

静止軌道衛星ひまわり8号可視バンドによる極中間圏雲の観測

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Polar mesospheric clouds observation by the visible band of Advanced Himawari Imager on Himawari-8

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Polar mesospheric clouds (PMCs) consist of water-ice particles, and have been observed near the summer polar mesopause region. Production and disruption of PMC are sensitive to the background mesospheric state, such as temperature and water vapor conditions. Its distribution is strongly affected by the background wind. Hence, PMC is a good proxy of the thermal structure and dynamics at the high latitude summer mesosphere. Observations of PMC have been widely performed by various methods from the ground as well as from the space. However, these past methods have some limitations, especially in local time coverage or observational continuity to monitor the long-term PMC activity.

Recently, we reported that PMC emission layers are captured in the limb of the Earth in the full disk image taken by the Advanced Himawari Imager (AHI) onboard Himawari-8 [Tsuda et al., Atmospheric Measurement Techniques, 2018]. PMC data from the geostationary orbit satellite have great advantages on the wide and stable field of views and the local time coverage. PMC observation by Himawari-8 is expected to provide new information on the PMC studies, majority of which are based on the ground-based or low-orbit-satellite observations. In the presentation, we report the PMC signals in the visible band of AHI. The blue visible band (Band No: 1, Central wave length: 470 nm) is the most suitable band for the PMC observation in the 16 bands of AHI. We analyzed the band to examine the PMC signatures in it. The spatial structures and the local variations will be presented. The detection capability, especially the limit of sensitivity, of AHI on the PMC observation will be also discussed.