Hydrographic Variability off the Coast of Oman

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Data from hydrographic transects made in 2001 and 2002 and between 2007 and 2009 were obtained from the Oman Ministry of Fisheries Wealth. Property-depth plots of temperature, salinity, and dissolved oxygen were produced for all transects and in all months for which data were available. These were analyzed for temporal and spatial variability. For all transects, there exist large variability on various timescales, with strong spatial variability. Two common features that are seen in the hydrographic data sets are the Persian Gulf Water (PGW) and a layer of continuous low oxygen concentrations in the lower part of the water column. Plots of salinity produced for transects located in the northern part of the Gulf of Oman show a one-unit increase in salinity of the water at the bottom of deepest station during the months of August and September as compared to the other months. Similarly, cross-shelf contour plots of temperature shows an increase in water temperature near the bottom station during the months of August and September. These indicate the presence of the PGW outflow in the northern part of the Gulf of Oman. For dissolved oxygen distributions, hydrographic transects that did not extend far offshore show monthly differences in the presence of water with low oxygen concentrations. For transects that do extend far offshore and also show a layer of low oxygen water throughout the year, there is generally a monthly difference on whether this water is found close to the surface or deeper in the water column. The variability seen in the data could only be explained by comparing these data to data collected from the real time cable ocean observing system installed by Lighthouse R &D Enterprise in the Oman Sea and the Arabian Sea in 2005. The analysis of these data reveal that the variability observed is related to processes such as ocean conditions, monsoonal cycle, and extreme weather events.

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