

THE RELATIONSHIP BETWEEN OZONE FORMATION AND AIR TEMPERATURE IN THE ATMOSPHERIC SURFACE LAYER

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Studying the formation and dynamics of ozone in the atmosphere is important due to several reasons. First, the contribution of tropospheric ozone to the global greenhouse effect is only slightly less than that of water vapor, carbon dioxide, and methane. Second, tropospheric ozone acts as a strong poison that has negative effects on human health, animals, and vegetation. Third, being a potent oxidizer, ozone destroys almost all materials, including platinum group metals and compounds. Fourthly, ozone is formed in situ from precursors as a result of photochemical processes, but not emitted into the atmosphere by any industrial enterprises directly.

In this work, we present some results of the study aimed at the revealing relationship between ozone formation rate and surface air temperature in the background atmosphere. It has been found that this relationship is nonlinear. Analysis of the possible reasons showed that the nonlinear character of this relationship may be due to a nonlinear increase in the reaction constants versus air temperature and a quadratic increase in the concentration of hydrocarbons with increasing temperature.

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