

Polarization Backscattering Lidar Using a Coherent White Light Continuum

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The white light lidar system employs a coherent white light continuum whose wavelength ranges from the UV to the IR region as the light source and has a potentiality of simultaneous multi-wavelength measurements. In addition, the white light continuum showed the linear polarization similar to the original laser pulse. We carried out depolarization lidar at 450 nm for the first time using a coherent white light continuum. The obtained signals showed relatively high ratios as water droplet clouds. To confirm the wavelength dependence of the depolarization lidar signals, we developed the simultaneous multi-wavelength lidar system. The new lidar system consisted of three depolarization channels at 450, 550 and 800 nm. In the aerosol layer, the observed altitudes of strong signals differ in wavelength. This can be attributed to the wavelength dependence of the aerosol size distribution. Also, noise reduction using wavelet shrinkage at 1D and 2D was performed.