

Interactive comment on “Seasonal, sub-seasonal and spatial fluctuations in oxygen-depleted bottom waters in an embayment of an eastern boundary upwelling system: St Helena Bay” by G. C. Pitcher and T. A. Probyn

Anonymous Referee #1

Received and published: 30 September 2015

This paper reads somewhat like a collation of data that was available for another purpose thus it is not an easy read. Some assertions made are not supported by the data provided. Most of the references used should be updated. The controversy on evaluating the environmental data from St Helena bay is not addressed. Since the decay of a bloom is used to justify the episodic hypoxia/anoxia it is strange that there is no link between phytoplankton biomass and macronutrient concentrations in surface water since they are the organisms using the macronutrients.

Specific comments: p. 13286, line 5. The ‘red tide’ phrase used here is very outdated.

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I’m not sure if it was used due to the nature of this journal (i.e. not dealing with microalgae), but this term isn’t used readily (i.e. since blooms discolor the water differently according to the phytoplankton species present so it is not always red)

p. 13288, Line 5. Statistical significance of arbitrary samples taken since they were used to ‘correct’ the CTD?

p. 13288, line 18. DO sensor range missing.

p. 13289, lines 2-4. Which measurement took precedence over which (i.e. which was used to verify which, sensor or winkler measurement)? Was a correction factor applied? Was this 12

p. 13297, line 5-10. The statement of NO₃⁻ deficit being indicative of denitrification is not supported by figures 4 B and C (p 13307). As these figures have no means of representing which sample point correlates to which to depict the pathway of NO₃⁻ to NO₂⁻. There are also multiple points that have high NO₃⁻ concentrations and would not show denitrification.

p. 13298, Line 5-7. As there is no sample or information on the phytoplankton community, this increase in bottom fluorescence could also have been due to *Prochlorococcus* instead (See: Lavin P, González B, Santibáñez JF, Scanlan DJ, Ulloa O (2010) Novel lineages of *Prochlorococcus* thrive within the oxygen minimum of the eastern tropical South Pacific. *Environ Microbiol Rep* 2:728–738.)

p. 13304, Figure 1. add a (bouy station signified by the red block) narrative.

p. 13306, Figure 3. A notation missing so hard to correlate to the other figures during the same period. The y-axis units of (D) are incorrect.

P 13307, Figure 4. The y-axis units are incorrect (C)

p. 13309, Figure 6 B-D. The primary y-axis (DO) should start at zero. This will help clarify the presence of anoxic bottom waters.

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