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Attributes of West African convective storms during 2006

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An overview of the thermodynamic and microphysical attributes of mesoscale convective systems (MCSs), observed in West Africa during July to September 2006, will be presented and discussed. Storm antecedent conditions were investigated using a combination of a meteorological flux tower, air soundings, and rain gauges. Also, a polarimetric Doppler S band radar provided the storm characteristics as they transitioned from the continental to maritime region. Strength and organization of the MCSs were associated with favorable antecedent conditions in the continental lower atmosphere, including high specific humidity (18 g kg^{-1}), temperatures (300 K), and strong wind shear. Differences in storm attributes, over land and ocean, were ascribed in part to pre-existing thermodynamic and microphysical gradients found along the land-to-ocean transition. While transitioning off the coastal region, the convective and stratiform regions of the MCSs became weaker and less organized. Such changes in individual storm attributes were linked to less favorable thermodynamic, dynamic, and microphysical conditions over ocean. The differences observed in storm attributes, over land and ocean, were ascribed in part to pre-existing thermodynamic and microphysical gradients found along the land-to-ocean transition. An additional goal of this presentation is to identify differences between precipitation events that developed into tropical storms and those that did not. Spatial precipitation distributions and total storm accumulations were investigated for the incipient MCSs moving from continental to maritime regions in West Africa. Events that did not develop into tropical storms produced more rainfall than events that later evolved into tropical storms.