'm a bit confused by sentence. Maybe should explain a bit more what you had in mind while writing it. One core records more global scale SST variability while the other more the local variability? Is that it?

- l53: "41 years of the Maunder" Can you write instead "41 years during the Maunder

- l54: "39 years of the mid-19th to early 20th century (1870-1909) covering 39 years". You wrote twice the same info about 39 years.

- l55: "We identify past warm and cold events in each record and use these events to compile composites to evaluate the symmetry of positive and negative ENSO-driven SST anomaly events in the tropical Indian Ocean." This paragraph seems out of context here.

- l62: "… water exchange with the open ocean is substantial." Do you specify that because your coral core is from inside the lagoon?

- l98: "Averaged over the entire area of the Chagos (70-74° E; 4-8° S), SST is similar…" It would be interesting to add the mean values for both sites.

- l104: "ENSO Indices" You might want to introduce this paragraph as the time series you will compare your records to? Or something in this line.

- l125: "The core top (1950-1995) was shown to record SST variability at Chagos on a grid-SST scale (Pfeiffer et al., 2009). The entire record was included in a composite reconstruction of large-scale western

Indian Ocean SST (Pfeiffer et al., 2017)." Those sentences are similar to the ones l51 that I did not understand. The top core was comapred to grid-SST data and it maches perfectly and then the entire record was used in a coral composite but with which other corals? Can you, please, add more information here.

- l128: "From the slabs of the sub-fossil corals, powder samples were drilled at 1 mm increments using a micro-milling machine (type PROXXON FF 500 CNC). This depth resolution can be translated to monthly temporal resolution with average growth rates being 12 mm/yr. The subsampling paths were always set along the optimal growth axis that was determined based on x-ray images (Fig. S2)." Can you please add some information on the sampling over laps that you had to do when switching sampling paths? How did you determine the temporal resolution, by looking at the density band or by looking at the seasonal cycles in Sr/Ca data? You might want to move this paragraph up right below where you talk about your new coral core samples.

- l138: "The intensities of Strontium and Calcium were converted into Sr/Ca ratios in mmol/mol." Which method did you use to convert the instrument output in intensity to concentration values 1) the calibration given to you by the instrument? or 2) the deVillier et al., 2002 ratio method?

- l165: Statistic Section : I would like to see this section a bit above as you use statistics in above paragraphs

- l166: "Composite were generated calculating…" replace by "Composite were generated by calculating…"

- l175: Can you please indicate in which occasion you use the t-test

- l188: It would be interesting to have at the end of the Diagenesis section a summary sentence stating that your sampled should all be good for geochemical analysis and that the results should not be impacted by secondary calcification ...

- l189: In my opinion you do not need subsections, but instead a big paragraph labelled Sr/Ca data description, where you describe the results core by core

- l192: Porites needs to be in italic

- l196: "The range …" Is that the mean range or the maximum range?

- l206: Can you please describe how you determine the mean annual cycle?

- l207: "The seasonal amplitudes in coral SST [°C] are slightly higher" You should be using parenthesis instead of brackets

- l209: I do believe you should spend a little more time describing Figure 4.

- l224: "Our results show that,…" I'm guessing that these conclusions derived from Table 4-6: you might want to refer to it as well as indicate some stats about this change of frequency. Maybe the percentage of increased frequency?

- l225: Replace the ":" by "."

- l226: Remove here also the reference to Figure 7-9.

- l241: "referring to Figure S6". Figure S6 correspond to the detcoral Sr/Ca records after detrending. Which Figure are you referring to here?

- l245 – 251: This paragraph should be in the method section.

- 256-258: This sentence has no link with the previous sentence and should be separated from it.

- l259: "we compared". I do not think "compare" is the right word. You do not compare, you use the same technique to discriminates El Nino from La Nina from negative events other than La Nina years, right?

- l263: "All SST anomalies were … of -0.06 mmol/mol per 1°C (see Leupold et al., 2019)." This section looks more like a material and method section. You do not talk at all about what you found.

- l265: "Coral SST proxy". What is that? Is it your so-called ENSO composite?

- l265: "Ocean record similar, but higher anomalies". If it is higher it is not similar. What do you mean by "similar"?

- l269-271: Those two paragraphs talk about the same subject; you should not separate them.

- l274: "from those". You mean from the coral composite, right? It is not clear; you might want to rephrase.

- l288: "On average … (p=0,75)". This sentence is a bit similar to the first sentence of the paragraph, no? You might want to regroup them.

- l293: You forgot the "." at the end of the sentence.

- l298: You need to regroup this sentence with the next paragraph as they discuss the same idea.

- Figure S1 : Can you please add an arrow to actually point at the boulder you sampled? Can you please add a symbol of the lagoon of Peros Banhos site location on your Map