Geophysical Research Abstracts
Vol. 18, EGU2016-9263-3, 2016
EGU General Assembly 2016


# Mesosphere-thermosphere regions coupling with the lower atmosphere through the inter-annual variations of the hydroxyl OH(8-3) bands, the oxygen 557.7 nm and 630.0 nm lines nightglow intensities

Goderdzi Didebulidze, Giorgi Javakhishvili, Maya Todua, and Lekso Toriashvili

E. Kharadze Abastumani Astrophysical Observatory at Ilia State University; K. Cholokashvili Ave 3/5; Tbilisi 0162; GEORGIA (didebulidze@iliauni.edu.ge)

The characteristics of the inter-annual/seasonal distributions of the mid-latitude nightglow intensities of the mesopause hydroxyl OH(8-3) bands (maximum luminous layer about 87 km), the thermosphere oxygen green 557.7 nm (main maximum of luminous layer in the lower thermosphere at about 95 km) and the red 630.0 nm line (emitted from the ionosphere F2 region with maximum luminous layer about 230-280 km) intensities are considered by observations from Abastumani (41.75 E; 42.82 E).
The observed inter-annual variations of the OH bands and green line, along with the maximal values at spring (March-April) and fall (September-October) equinoxial periods which are noticed also from other regions, exhibit maxima in June as well. The red line intensity mainly tends to decrease at equinoxial months, while it is maximal in summer and is accompanied by relatively small increase in June (compared to May and July). Maximal values of OH band and green line intensities in June are observed both in maximum and minimum phases of solar activity. This is considered as a manifestation of the features of upper and lower atmosphere dynamical coupling of this region of the South Caucasus. Such dynamical coupling can involve the ionosphere F2 region and can be accompanied by relative decrease of the red line intensity in June.
It is observed that the increase of OH band and green line intensities is accompanied by the red line intensity decrease at the end of March and beginning of April, which also is considered as a manifestation of lower and upper atmosphere dynamical coupling.

Acknowledgements: This work has been supported by Shota Rustaveli National Science Foundation Grants no. 31/56 and 31/81.