

Interactive comment on “The response of the Peruvian Upwelling Ecosystem to centennial-scale global change during the last two millennia” by R. Salvateci et al.

Anonymous Referee #2

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The paper by Salvatecci et al. "The response of the Peruvian Upwelling Ecosystem to centennial-scale global change during the last two millennia" uses multiple proxies and multiple marine sediment cores to reconstruct linkages between changes in regional precipitation, marine productivity and OMZ expansion and assemble all the data to draw a picture of the changes in the peruvian upwelling ecosystem within a broader climatic context.

The dataset is impressive, and the authors should be commended for a tenacious piece of work while assembling, for the first time, a set of marine cores from a region notoriously known to be perturbed by multiple slumps and sedimentary hiatus which impedes reconstructing oceanic changes from a single marine sequence. The idea to

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standardize all data help visualizing synchronous changes in all the presented various proxies in a rather elegant way.

All the data presented indicate synchronous changes in oceanic parameters with a connection to well defined climatic anomalies of the late Holocene such as the LIA and MCA.

I think the paper should be published in *Climate of the Past* after moderate revisions which I describe below.

I agree with reviewer 1, so I try to comment on other aspects.

In general, I shall suggest the authors to develop more some parts of the article, and reduce very much other parts.

The paper, in general, is not easy to read because it is very lengthy. There are many sentences that could be removed/cut as well as too many repetitions that distract the reader from the main message. I urge the authors to get a critical read over the paper and remove everything obvious or repetitive and try to write the paper in a much more straightforward style.

On the other hand, all the methods are in a lengthy supplement and key informations must be described - even rapidly - in the article.

Following on these general remarks I have some minor suggestions:

1/ You may avoid in some cases assigning oceanic features you describe to ENSO and/or ITCZ, or at least clarify the use of these terms rapidly and keep only one generic term, as it is impossible to disentangle whether changes in oceanic features are due to changes in the seasonal ITCZ or inter annual alteration of the Walker circulation

2/ In the same vein, try to not use the terms "cold/warm periods" while you assign productivity changes associated with the LIA/MCA periods. The temperature pattern during those periods was not uniform, and your way of using those periods is some-

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times awkward (e.g. page 5500 paragraph 5.2 "Our results show that during the cold periods (DACP and LIA), the PUE exhibits El Niño-like conditions with low export production" => if it's El Niño-like I anticipate the LIA and DACP to be warm periods in the peruvian upwelling!)

3/ Please clarify the use of the precipitation proxies. Unlike everything else, you get rid of it in paragraph 3.2.1. using an obscure publication and your description of the "rationale" is not understandable.

4/ Putting upside down the precipitation proxies in Figure 2 would help the eye to visualize synchronous changes in the proxies.

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