

Responses to comments from reviewers on the paper "Reconstruction of super-resolution ocean pCO₂ and air-sea fluxes of CO₂ from satellite imagery in the Southeastern Atlantic", by I. Hernández-Carrasco et al.

The comments to authors are quoted in italics. Our responses are provided below every comment.

Comment:

Include a short statement (summarizing the explanation provided to the editor), clarifying the referee-query about pCO₂ and xCO₂. This should follow the section on data description referring to use of GLOBALVIEW data (after line 240).

Authors:

Here is a summary of the response provided to the editor in the previous revision and now inserted after line 240:

“The partial pressure of CO₂ is determined from its mole fraction (xCO₂), using the following equation (Dickson et al., 2007): pCO₂ = xCO₂ . p, where p is the total pressure of the mixture. We assume this pressure to be close to 1 atm for the conversion following ORNL/CDIAC 105 report (Program developed for CO₂ Systems calculation).”

Comment:

Please check of the status of the “Sudre et al.” ms before quoting and listing as reference (line 434, lines 548-9): is there further indication whether this ms. is yet accepted? doi? If not quote where appropriate as “pers. comm.” or remove.

Authors:

The status of reference has been updated.

Comment:

“Nb” is not an accepted abbreviation for number : use “No.” throughout; check tables.

Authors:

We have replaced “Nb” with “No.” in all tables.

Comment:

Ensure that offshore Benguela is referred to throughout e.g. line 708 insert “offshore”. Your findings do not address the actual Benguela upwelling.

Authors:

We have included offshore in line 708 and now the sentence reads: “..... we see that in the southern part offshore of the Benguela area there is a strong

Comment:

The grammar and language usage must be improved throughout to give flow and better understanding to the text. Some obvious improvements are suggested:

Authors:

We have read carefully the whole manuscript and we have tried to improve the English.

Line No	Correct
5	<i>Bracket pCO2</i> Authors : Done
38	<i>Remove “in particular”</i> Authors : It has been removed
57	<i>Image</i> Authors : Corrected
63-64 <i>improve</i>	<i>remove “we can find the work by”Takahashi et al. (2002, 2009) that interpolate.....</i> Authors : The sentence has been modified
72	<i>Remove “Beside the Takahashi’s works”</i> Authors : Done
73	<i>Change to “recently been”</i> Authors : Done
75	<i>Remove “later”</i> Authors : Removed
77	<i>Approaches</i> Authors : Corrected
78	<i>have been</i> Authors : Corrected
81	<i>Remove “an”</i> Authors : Removed
84	<i>.....on direct remove “the”</i> Authors : Removed
97	<i>Remove “of”</i> Authors : Removed
113	<i>Comma after flow</i> Authors : Inserted
121	<i>and Turiel....</i> Authors : Inserted
122	<i>allows study of its</i> Authors : Corrected
140	<i>current</i> Authors : Corrected
149	<i>flux</i> Authors : Corrected
153	<i>descriptions</i> Authors : Corrected
168	<i>Remove “more precisely”</i> Authors : Removed
175	<i>This paper.....</i>

	Authors : Done
237	<i>Change to “ We use values taken at the closest sea-level station to the Benguela, located.....</i> Authors : Changed
258	<i>Change sentence order : sentence “Examples....” before sentence beginning “Results...”</i> Authors : Changed
268	<i>Leave out “when dealing with CO2 for instance”</i> Authors : It has been removed
386	<i>cruise</i> Authors : Corrected
396	<i>Insert “With that functional.....”</i> Authors : Inserted
405	<i>Change “like” to “such as”</i> Authors : Done
254	<i>Change “with” to “to”</i> Authors : Done
468	<i>carbonate</i> Authors : Corrected
478	<i>“These” and “they” (line 482) – clarify ? results of Montes et al. ?</i> Authors : This has been clarified
492	<i>Improve :concentrations (SST and Chl-a) with pCO2, is performed in order to obtain a proxy for pCO2 at high resolution by using</i> Authors : The sentence has been improved
515	<i>functional what? – word missing</i> Authors : This has been corrected
517	<i>Wavelet</i> Authors : Corrected
590	<i>...ability to obtain...</i> Authors : Corrected
653	<i>....MERIS. This is discussed in more depth in the next sections. (delete bracket contents)</i> Authors : Corrected
664	<i>Change “From..... use” to “Henceforward we use.....”</i> Authors : Changed
681	<i>slight</i> Authors : Corrected
698	<i>Delete “will”</i> Authors : Deleted
749	<i>Change “mentioned....combinations”</i>

	<i>to ... "above-mentioned product combinations</i> Authors : Done
755	<i>product</i> Authors : Corrected
757 onwards; fig 8	<i>Clarify (also in label fig.8) whether you mean "compares the spatial distribution of the pCO₂ infer values to the time averages over 2006 and 2008 for the three product combinations"</i> Authors : This has been clarified
807	<i>....51%, and is more affected.....</i> Authors : Improved
825	<i>.....to examine the transition fronts.....</i> Authors : The sentence has been modified
828	<i>Delete "One can see that"</i> Authors : Done
834	<i>...as happens in the ocean.....</i> Authors : Corrected
842	<i>Delete "in particular"</i> Authors : Deleted
849	<i>product</i> Authors : Corrected
859	<i>Most days....</i> Authors : Corrected
860	<i>On some days....</i> Authors : Corrected
862	<i>....fluctuations as</i> Authors : Corrected
866	<i>Delete "on one hand,"</i> Authors : Deleted
882	<i>..due to cloudiness....</i> Authors : Corrected
929	<i>Delete "the fact"</i> Authors : Deleted
944	<i>statistical</i> Authors : Corrected
948	<i>Delete "that"</i> Authors : Deleted
961	<i>scale</i> Authors : Corrected
963	<i>given</i> Authors : Corrected
967	<i>flux</i> Authors : Corrected

972	<i>...have also been obtained....</i> Authors : Corrected
973	<i>Use the word “capturing” not “catching”</i> Authors : It has been replaced
978	<i>Replace “have obtained” with “show”</i> Authors : Changed
984	<i>Delete” From”: These results indicate that....</i> Authors : Done
985	<i>...will be only as good...</i> Authors : Corrected
991	<i>work</i> Authors : Done
992-3	<i>...on the extension.....to larger areas in order to infer.....</i> Authors : The sentence has been modified
994 - end	<i>Clumsy last sentence. Remove “us to perform an even “.....from more in-situ measurements. Remove lines 996,997.</i> Authors : Corrected