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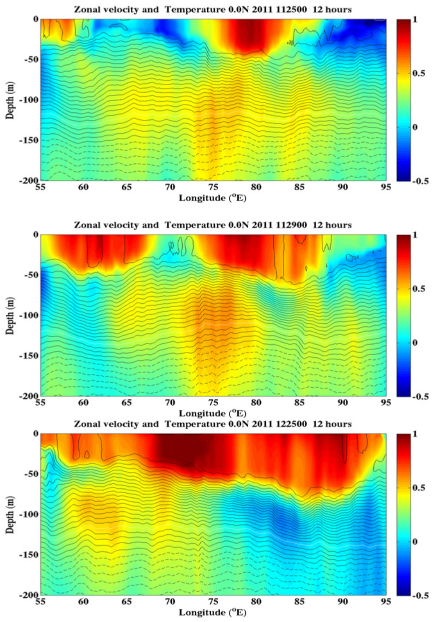

Figure 1. Daily averaged zonal current (color) and temperature (contours) along the equator on 25 Nov (top), 29 Nov (middle) and 25 Dec (bottom). Contour interval is 0.5°C. White line is 20°C.

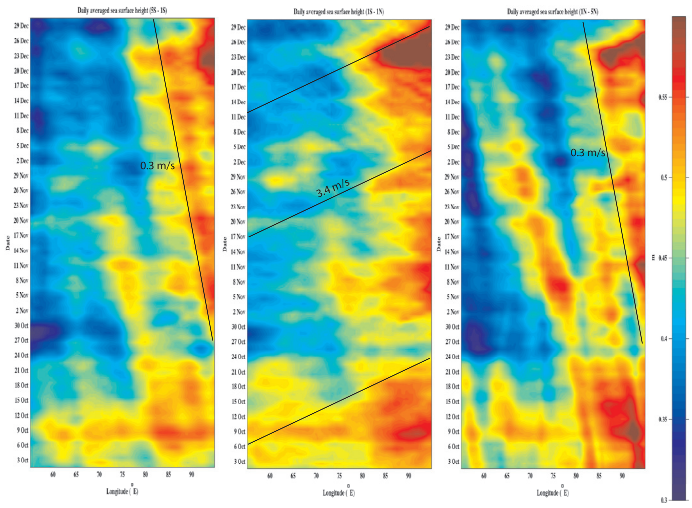

Figure 2. Daily averaged sea surface height (SSH) from 1 Oct to 31 Dec across the Indian Ocean in 3 latitude bands: 5°S – 1°S (left), 1°S-1°N (center) and 1°N – 5°N.

- When an intense MJO event started on Nov 22, 2011, a rapidly intensifying Yoshida jet was generated in the central equatorial Indian Ocean with zonal currents exceeding 1 m/s in the mixed layer. The jet was observed by RAMA buoys and modeled in COAMPS (Fig. 1). By the end of Dec 2011, the jet spanned the width of the Indian Ocean (Fig. 1, bottom). The MJO generated jet is different from the seasonal Wyrtki Jet which has its maximum velocity in the thermocline at about 100 m.
- The sea surface height (SSH) response to each MJO event is an eastward propagating equatorial Kelvin wave (positive SSH anomaly, Fig. 2 center) and off-equatorial negative anomalies propagating westward as Rossby waves (Fig. 2, left and right). Upon reaching the Indonesian coast, a fraction of the Kelvin wave reflects and propagate westward as equatorial Rossby waves with positive anomalies off the equator (Fig. 2, left and right).
- During the inactive phase of the MJO, wind speeds are low and a large diurnal cycle with an amplitude of about 1.5°C is seen in the COAMPS simulations as well as the observations. During the active phase, the diurnal cycle is absent. COAMPS is able to simulate the diurnal warming during the inactive MJO due to its 0.5 m resolution of the upper 10 m of the ocean.