Biogeosciences

Discussions

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Interactive comment on "Living coccolithophores from the eastern equatorial Indian Ocean during the spring intermonsoon: Indicators of hydrography" *by* Jun Sun et al.

Anonymous Referee #1

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Reviewer Comments: The authors have attempted to use of living coccolithophores as indicators of hydrography. Authors have tried to relate/use statistical methods to validate their hypothesis. However, there are many weaknesses in the manuscript. I will comment one by one which must be addressed before publication can be considered. Major points Abstract: The abstract should be more precise. It should address the major outcomes of the paper. The current abstract is too simple and it is difficult for the reader to understand what authors are keen to convey. Introduction: The introduction is very weakly written. First few lines in the Introduction address global issue which is irrelevant for the current subject of the manuscript. The first paragraph can be written after the introduction or in the methods under the heading hydrographic set-

tings. Introduction should start with Second paragraph beginning with introduction of coccolithophores. Introduction to coccolithophores should be more precise. For ex. "Coccolithophores are unicellular microalgal flagellates with diverse life cycle"... authors should explain what kind of life cycle they have. The white water mentioned in the line no 12, happens during bloom condition, calcareous nannoflora usually dominate in the open ocean plankton community............. There are many authors who have described where coccolithophores usually dominate. Line 23- coccolithophore cell is not a coccosphere. Please see definitions of these terms in the Young et al., 1997- 'Guidelines for coccolith and calcareous nannofossil terminology'. Also, as written in line 23, coccoliths on spheres are not used for paleoceanography, it should be coccoliths preserved in the sediments and authors should be describe how they are utilized Line 25- Community structure and ecological distributions in the Atlantic Ocean have been documented by McIntyre et al., ... etc. (1) McIntyre et al studied nannoplankton in the Pacific and not Atlantic. (2) Reference of Baumann et al., (1999) is not in the reference list. Similarly, Honjo and Okada (1974) reference is missing in the reference. Line 29- Most of the coccolithophore studies were limited to surface waters is not true. There are many recent studies carried out which are not listed in the introduction. Author listed references are both from sediment and water. Authors should refer recent published papers and write introduction more precisely including recent references. Line 30-33, all studies listed here are not carried out during monsoon. For ex. Mohan et al studied ecology of coccolithophores in the Indian Sector of the Southern Ocean during austral summer.... Not during the monsoon season. Page 3-Line-1-4. Objectives should be more precise.

Materials and Methods The methodology needs to be explicit. It is difficult to comprehend how authors did all the analysis (chlorophyll a, phytoplankton, PIC, POC) in 400-500 ml water. Line 12-15- I wonder, is it a phytoplankton analysis or coccolithophores? How much water was filtered? It sounds like samples were analyzed on light microscope, if so authors should give light microscope images along with SEM images. How many coccospheres and coccoliths counted at each station? How coccolithophore

abundance was calculated? How much water was filtered for size fractionated chl-a, why size fractionated chla analysis was carried out? How PIC and POC was measured? Nothing is written about PIC and POC measurements. I am not sure if the method described here can give good estimates of coccolith calcite or coccosphere carbon biomass? Authors should use statistical tools which are relevant to the study.

Results and discussion Results are very weakly written. Hydrographic features should be more informative. Authors provided 19 figures and 4 tables but this data is not discussed properly. I am not sure if all this statistical analysis is essential to talk about ecological preferences. And, the Coccolithophore ecological preferences which are given in the manuscript are not new. The discussion is somewhat misleading. Authors tried to provide information on factors affecting coccolithophore assemblage structure without providing vertical temperature, salinity, nutrient and other necessary data. Authors have reported only few species. Probably, water filtered was not enough to study coccolithophores in water samples (300-400ml or less than that?-as written in methods, this is grossly less or they need to check their records). For providing ecological preferences, authors should use all the physico-chemical parameters (surface and vertical depth) and draw firm conclusion. References Some references are missing the reference list which is listed in the introduction and discussion. Authors should check all references again and cross check with the text. This manuscript requires gross revision and much more additional information to improve it further. Manuscript should focus on key points and should have strong hypothesis. I have pointed out some, corrections in the text which needs to be answered. The quality of language used is below standard and I don't think this manuscript will be of publication quality of BGD even after revision.

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