SURFACE OZONE VARIATIONS INDUCED BY UV RADIATION IN POLLUTED POLAR ATMOSPHERE

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Chemical transformation of the basic small trace components of air by anthropogenic atmospheric pollution at different levels of solar ultraviolet (UV) radiation is numerically studied. Conversion of different species is studied in frame of simplified box model with 9 independent species which are O_3 , NO , NO_2 , HO_2 and others. Pollution is supposed to take place during the working day (8 – 17 hours). UV radiation is the cause of NO_2 , NO_3 photodissociation which is given as a function of local time with maximum at the noon. There are found theoretically that: a) surface ozone concentration (SOC) may be as increased as decreased during pollution on dependence of organic peroxy radical concentration, nitric oxides concentration and UV radiation intensity; b) SOC shows more violent dependence from UV radiation intensity in condition of high pollution than of weak one. Observations of SOC and UV radiation which were conducted at conditions of weak (Lovozero) and high (Apatity) pollution of air confirm this conclusion.