



Regional Precipitation Climatology of the New York Metropolitan Region

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The warm season (April - September) rainfall climatology of the New York - New Jersey region is examined through analyses of five year simulations (2003 - 2007) using the Weather Research and Forecasting (WRF) model and high-resolution radar rainfall fields from the HydroNEXRAD system. Model simulations use two nested domains with horizontal resolutions of 3 km and 9 km. The study region exhibits pronounced heterogeneities in warm season rainfall that are linked to orographic processes in mountainous terrain, land - water circulations systems along the Atlantic coast and impacts of urbanization through the urban heat island, urban canopy and urban aerosols. Heavy rainfall, represented by daily accumulations exceeding 25 mm, is a special focus of this study. In addition to radar rainfall fields, we use rain gage data, surface flux observations from an eddy covariance station, cloud-to-ground (CG) lightning observations from the National Lightning Detection Network (NLDN), soil moisture observations and radiosonde data for intercomparisons with model-simulated fields. The diurnal cycle is an especially challenging feature of warm season rainfall to capture in model simulations. A special observing period (July 2007) is used for detailed examination of land surface processes, the convective environment and its impact on warm season rainfall distribution.