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Interactive comment on "Interannual correlations between sea surface temperature and concentration of chlorophyll pigment off Punta Eugenia, Baja California during different remote forcing conditions" *by* H. Herrera-Cervantes et al.

Anonymous Referee #2

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Review of Interannual correlations between sea surface temperature and concentration of chlorophyll pigment off Punta Eugenia, Baja California during different remote forcing conditions, by H. Herrera-Cervantes, S. E. Lluch-Cota, D. B. Lluch-Cota, and G. Gutiérrez-de-Velasco

General comments

This manuscript examines variability in satellite-observed physical and biological conditions in the region of Punta Eugenia, Baja California, over a period spanning approximately a decade. This region, described appropriately as a "biological action center", is

ecologically and economically important, and its study is clearly motivated. The satellite data sets employed are of high quality, and the analysis methods effectively extract from massive data sets interpretable patterns of spatial and temporal variation that can be related to climate / forcing indices (MEI, CUI, water mass anomaly). Overall, I think this study is scientifically sound, meaningful, and well presented.

Specific comments

I think it would be more methodologically sound to bin AVHRR SST to the coarser resolution of SeaWiFS because this way there is no "fabrication" of data by interpolating SeaWiFS to falsely higher resolution. I don't think this would significantly affect the results of EOF decomposition; this is just a comment on the approach chosen.

It is not explained how CUI and MEI were normalized.

Chlorophyll is approximately log-normally distributed (see papers led by Campbell, Chelton, Yoder). In this case, verifiable with your large SeaWiFS data set, statistical analysis is best conducted on log-transformed chlorophyll. The methods do not state that this occurred in the process of analysis, yet it would seem to be particularly important at the stage of computing anomalies normalized to standard deviation, to the joint EOF analysis, and perhaps to correlation of EOF results with climate indices. I think it is worth testing sensitivity of the analyses to log transformation of chlorophyll.

In Figure 2, SST shows high standard deviation along the southern coast of Bahia Sebastian Vizcaino, but Chl does not. This is in contrast to high standard deviation for both variables along the coast further south, and it makes me wonder if there is any issue with fog / cloud contamination of SST along the southern coast of Bahia Sebastian Vizcaino.

In Figure 4, the highest amplitude of mode-1 Chl is north of the point, within Bahia Sebastian Vizcaino. There is no mention of this seemingly significant result, and the reader cannot tell if the description "off Punta Eugenia" includes both west and north

of the point. This should be clarified.

Page 9, Lines 12-14: It is stated, "The amplitude time series corresponding to the joint EOF1 is not shown since they are identical to those of individual EOF1 in Fig. 4c. I don't understand how this is possible. A joint EOF would include the variance of the two time series together, thus it would not be possible to get an identical amplitude time-series as those computed from EOF decomposition of the original variables individually. Please clarify.

Figure 7 is based on anomalies, so the description in the conclusions that this (undoubtedly important) biological action center around Punta Eugenia has "levels of pigment concentration [comparable] with that of high latitudes" is not supported by the analyses presented, and it is not likely to be accurate considering the magnitudes shown in Fig. 2 (values < 2 mg/mˆ3).

Technical corrections The authors have done an excellent job making a set of focused results on a complex topic quite understandable. The text contains many nuances that would naturally result from authors having English as a second language, however these do not interfere with effective communication of the scientific results. If the journal wishes to maintain a more strict requirement for language, it would be appropriate to have a native English writer edit the manuscript.

Interactive comment on Ocean Sci. Discuss., 10, 853, 2013.