

Interactive comment on “Seasonality in Planktic Foraminifera of the Central California Coastal Upwelling Region” by C. V. Davis et al.

Anonymous Referee #1

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General Comments This paper presents monthly planktonic foraminifera data from plankton tows recovered along a series of stations crossing the California coastal upwelling system, from the coast to the offshore. The study highlights the differences in the planktonic foraminifera community related to the upwelling seasonality and resulting hydrography, via PC analysis of the environmental variables and each of the four most abundant species. Side aspects of the paper investigate the veracity of the well-accepted empirical relationship between planktonic foraminifera coiling direction and water temperature, and the possible effects of ocean acidification on planktonic foraminifera assemblages.

The paper is well written and organized and reports important results both for paleo-reconstructions as for the potential acidification direct effect on specific planktonic foraminifera and indirect effect on the ecosystem via an alteration in the food web.

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One of the main findings of this work relates to the confirmation that the dominant species during upwelling events differs within and between coastal upwelling regions, confirming the need for regional proxy calibration studies, if species are to be used in the reconstruction of past conditions.

Specific Comments Planktonic foraminifera abundance is presented throughout the paper just as total number without any indication, not even in the methods section of the volume of water in which they were counted. Data can only be compared if the number of liters of water filtered at each station was the same, but that seems not to be the case, since the water depth was different between the coastal and the offshore stations. As such, the reader needs to know what do the numbers really mean.

Assemblages composition as % abundance, as shown in figure 3 for the inner most stations should indeed be shown for all the stations in comparison with the total number of foraminifera. This data could be presented as a supplement figure substituting the one (relationship graphics) of the present version.

Are the counts shown on figure 8 from the integrated 200m tows? Why then are the environmental parameters shown only for the top 100 m? Considering that during the full moon phase the total number of a particular species of planktonic foraminifera can increase by 4-5x or even 1 order of magnitude, it would be good to have a graphic showing total abundances for each species together with the most important environmental parameters in one graphic where the different moon phases are also indicated.

Technical Corrections Section 3 is Results and not Methods

Table 2 is difficult to read as presented, it would be better to show a correlation matrix
Figures 2 and 7 – The program used generates some very strange patterns that need to be revised.

Figure 3 – the graphics have to be bigger and the figure should also include the total abundance of foraminifera observed at each sampling time and station.

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Supplement figure - The graphs presented in the supplement file do not add any useful information other than showing that the two variables are not at all related between them in the great majority of the cases.

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