

Interactive comment on “Sea–air CO₂ fluxes in the Indian Ocean between 1990 and 2009” by V. V. S. S. Sarma et al.

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Received and published: 2 September 2013

General Comments

Modelling and inversion methods are often used to assess the role of the undersampled Indian Ocean in the global carbon cycle, therefore it is important to evaluate and compare these methods, over various spatial and temporal scales.

Sarma et al have carried out a thorough investigation of different approaches to estimating CO₂ fluxes – observations, ocean models and inversion techniques. The differences between the approaches are then evaluated, and put into the context of the drivers of the carbon cycle in the different sub-regions of the Indian Ocean.

This multi–institutional, multi-disciplinary effort has produced a paper that is easy to

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follow and is logically organised in spite of the large amount of information and interpretation contained within.

Therefore, I recommend that this paper be published with only minor changes, which I describe below.

Specific Comments

Figure 1 could be improved to make it easier for the reader to identify features described in the text, For example: add the latitude and longitude labels to the map, identify Bay of Bengal, Indonesian Flow Through and other features mentioned in the text. It would also be helpful to have a Table or extension to the Figure 1 legend that has the position and location names of the atmospheric monitoring locations.

There are many abbreviations which often make the text difficult to read without referring back to the definition. I suggest that some of these abbreviations be written in full each time eg IAV – interannual variability. The Indian Ocean Dipole / Zonal Mode is sometimes referred to as IOD/ZM and sometimes as IODZM. The abbreviation should be consistent.

Technical Corrections Page 10762 line 25 ... Indian Ocean... Pg 10763 line 1 change words to maxima and minima Pg 10767, move sentence “In our subsequent. ...climatologies” to the end of the paragraph. Pg 10781 line 23 change word to suggesting Pg 10786 line13 – net work is one word Pg 10786 line14 – incorrect word, accumulate should perhaps be accurate

Interactive comment on Biogeosciences Discuss., 10, 10759, 2013.

BGD

10, C4696–C4697, 2013

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