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**Combining Laser Radar and Radiosonde Measurements to Study the Planetary Boundary Layer** SETH GAGNON, MARCUS ALCANTRA-SILVA, ADRIAN PARNELL, NIMMI SHARMA, Central Connecticut State University, AMIN KABIR, University of Bahamas — Laser radar, or LIDAR, an acronym for light detection and ranging, is a remote sensing technique which, when applied to the atmosphere, can provide continuous observations of atmospheric structure over a range of altitudes. Camera-based Lidar, or CLidar, is a lidar system specifically developed and optimized for near-ground atmospheric studies including those of the lowermost layer of the atmosphere, the planetary boundary layer (PBL). It consists of a laser which is transmitted into the atmosphere and imaged from the side with a CCD camera. The side-scatter of the laser beam is used to derive the extinction caused by suspended particulates in the atmosphere, also called aerosols. This extinction was plotted to help provide a picture of atmospheric behavior in the Bahamas, and results were compared with nearby balloon-borne radiosonde measurements. The radiosonde apparatus rises through the atmosphere measuring many atmospheric properties, such as relative humidity and potential temperature, which provide insights into the dynamics of the PBL. Using these two techniques, the structure of the planetary boundary layer was studied for multiple nights. PBL behavior informs our understanding of weather, climate, and the dispersion of pollutants such as dust or smoke.

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