Anonymous Referee #1

Received and published: 12 March 2013

We thank Anonymous Referee for their comments.

Abstract: Line 1. "We investigated...."

--- Past tense,.. ok

Line 2. What are interleaving regional water masses?

--- In a sense, the whole paper is a description of these. Regional water masses (Gyral Current, ITF flow, STSW) meet and mingle in the study area to form the headwaters of the Leeuwin Current. As they do so, significantly different densities (which change both temporally and spatially) cause the water masses to interleave in multiple layers, rather than a) mixing or b) layering one above the other in a more simple fashion. We will clarify this more fully in the manuscript.

Line 6. Define LODHN in the abstract Pages aren't numbered!

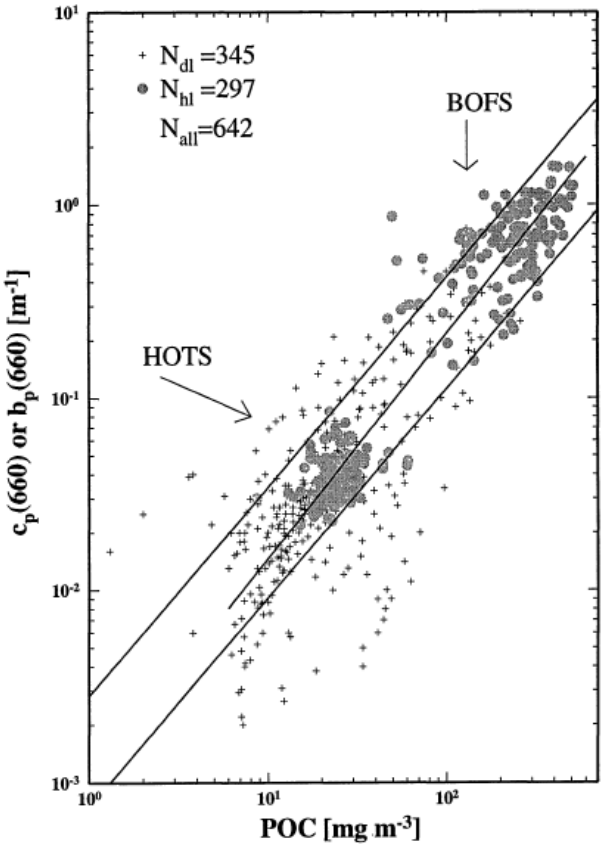
-- LODHN will be defined; Pages will be numbered

