

# 1 Summer polar mesosphere science using the Odin satellite

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The polar orbiting satellite Odin has delivered data for astronomical and atmospheric research for more than 5 years. In its aeronomy mode, the satellite scans the Earth's limb through the middle atmosphere. During about 100 days per year, Odin performs scans up to 110 km with a particular emphasis on studies of the polar summer mesosphere. In this paper, we review basic results from these studies.

Orbiting around the Earth about 14 times a day, Odin has an excellent global coverage both in time and space. With a height resolution between 1 and 3 km, the OSIRIS spectrograph (Optical Spectrograph and InfraRed Imaging System) provides measurements on minor species such as ozone and aerosols. The second instrument onboard the spacecraft, the submillimeter radiometer (SMR), can supply information on water abundance in the middle atmosphere. Combined, these observations are explicitly suited for the study of noctilucent cloud development in the summer polar mesopause region. In addition, interactions between NLC and mesospheric sodium layers observed by OSIRIS are investigated.

Viewing the atmosphere in the direction of the motion, Odin usually covers latitudes up to about  $82^\circ$ . During the last two southern summers, however, the instruments on Odin were pointed off track and towards the pole. Measurements from these periods are unique since the latitudinal coverage extends up to  $90^\circ\text{S}$ . Spectral analysis carried out from the OSIRIS' observations reveal an NLC population with larger particles at the very highest latitudes.