R005-08
Zoom meeting C ：11/1 AM2 (10:45-12:30)
11:15〜11:30

昭和基地で観測された中間圏カルシウムイオン層の挙動

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Behavior of Ca+ layer in the mesosphere observed with a resonance scattering lidar at Syowa Station

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Layers of metal ions in the mesosphere and lower-thermosphere (MLT) are produced by meteoric ablation. The meteoric metal ions have relatively long chemical life time in the MLT region and behave as plasma affected by neutral atmosphere dynamics. In the mid-latitude, the meteoric metal ions, including Calcium ion (Ca^+), in the MLT region are generally accepted as key species for generation of sporadic E (E_s) layer in the wind shear theory. Thin Ca^+ layer related with the E_s layer was often observed at the mid-latitude [Raizada et al., 2012; Ejiri et al., 2019a; 2019b]. Such thin Ca^+ layer usually descends in the MLT region while rare cases stay at an altitude of about 100 km for a long time. In contrast, thin Ca^+ layer was observed at Syowa Station (69S, 40E) only one night of 6 nights. One of thin Ca^+ layers was staying around 90 km altitude more than 3 hours while Ca^+ chemical lifetime was minutes to a few tens minutes estimated by previous studies at the midlatitude. We estimate a Ca^+ lifetime from observation and compare with a lifetime calculated using number density of neutral atmosphere over Syowa Station by NRLMSISE-00 Atmosphere Model. We will show the results and discuss the Ca^+ lifetime and behavior of the Ca^+ layer by background wind in case that number density profile of neutral atmosphere changes.

References

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