

Surface ozone variations and UV radiation intensity on Kola peninsula in connection with atmospheric pollution

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Mean afternoon surface ozone concentration in central part of the Kola peninsula for 1999-2001 is investigated along with ultraviolet (UV) intensity. Ozone concentration measured by DASIBI 1008 and UV intensity measured by M – 124 devices. Last device registers UV intensity in long- (UV-A) and short - wave (UV-B) ranges. The average diurnal variation of surface ozone concentration is determined. The maximum value of this variation is at 15 hours of local time. It is found out that diurnal variation of ozone concentration grows from spring to autumn (from ~ 0 in March to ~ 20 % in September). Influence of extra-atmospheric short - wave UV radiation variations on surface ozone is not found out.

It is shown by the numerical modeling of ozone generation and absorption processes that increased ozone diurnal variation in autumn has resulted from combined action of ozone precursors (the organic peroxyradicals at this case) and UV radiation. Organic peroxyradicals appearance in the atmosphere is a peculiarity of summer – autumn period. It is concluded that possible basic precursors of ozone in weak – polluted high – latitude region during this period are the organic peroxyradicals appeared from volatile organic compounds of biogenic origin.