



Circulation, eddies and oxygen changes in the Oxygen Minimum Zone of the Eastern Tropical South Pacific

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A large, subsurface oxygen deficiency zone is located in the Eastern Tropical South Pacific (ETSP) revealing a decrease in oxygen over the past decades. Oxygen time series from historical measurements augmented with float data reveal a significant negative trend between 50 to 300 m depth since 1976, averaged in the region of the westward flowing South Equatorial Current and the South Equatorial Intermediate Current between 2-5°S, 84-87°W. This long-term trend, which is related to increasing nutrients might be modified by climate signals such as the Pacific Decadal Oscillation. To understand the ongoing changes in the Oxygen Minimum Zone (OMZ) it is necessary to understand the circulation in the ETSP and its variability, which is still not well described.

In the frame of the research initiative 'Climate-Biogeochemistry Interactions in the Tropical Ocean' hydrographic data from an open ocean and a near shelf cruise leg in November and December 2012 and from floats are used to investigate the large-scale circulation in subsurface layers of the ETSP showing the influence of the equatorial current system, the eastern boundary, and the northern reaches of the subtropical gyre.

On the poleward side of the OMZ the mean flow is overlaid with strong eddy activity. Coherent/isolated mesoscale eddies can exist over periods of several months propagating westwards after formation in the coastal regions. Float data as well as data from the Stratus mooring (~86°W, 20°S) are used to describe the passage of eddies by anomalies in oxygen and hydrographic data.