Characteristics of scattering layers studied with high resolution observations by a Raman/Mie lidar and the MU radar

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We have carried out simultaneous high resolution observations of troposphere by the MU radar FII (Frequency domain Interferometric Imaging) measurement and a Raman/Mie/Rayleigh lidar measurement at Shigaraki, Shiga, Japan. The thin layered structure of radar echo below 4 km altitude corresponded very well with the layer of large height gradients of backscatter ratio (quantity indicating aerosols and clouds) and water vapor mixing ratio.
This correspondence was observed even in a region where isotropic turbulence echo was dominant. This result suggests that intense radar echo layers of turbulence scattering are mainly produced at the region of large gradients of refractive index.