In Materials and Methods state when the Primary Cruise took place

-- 10 May to 22 May 2010

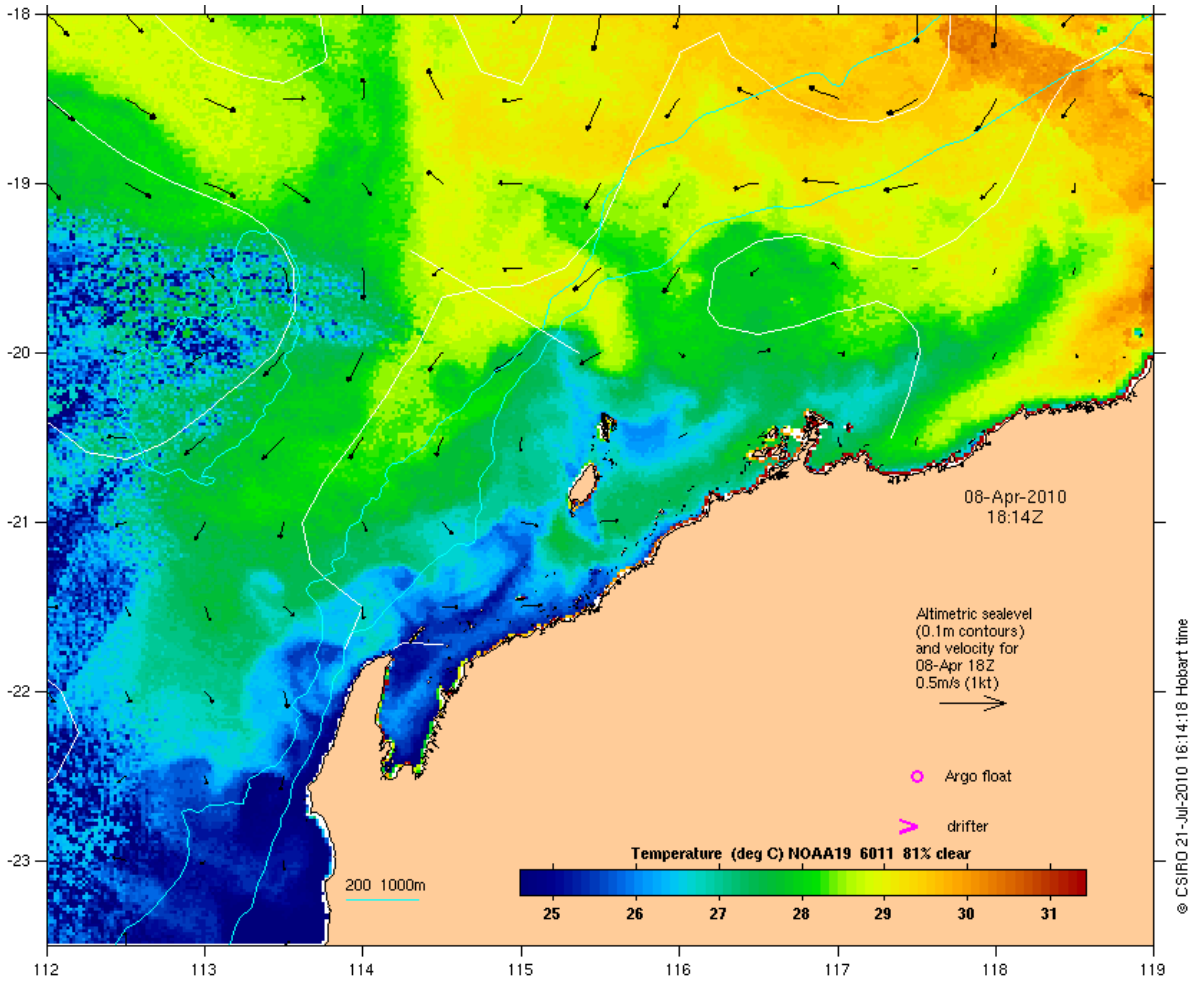
In next page. You measured "particles" with the transmissometer. Could the transmissometer have measured inorganic as well as organic particles and also CDOM? You are assuming it is only measuring POM, but that may not be a valid assumption.

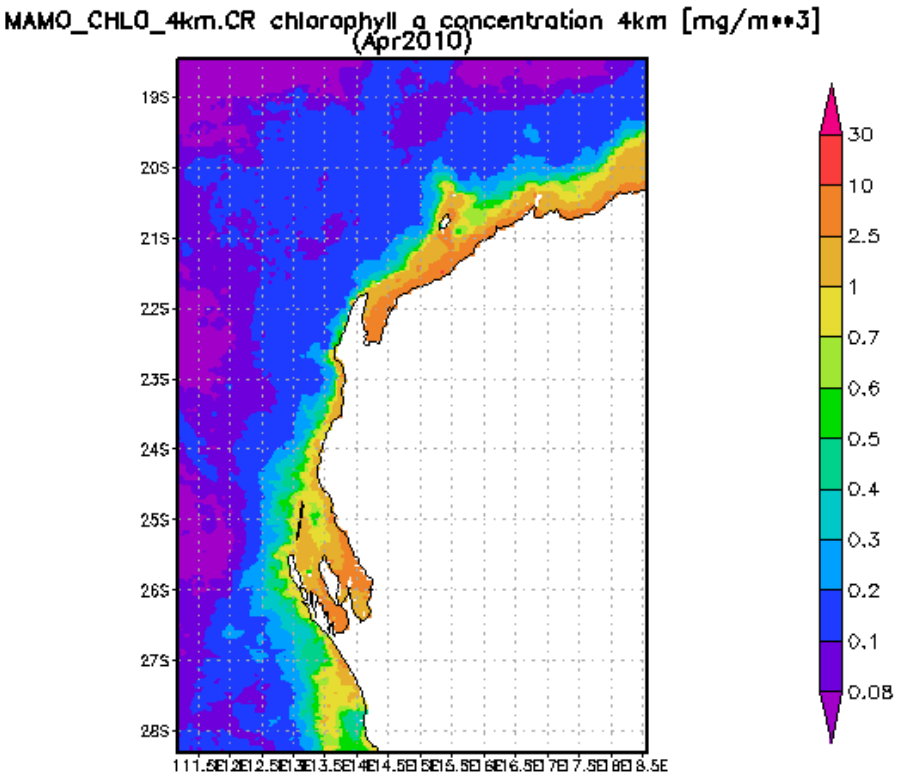
-- This is a fair question - however, in Case 1 waters such as these, in very oligotrophic environments, POC and transmission are linearly correlated, with most of the scatter contributed by particles between 0.5 and 10 microns (Loisel and Morel, 1998). There are few, if any, sources of inorganic matter or CDOM. We are currently working on a POC vs transmission relationship for the eastern Indian Ocean (as yet unpublished); this work confirms that POC is the best predictor of transmission in these waters.



