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Impact of atmospheric convectively coupled equatorial Kelvin waves on the upper ocean variability

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Air-sea interaction of Convectively Coupled Kelvin Waves is studied using precipitation, latent heat, wind speed and diurnal ocean surface temperature variability index. The index describing upper ocean diurnal temperature variability in terms of wind speed and solar irradiance was developed based on Sea Glider data collected during special observing period of the 2011 Dynamics of the Madden Julian Oscillation (DYNAMO) field project. The climatology of Convectively Coupled Kelvin Waves based on 15 years of TRMM measurements is developed. Out of 1948 Kelvin wave trajectories identified, more that 40% were active in the Indian Ocean basin. It is noticed that many Kelvin waves propagate in groups with only short period of time separating members of a group. Such waves account for most of the cross basin differences in the overall Kelvin waves activity. It is suggested that although averaged mixed layer temperature is not affected by fast propagating Kelvin waves, its diurnal variability is highly sensitive to wave passage even though the diurnal cycle doesn't have the wake effect in the ocean. Composites of all the Kelvin waves show that although changes in wind speed, latent heat, and temperature index have similar signature in various Madden Julian Oscillation phases the intraseasonal variability modulates the typical response to the Kelvin wave passage.