



Seasonal and nightly variations of the mesopause hydroxyl and molecular oxygen airglow as observed at Zvenigorod, Russia

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Regular seasonal and nightly intensity variations of OH (6-2) (835 nm) and O₂ (0-1) (865 nm) atmospheric emissions have been obtained from spectral observations of the mesopause airglow at Zvenigorod (55.7N, 36.8E) during 2000-2009. The importance of such studies is that because these emissions of the airglow are the product of recombination of oxygen atoms their variations can give the information on the different time scale changes of atomic oxygen content in the mesopause region. Mean monthly nocturnal course of the hydroxyl emission intensity is characterized by negative trend. In the case of the molecular oxygen emission, the nightly course of its intensity is more various. An analysis of the seasonal variations of the emissions shows that they have two minima, the deepest of which is in spring (April-May). In this period of the year, the O₂ (0-1) band intensity decreases by about 55% relative to its mean annual value of 340 R. The OH (6-2) band intensity decreases by about 25% at its mean annual value of 850 R. The second minimum in the seasonal behavior of the emissions occurs in December. It is in two times smaller than the spring minimum. The comparison of seasonal variations of the airglow emissions, obtained at different observatories, indicates to their latitudinal dependence.