In page describing the early Transit Voyage the location of the Trichodesmium bloom is only vaguely described. I think that a figure showing the area of the bloom as well as where you saw the LODHN layers would be helpful.

-- I observed the bloom, present continuously over ~2 days' steam when transiting between Ningaloo and Broome between 7 and 13 April 2010. Satellite data show a bloom associated with a warm plume from the north (see green 28-29 degree water).





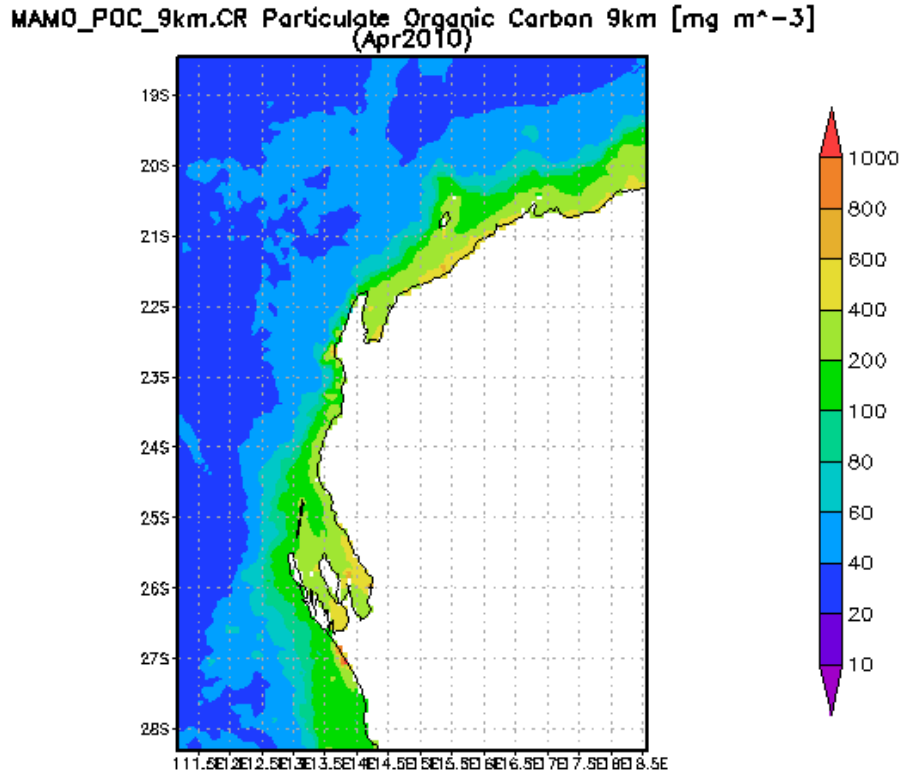


Figure 1 is pretty tiny. I suggest a larger and clearer figure.

--We will make the figure larger

In discussion section 4.1, you talk about a "hot spot" for remineralization. Please be more specific about what you mean by remineralization.....of what?

-- Particulate organic matter, originating in a large part from N2 fixation

Section 4.2 Be more specific about what these "particles" are. Could they be inorganic as well as organic?

o we have addressed this above

The manuscript would be a lot better if the authors could be more specific.

Interactive comment on Biogeosciences Discuss., 10, 3951, 2013.