The characteristics and application of radar refractivity in tropical coastal region

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Low-level moisture is a critical environmental condition to study convective and boundary layer processes. Yet, the high resolution low-level moisture observation is not readily available. Radar refractivity retrieval is a proxy for two-dimensional near-surface moisture fields. Refractivity fields retrieved from weather radars and ground targets can promisingly bridge the data gap to enhance our knowledge on the highly evolving moisture distribution.

In this study, we will present the characteristics of the refractivity retrieved by NCAR S-POL radar during the Southwest Monsoon Experiment/Terrain influenced Monsoon Rainfall Experiment (SoWMEX/TiMREX) in Southern Taiwan. High temporal and spatial resolution refractivity fields illustrate the near-surface moisture variability associated with land-sea breeze, convection evolution and land-atmospheric interaction processes. Previous refractivity study has been focused on the continental environment, and this study provides the near-surface moisture variability in the moist tropical coastal environments.