

Observational results with the Tromsø sodium LIDAR from October 2012 to March 2013

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We have made observations of the neutral temperature as well as wind velocity in the polar MLT region (80-110 km) from October 2012 to now (probably March) using the sodium LIDAR installed at Ramjordmoen, Tromsø (69.6N, 19.2E), where the EISCAT radars, MF radar, meteor radar (NIPR), FPI, aurora imagers have been operated. This season is our 3rd season of observations using the sodium LIDAR at Tromsø. In late September and early October 2012, we made further improvements of the LIDAR system such as (1) achievement of higher laser power output (about 4W), (2) replacement of a dome with a glass window, (3) use of narrower iris-mask, and (4) PC monitoring of temperature of laser devices.

This talk will give an overview of results obtained with the sodium LIDAR over about 6 months (October 2012 - March 2013) during the 3rd season. We mainly operated the sodium LIDAR with a five-beam mode where the laser beam was transmitted simultaneously toward five directions (vertical, north, east, south, west). In addition to the five-beam operation, we operated the sodium LIDAR with a vertical (1-beam) mode, where the laser beam was transmitted vertically only, for about 1 hour each in the beginning and ending, since the noise level of the vertical receiver was significantly lower than the others due to sharpness of receiving backscatter laser echo. We will present variations of atmospheric waves, horizontal structure of the neutral temperature, comparison of wind velocity obtained with the LIDAR and the meteor radar, and simultaneous observational results with the EISCAT radars.

Keywords: Sodium LIDAR, Temperature variation, lower thermosphere, mesosphere, polar upper atmosphere, EISCAT