



The oxygen minimum zones in the eastern tropical oceans

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The oxygen minimum zones (OMZs) in the eastern tropical Pacific and Atlantic Oceans extend from 200 to 800-m depth and are centered at about 10 degrees north and south of the equator. In the Indian Ocean, the lowest oxygen values in the OMZ are located north of the equator in the Arabian Sea and the Bay of Bengal, with minimum oxygen concentrations at 800 m depth. Climate models predict an overall dissolved oxygen decline and expansion of the OMZs with global warming. Results from analyses of existing measurements and preliminary efforts for a new interdisciplinary research program focusing on the oxygen minimum zones will be presented. We describe supply paths of oxygen to the OMZs by the eastward, tropical current bands through joint analyses of ADCP velocity observations and oxygen measurements. Time series of oxygen profiles from historical data extended by recent observations indicate an intensification of the OMZ in the tropical North Atlantic with a vertical extension of the low oxygen layer over the last 50 years. Similarly, a thickening of the low oxygen layer with time is observed in the equatorial regions of the tropical Pacific and the tropical Atlantic, suggesting reduced oxygen supplies to the OMZs in both oceans.