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SST subseasonal variability in the Benguela upwelling system from satellite observations

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Subseasonal variability of sea surface temperature (SST) in the Benguela upwelling system is investigated using TMI satellite derived data over the period 2000-2008. Spatio-temporal characteristics of subseasonal variability are documented based on Empirical Orthogonal Functions (EOF) decomposition and wavelet analysis. Two regimes of variability are evidenced: submonthly with a dominant 11-days oscillation and a lower frequency intraseasonal with a dominant 61-days oscillation. Both regimes are consistent with Ekman dynamics and are modulated, to a large extent, by the local surface wind stress. The seasonality of the relationship between wind stress and SST for submonthly (intraseasonal) regime is characterized by a marked semi-annual (seasonal) cycle, which is explained in terms of the impact of seasonal change of the ocean stratification on the vertical advection process. The wind-driven SST subseasonal variability is shown to be associated with eastward-propagating disturbance in the mid-latitudes. The results also suggest a role of the Antarctic Oscillation in modulating the intraseasonal upwelling variability. The characteristics of the equatorial intraseasonal Kelvin waves are documented in order to discuss possible impact of remote oceanic forcing on SST variability along the coast in the Benguela upwelling system.