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TITLE: Expanding Oxygen-Minimum Zones in the Tropical Oceans

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ABSTRACT:

Oxygen-poor waters occupy large volumes of the intermediate-depth eastern tropical oceans. Oxygen-poor conditions have far-reaching impacts on ecosystems because important mobile macroorganisms avoid or cannot survive in hypoxic zones. Climate models predict declines in oceanic dissolved oxygen produced by global warming. We constructed 50-year time series of dissolved-oxygen concentration for select tropical oceanic regions by augmenting a historical database with recent measurements. These time series reveal vertical expansion of the intermediate-depth low-oxygen zones in the eastern tropical Atlantic and the equatorial Pacific during the past 50 years. The oxygen decrease in the 300- to 700-m layer is 0.09 to 0.34 micromoles per kilogram per year. Reduced oxygen levels may have dramatic consequences for ecosystems and coastal economies.

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