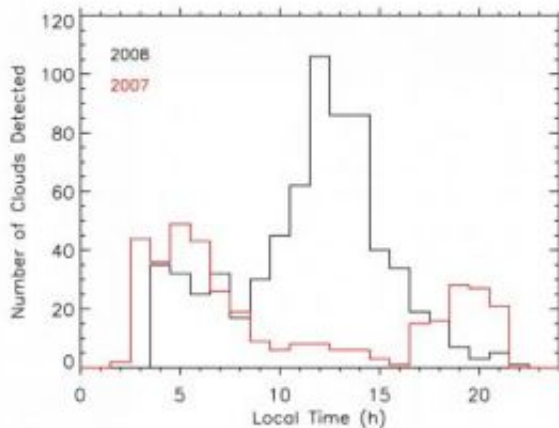


SHIMMER successfully observes Earth's highest clouds

November 13 2008



Number of PMCs observed by SHIMMER between 50-58°N versus local time. The red line (2007) shows a clear semidiurnal behavior, whereas the black line (2008) illustrates that in 2008 diurnal behavior is observed. How this difference in cloud occurrence is related to other meteorological data, such as winds and temperatures, is subject to ongoing and proposed work. Credit: Naval Research Laboratory

The Naval Research Laboratory's Spatial Heterodyne Imager for Mesospheric Radicals (SHIMMER) has successfully observed a second northern season of Polar Mesospheric Clouds (PMCs), which are the Earth's highest clouds. This successful observation fulfills the primary goal of the Space Test Program Satellite-1 (STPSat-1) Extended Mission.

SHIMMER was originally launched as the primary payload of STPSat-1 on March 8, 2007, with the objective to demonstrate the novel optical technique of Spatial Heterodyne Spectroscopy and to obtain global measurements of the hydroxyl (OH) radical in the Earth's mesosphere (50-90 km altitude). After the successful completion of its nominal 1-year mission, STPSat-1 operations were transitioned to NRL, which has been operating the spacecraft since June 1, 2008 using a novel, low cost operations approach.

The primary objective of the SHIMMER Extended Mission was to continue global scale PMC observations during the northern PMC season, which ended in August 2008. PMCs form in a thin layer in summer near 82 km over polar latitudes. Some have argued that, due to increases in atmospheric humidity, cloud occurrences have been increasing in recent decades. Because STPSat-1 is in a relatively low inclination orbit, SHIMMER observes PMCs at their equator-ward edge (

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