Coherent Doppler Lidar Backscattered Signal Power Validation Against Direct Detection. Sameh Abdelazim, David Santoro, Mark Arend, Fred Moshary and Sam Ahmed, The City College of New York (USA).

ABSTRACT

Backscattered signal power of a coherent Doppler Lidar (CDL) system for wind sensing was validated against that of a direct detection Lidar system. In coherent detection, the received signal power depends on the overlap integral between the backscattered and local oscillator fields. This overlap is influenced by both the geometric optics considerations of the antenna system and the loss of coherence of the backscattered field caused by propagation through atmospheric aerosol scattering and refractive turbulence. In this study, we present the analysis of range correcting of CDL backscattered signal power and report CDL wind measurements with signal power validation against direct detection measurements.