2014, *Oceanography* 27(1):172–183, http://dx.doi.org/10.5670/oceanog.2014.21

Eutrophication-Driven Deoxygenation in the Coastal Ocean

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Authors

Nancy N. Rabalais | Louisiana Universities Marine Consortium, Chauvin, LA, USA

Wei-Jun Cai | College of Earth, Ocean, & Environment, University of Delaware, Newark, DE, USA

Jacob Carstensen | Department of Bioscience, Aarhus University, Roskilde, Denmark

Daniel J. Conley | Department of Geology, Lund University, Lund, Sweden

Brian Fry | Australian Rivers Institute, Griffith University, Nathan, Queensland, Australia

Xinping Hu | Department of Physical & Environmental Sciences, Texas A&M University, Corpus Christi, TX, USA

Zoraida Quiñones-Rivera | Department of Biology, University of Regina, Regina, Canada

Rutger Rosenberg | Department of Biological and Environmental Sciences, Gothenburg University, Fiskebäckskil, Sweden

Caroline P. Slomp | Department of Earth Sciences, Utrecht University, Utrecht, the Netherlands

R. Eugene Turner | School of the Coast & Environment, Louisiana State University, Baton Rouge, LA, USA

Maren Voss | Leibniz-Institute for Baltic Sea Research, Rostock, Germany

Björn Wissel | Institute of Environmental Change and Society, University of Regina, Regina, Canada

Jing Zhang | State Key Laboratory of Estuarine and Coastal Research, East China Normal University, Shanghai, China

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Abstract

Human activities, especially increased nutrient loads that set in motion a cascading chain of events related to eutrophication, accelerate development of hypoxia (lower oxygen concentration) in many areas of the world's coastal ocean. Climate changes and extreme weather events may modify hypoxia. Organismal and fisheries effects are at the heart of the coastal hypoxia issue, but more subtle regime shifts and trophic interactions are also cause for concern. The chemical milieu associated with declining dissolved oxygen concentrations affects the biogeochemical cycling of oxygen, carbon, nitrogen, phosphorus, silica, trace metals, and sulfide as observed in water column processes, shifts in sediment biogeochemistry, and increases in carbon, nitrogen, and sulfur, as well as shifts in their stable isotopes, in recently accumulated sediments.

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Citation

Rabalais, N.N., W.-J. Cai, J. Carstensen, D.J. Conley, B. Fry, X. Hu, Z. Quiñones-Rivera, R. Rosenberg, C.P. Slomp, R.E. Turner, M. Voss, B. Wissel, and J. Zhang. 2014. Eutrophication-driven deoxygenation in the coastal ocean. *Oceanography* 27(1):172–183, http://dx.doi.org/10.5670/oceanog.2014.21.

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