

Variations in polar mesospheric clouds observed by the Advanced Himawari Imager onboard the Japanese geostationary-Earth-orbit meteorological satellite Himawari-8

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To advance polar mesospheric cloud (PMC) observations by Advanced Himawari Imager (AHI) onboard the Japanese geostationary-Earth-orbit (GEO) meteorological satellite Himawari-8, we have developed a PMC detection method for application to the Himawari-8/AHI full-disk images. The PMC detection method consists of two steps: the detection of stronger PMC signals in the first step and the detection of weaker PMC signals in the second step. By using this two-step detection, we eliminate false detections as much as possible and enhance detection sensitivity. As a result, the PMC detection sensitivity by Himawari-8/AHI is well comparable to that by Cloud Imaging and Particle Size (CIPS) onboard Aeronomy of Ice in the Mesosphere (AIM). By analyzing the detected PMC data, various PMC variations such as quasi-5-day waves and mid-latitude extensions can be revealed. Among them, we focus on interhemispheric coupling, specifically a relationship between PMC occurrence rates in the summer hemisphere and sudden stratospheric warmings in the winter hemisphere.