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Influence of High-Voltage Lines on the Surface Ozone Concentration

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By results of expeditions TROICA 3,4,5,7 (Transcontinental Observations in the Chemistry of the Atmosphere) concentration of ozone under high-voltage lines (HVL) have been certain. Measurements were spent by devices Dasibi RS and Dasibi AH which instrument accuracy made $\pm$ 1ppb, and the period of measurements 10 s, that has allowed to register small local changes of concentration of ozone. As is known, speed of formation and destruction of ozone depends on various conditions of environment, therefore for the analysis crossings a line with HVL 500 kV in conditions of absence of anthropogenesis influences have been chosen, or at a weak level of pollution. Such cases it has appeared 105. It has been shown, that change of concentration of ozone makes approximately on 13 % from the chosen background values where concentration NO did not exceed 2 ppb. The analysis of the return trajectories constructed by technique NOAA hysplit 4.7 at heights 100, 500 and 1000 m agl, has shown, that the reason of increase of a level of concentration of ozone above background is generation of ozone as a result of processes of interaction of atomic oxygen, formed at known discharge, and molecular (O_2) is direct near to high-voltage wires HVL. Generated under HVL amount of ozone it is not enough to have an influence on global balance of troposphere, however don't pay attention to such anthropogenesis source is impossible, because its concentration can locally raise. Surplus of ozone can slow down growth of plants, lead to illnesses of bodies of breath at the person, accelerate destruction of paint and varnish coverings. By means of the influence on ecosystems ozone also influences a regional climate. In conditions of the raised density of electric networks this influence can play a significant role in changes local ecosystem.

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