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The impact of COVID-19 pandemic preventing measures and meteorological conditions on the atmospheric air composition in Moscow in 2020

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Changes in the atmospheric composition in different periods of 2020 in Moscow, associated with the COVID-19 pandemic preventing measures of varying intensity and with corresponding reduction in emissions of pollutants, were investigated. Surface concentrations of nitrogen dioxide NO_2, carbon monoxide CO, ozone O_3, aerosol fraction PM_{10} and meteorological parameters in different periods of 2020 are compared with similar data for the previous 5 years. The analysis of ground-based measurements, as well as high-resolution satellite distributions of CO and NO_2, indicated that the content of major pollutants and its spatial distribution in the Moscow region were significantly affected by both restrictive measures and abnormal meteorological conditions in 2020. It is possible to obtain quantitative estimates of the contribution of both factors using transport and chemical modeling based on detailed inventory of anthropogenic emissions.

Additionally, some characteristics of atmospheric composition long-term trends in Moscow region are analyzed and discussed.

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