

Interactive comment on “Spatiotemporal variability and long-term trends of ocean acidification in the California Current System” by C. Hauri et al.

Anonymous Referee #1

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The study investigates the evolution of near surface Ocean Acidification in the California Current System using an eddy-resolving US West Coast configuration of ROMS coupled to a NPZD model. The authors show that despite the large variability of pH and Ω , nearshore ecosystems are already operating outside their simulated preindustrial variability envelope. Furthermore it is demonstrated that the nearshore ecosystem is projected to move out of their present-day envelope as early as 2040. The authors conclude that the combination of naturally low pH and Ω and increasing atmospheric pCO₂ makes the California Current System particularly vulnerable to the effects of Ocean Acidification.

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Overall evaluation: I find this a really good paper that will be interesting for a broad scope of readers. The paper is well written and all necessary aspects are explained in detail. The biases in the simulated parameters with respect to observations cause a little stomach ache, but the authors do a good job in dealing with them. I really only have a few minor points that should be addressed before I can fully recommend the manuscript for publication.

(Pages and line numbers refer to the “printer-friendly” version)

I would appreciate a little discussion on the validity of the NPZD model under low Ω (ar). To what degree can we trust the fixed 7% calcium carbonate formation? See for example Figure 2 in Ilyina et al. [2009, GBC]. Of course we do not know how this ratio will change with Ω . However, it should be stated in the manuscript that great uncertainty is introduced by this unknown relationship.

page 10394 / line 8 “O₂ and S” not O₂ and T ?

Table A2: the last correlation coefficient amounts to 1.08

Figure 2+3 it says “PSD” instead of “PDS” in the axis labels.

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