Advanced prediction of climate-forced changes in oceanic dissolved oxygen

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Key Points:

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Abstract

1 Introduction

Dissolved oxygen is a fundamental constraint on the marine habitat. When oxygen concentrations fall below "hypoxic" limits, organisms reliant on aerobic metabolism cannot function. Coastal hypoxia can have significant impacts on marine ecosystems and fisheries [*Rabalais et al.*, 2010]. Predictive capacity would be useful.

There are good geophysical reasons to expect high predictability of dissolved oxygen anomalies with long forecast lead, because much of the variability is on multidecadal timescales.

Prediction of biogeochemical state variables in the North Pacific with CESM [*Chikamoto et al.*, 2015].

References

Chikamoto, M. O., A. Timmermann, Y. Chikamoto, H. Tokinaga, and N. Harada (2015), Mechanisms and predictability of multiyear ecosystem variability in the north pacific, *Global Biogeochem. Cycles*, *29*(11), 2001–2019, doi:10.1002/2015gb005096.

Rabalais, N., R. Díaz, L. Levin, R. Turner, D. Gilbert, and J. Zhang (2010), Dynamics and distribution of natural and human-caused hypoxia, *Biogeosci.*, *7*(2), 585–619, doi: 10.5194/bg-7-585-2010.