

**Review - "Ocean acidification over the next three centuries using a simple global climate carbon-cycle model: projections and sensitivities."**

General issue:

Throughout the manuscript there is a problem with references. These should be written either in the form "Hartin et al. (2015)" or in the form "(Hartin et al., 2015)". I have found errors on the following lines: 97, 122, 283, 348, 366, 399, and in addition most refs in Table 1 and all refs in Table 3. There could of course be other mistakes that I missed, so please check this carefully.

Other comments:

Line 26-27: Beta and  $Q_{10}$  are not defined until line 265-267 (and by the way defined again on line 297-298). I think you should explain these parameters already in the abstract.

Line 47: The "+" in "H<sup>+</sup>" should be in superscript.

Line 69-73: The RCP and CMIP5 acronyms were already defined in the abstract, maybe that's sufficient.

Line 156 and 362: The "sp" in "K<sub>sp</sub>" should be in subscript.

Line 210: "First, he carbon pools..." – change to "the carbon pools".

Line 233: "Recent work, suggests" – remove comma.

Line 236: "Twice" instead of "double".

Line 237: Change "decrease in pH of 7.96" to "decrease in pH to 7.96".

Line 255 and 290: Change "under saturation" to "undersaturation"?

Line 255-257: According to the text: "Even under a best-case scenario, RCP 2.6, low latitude pH will drop to 7.73 by 2100 and to 7.43 by 2300, with  $\Omega_{Ar}$  saturations remaining well outside of present day values". However, according to Figure 6, pH in the best-case scenario is around 8.1 and 8.15 in 2100 and 2300 respectively, while the aragonite saturation steadily increases... so what happened here? – By the way, I would change "saturations" on line 256 to "saturation levels".

Line 288: Pelejero et al. (2010) is not in the reference list.

Line 320: The Section number should be 5 and not 6.

Line 323: "study, calculates" – remove comma.

Line 328: "archive, includes" – remove comma.

Line 331-332: "Overall, we find that parameters directly involved changes in atmospheric [CO<sub>2</sub>] have the most impact" – Strange sentence, I think a word is missing somewhere.

Line 369: Rongudai or Tongudai?

Line 376-379: I would change this section to: "C. Hartin designed and carried out the experiments. C. Hartin, B. Bond-Lamberty, and P. Patel developed the model code. A. Mundra processed data and

designed and prepared figures. C. Hartin prepared the manuscript with contributions from all co-authors.”

Line 386: According to the reference list, the Dore et al. paper is from 2009.

Line 414: Solid/dashed arrows: all arrows in this figure appear to be solid in my copy of the manuscript – maybe use different colors instead?