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Biogeosciences Discussions

Interactive comment on "Export fluxes of dissolved inorganic carbon to the Northern Indian Ocean from the Indian monsoonal rivers" *by* Moturi S. Krishna et al.

Anonymous Referee #2

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BG-2018-4 "Export fluxes of dissolved inorganic carbon to the Northern Indian Ocean from the Indian monsoonal rivers" by Moturi S. Krishna et al.

The manuscript by Moturi et al. presents an extensive database on the DIC fluxes to the Indian Ocean from the monsoonal rivers in the Indian subcontinent. It is clearly the outcome of very hard work, which resulted in this important dataset. As such, this work is valuable, and I can imagine that if published, this dataset would be used by modelers and other researchers. However, at its current form, the manuscript suffers from two essential drawbacks, which in my opinion, should be corrected before the manuscript can be published or even properly reviewed. My first and main concern is with the

quality of the presentation, namely the writing. The manuscript is heavily burdened by numerous grammatical mistakes, redundancies, and unintelligible sentences. Since English is not my native language, I am well aware of how hard it is to write in a foreign language, and therefore, I strongly urge the authors to have their manuscript edited by a native English speaker and/or by a professional editor. My second concern is with the somewhat superficial interpretation of the data. The authors relay heavily on correlations to investigate the relations between different characteristics of the rivers, but correlation do not necessarily imply cause/effect relations or, as the author argue in the discussion section. Therefore, the conclusions the authors draw are rather general, and do not go much beyond the data itself. Consequently, the manuscript has more resemblance to a report, and may be more appropriate to publication as such. I would recommend the authors to consider more carefully how this dataset can advance what we have already learned from previous works. At its present form, it is very hard to evaluate the scientific contribution of this work, and therefore, I recommend that this discussion paper be withdrawn, and perhaps submitted ab-initio after it has been thoroughly edited and revised.

General comments:

1) Grammar: The text is laden with grammatical errors. The first sentence in the abstract, for example, is flawed. So are lines 19-22, 65-68, 177-178 and many more. The usage of connectors ("However", "Though", "Despite" etc.) is wrong throughout the text. 2) Writing: Many sentences in the text are excessively long and incomprehensible (e.g. lines 30-35, lines 225-232). Reading sentences that contain more than 80 words, 11 values and more than 10 references (lines 225-232) is extremely demanding, and prevents the reader from understanding the messages that the authors try to convey. 3) Cumbersomeness and redundancies: Far too many results are incorporated in the text, instead of being presented as figures (e.g. lines 225-232, 247-250). This makes the manuscript cumbersome and turns the reading into a very demanding task. Some statements repeat themselves along the text (e.g. lines 176-177 and lines

216-217), making the text needlessly long. In some parts of the manuscript, there are no references to existing figures. Instead, the authors re-cite the values (see previous comment), whereas in others, the authors refer to relationships which should have been presented as figures (e.g. lines 263-264. See also detailed comment #22). 4) Units: The authors report most of their DIC data in mg l-1. This unit is somewhat archaic, and unclear. To what does the "mg" refer? Bicarbonate? Carbon? The more explicit concentration units of mol l-1 or mol kg-1 are much more common in the current literature. The authors themselves use mol kg-1 in the methods section. In the same section, they use percentage to describe the accuracy. This usage of multiple units for the same parameter is needlessly confusing. I recommend reporting all the results in mol l-1 or mol kg-1. 5) Error propagation and significant figures: In the methods sections, the authors report the analytical errors associated with their concentrations measurements. However, they do not propagate these errors to the DIC fluxes. In addition, the authors report too many significant figure compared to the error they report. 6) Figures and missing figures: Figures 1 and 2 are clear and informative. The rest of the figures are correlations, and could be presented in one or two panels. For some reason the authors did not include figures for some of the correlations they describe in the text. I cannot understand why.

Specific comments: (please note that I did not include all the grammatical errors in the text).

1) Line 10: change to "rivers are an/a important/significance source of. . ." 1) Line 19-22: revise this sentence. The usage of connectors is grammatically wrong. Use "enriched" instead of "caused the enrichment". Also, the "stable isotopic composition" cannot be "enriched". Use either "enriched in 13C" or "increase δ13CDIC values" 2) Line 25: The sentence is grammatically wrong 3) Line 30: define "yield of DIC" 4) Lines 30-35: This sentence is too long and unintelligible 5) Line 56: "The Mississippi river" 6) Line 65: How do the fresh water discharge, and suspended sediment load relate to the fluvial carbon fluxes? 7) Line 67: The sentence is grammatically wrong 8) Line

71: change "estimating" to "estimations" 9) Lines 73-76: Most of the rivers mentioned in this paragraph are located between 30°S - 30°N. So why do the authors claim for ". . .paucity of data" (line 72) for this region? 10) Lines 76-81: The sentence is grammatically wrong 11) Line 82: The phrasing of this sentence is awkward, consider revising 12) Line 154: The units here are different from the units used in the text. Please be consistent. It is advised to use mol kg-1 throughout the text 13) Line 155: change "Scripts" to "Scripps" 14) Line 157: If the CRM from Andrew Dickson lab is used, 0.3 % equals approximately $\pm$ 6 μmol l-1. This is considerably larger than the precision the authors report in line 154. This error should be propagated along with other sources of error, to calculate the error on the flux estimations and DIC yield 15) Line 177-178: This sentence's phrasing is awkward, consider rephrasing 16) Line 179: If the error is in the second significant figure, it makes no sense to report 4 significant figure. Change 30.86$\pm$1.23 °C to 31$\pm$1 °C (and throughout the rest of the manuscript) 17) Line 205: remove the comma after "The estuaries" 18) Lines 216-217: This was already stated in lines 176-177. 19) Line 232: These values were already mentioned in line 224. 20) Line 236: I suggest that the mean values be added to figure 1 or to figure 2 21) Lines 247-250: There are way too many values in this sentence. 22) Lines 255-277: The authors describe 4 correlations here. None of them is shown in a figure, whereas other correlations are. Why did the authors chose not to show there correlations in figures? Since the readers cannot see the fit the authors used, there is no point in mentioning the (very poor) R2 values. 23) Line 328: The sentence is grammatically wrong 24) Line 501: Add the NIO number or remove this sentence

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