



Studies of low-altitude Polar Stratospheric Clouds during the LEEWAVES campaign

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The LEEWAVES campaign was conducted in Northern Sweden in the Winter of 2015/2016. LEEWAVES (Local Excitation and Effects of Waves on Atmospheric Vertical Structure) was a Swedish complement to the comprehensive German research programmes GW-LCYCLE and POLSTRACC. LEEWAVES instrumentation included RMR lidar, MST radar, radiosonde balloons and airglow imagers at Esrange Space Center (68°N, 21°E) and in the Kiruna region. A total of 250 measurement hours of the Esrange lidar were gathered to investigate periods of unusually low temperatures in the stratosphere. We present case studies of extended periods of low-altitude Polar Stratospheric Clouds (PSC), including characterization in terms of STS, NAT, ice and mixed particle cloud composition at different altitudes. Atmospheric structure and nucleation conditions are analyzed by means of local Rotational Raman temperature data and ECMWF temperature and wind fields. Using backward trajectory analysis, we follow the evolution of the PSCs in different temperature regimes up to their detection above Esrange.