

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

**Anonymous Referee #2**

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This paper reports on the effects of an unprecedented marine heat wave that affected the west coast of Australia over a period of 8 weeks. This manuscript uses an 8-year data set to focus on how the marine heat wave altered temperature and dissolved oxygen at a single, but economically and industrially important location, Cockburn Sound. As such this is very descriptive in nature, but provides important evidence, which in conjunction with other studies provides strong evidence for the pervasive impacts of this unprecedented marine heat wave on the physical and biological characteristics of much of the Western Australia coastline. The manuscript is based on changes in physical factors and therefore a weakness, as acknowledged by the authors, is the lack of evidence/support of impact on the biological system. However, given the recognized importance of recording and understanding the impacts of extreme events in the next IPCC review this manuscript provides an important descriptive contribution to this body of literature.

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### Minor comments

• Reference required for second sentence of introduction – Is it possible to mitigate the effects of extreme events at this sort of catchment scale? Perhaps at this scale adaptive management is the best we can hope for. • Reference required after “the strongest La Nina events ever recorded” – I suggest the section on sea-level at Fremantle and the strength of Leeuwin Current may need some additional explanation for those not familiar with the dynamics of the Leeuwin current and how its strength is measured. • Were the 4°C anomalies recorded over a discrete geographic area? If so it may be worth mentioning the geographical extent to place in context with current study. • I suggest cutting the last sentence of the ‘study area’ paragraph as not relevant to this study. • Page 1696 – reference or data required to support the last sentence in the first paragraph. • Page 1697 – what data is there to support the assertion that low DO levels were in response to biological activity. Given the lack of biological data throughout the ms it would appear that this statement would need some level of support.

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

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