

## ***Interactive comment on “The 2011 marine heat wave off southwest Australia” by T. H. Rose et al.***

### **Anonymous Referee #1**

Received and published: 6 June 2012

This study presents the results of in-situ monitoring of DO and water temperatures in Cockburn Sound during a prolonged thermal heating event in west-Australia. The study compares DO and water temperature records from 4 stations during the heating event, with long-term averages from these stations over the previous 9 years. Very little information is given on the impacts of the heating event on biota, which is the study's weak point, but in view of the likely climate change effects on shallow water embayment's like Cockburn Sound the study highlights the need for more detailed ecological information. I can find no major fault with the study other than the below corrections and suggestions.

Title The title is fine but the uniqueness of the content may justify the use of the study site name in the title. This is a site specific description and it would add value to add "Cockburn Sound" somewhere in the title.

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Abstract The abstract is concise however I would have liked to have seen a comment on the lack of observed ecological impacts of the heating event within Cockburn Sound included. Introduction

Page 1691 Line 24 Please reference “A recent analysis showed that, in the last 30 yr, the number of days of anomalously high seawater temperatures has increased along 38% of the world's coastlines”

Page 1692 line 3. I found the reference to the influence of ambient water temperatures on ectotherms curious. Is there an abundance of ectotherms in Cockburn Sound? If so please make this clearer in the study area description.

#### Study area

More information on the range of sensitive habitats within Cockburn Sound would be useful. For example, what percentage of the 124km<sup>2</sup> is occupied by seagrass, coral, macroalgae etc? Also, what commercial and recreational fisheries operate within this important multiple use embayment and what is their estimated value?

P1694 line 4. Please reference “contributes >\$ 20 billion to the Australian economy each year” Also, what are the most valuable industries within the area?

P1694 line 6 “West” in west-Australian should be lowercase

P1694 line 12. Please be more specific about the range of ecological threats and possible impacts For example, shipping in itself may not be a threat but the introduction of marine pests through shipping may be. Also, it could be argued there is no such thing as a “typical” multiple use coastal embayment.

#### Results and Discussion

Given the paper focuses on the possible ecological impacts on biota, I would have liked to have seen thermal heating (and dissolved oxygen) represented as a cumulative measure. For example, if the number of degree heating days (DHD) or weeks (DHW)

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was known at each site then this may assist in identifying the thresholds of organisms at these sites during future events. Perhaps this information could be incorporated into figure 3 and 4.

P1694 line 1 “general system wide trend” should be removed

P1694 line 7 A cumulative heating/oxygen stress measure would also be useful.

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Interactive comment on Ocean Sci. Discuss., 9, 1691, 2012.

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