

共鳴散乱ライダーによるCa⁺密度観測で見られた電離圏E領域プラズマ中の微細構造

Fine structures in the E-region plasma density of the ionosphere observed by a Ca⁺ resonance scattering lidar observation

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The National Institute of Polar Research (NIPR) is developing a new resonance scattering lidar with multiple wavelengths to install and operate it at Syowa, Antarctica. The lidar will observe temperature profiles and variations of minor constituents such as Fe, K, Ca⁺, and aurorally excited N₂⁺ in the mesosphere and lower thermosphere. In August 2014, it received the first light from Ca⁺ in a sporadic E layer. After that, we increase the resolution of the Ca⁺ observation and have succeeded in getting the Ca⁺ profile with time/height resolution of 5 sec/15 m. As a result of the high resolution observations, fine structures in a sporadic E layer with a vertical width of only 1-2 km have become detectable clearly. In this presentation, we will show the observed fine structures and discuss atmospheric instabilities in the E-region plasma.

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