SPECIAL FEATURES OF SURFACE OZONE TIME SERIES IN THE MOSCOW REGION

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Regular surface ozone data at Dolgoprudny (green-belt zone 25 km north of Moscow centre) since February 1991 are analyzed. Comparisons of surface ozone series in Dolgoprudny and from the Central and Western Europe show that our observation data are quite reasonable and have statistically significant relations with analogous data at stations Belsk, Poland, and Preila, Lithuania. The quantitative level of these relations is typical for distances more that 1000 km between observation sites. So surface ozone data from Dolgoprudny seem to be geophysically significant and can characterize its level in the Russian Central Region. Special features of surface ozone time series at Dolgoprudny are studied together with peculiarities of other meteorological and synoptic parameters. Specifically, we regarded changes of temperature and its vertical gradient in boundary layer, adverse weather conditions and thunderstorm occasions. Extraordinary much weather anomalies were observed in the Moscow Region in 2001. This appeared to be the main reason of anomalous surface ozone seasonal series. Surface ozone hourly series during very hot weather in July was unusual for a considerable length of time, too. The detailed (for every minute) surface ozone series during the severe thunderstorm on the 24th July demonstrated the necessity to take into account air vertical motions. The reasons of appearance in the Russian Central Region of elevated surface ozone concentrations those are dangerous for human health, plant and forest production are discussed. It is concluded that surface ozone changes in the Russian Central Region are mostly related to changes of meteorological and synoptic conditions; the episodes of obvious anthropogenic influences occur more rarely.