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Wyrtki Jet Dynamics

M. J. McPhaden and M. Nagura
NOAA/PMEL, Seattle, United States (michael.j.mcphaden@noaa.gov)

This presentation examines the depth integrated zonal momentum balance in the central equatorial Indian Ocean (0°, 80.5°E) using a combination of in-situ and satellite observations. We focus on two periods: 1993–1994 and 2004–2008. Data from the first period were collected by Fritz Schott during the World Ocean Circulation Experiment. Data from the second period were collected as part of the Research Moored Array of African-Asian-Australian Monsoon Analysis and Prediction (RAMA). The record length mean balances for these periods are approximately linear and steady state. Monthly to seasonal time scale variations are also governed by linear dynamics, with imbalances between the pressure gradient force and surface wind stress leading to zonal mass transport variations along the equator. Interannual variations in zonal transports along the equator associated with Indian Ocean Dipole events in 1994 and 2006 are likewise consistent with linear dynamics. These results provide a valuable benchmark for evaluating models of equatorial Indian Ocean circulation on seasonal-to-interannual time scales.