The features of gas-dust clouds of rocket exhaust in the upper atmosphere

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The results of research of the optical phenomena connected with rocket exhaust in the upper atmosphere are submitted. The most intensive, large-scale and dynamical phenomena are caused by special modes of operation of rocket engines, in particular, separation of rocket steps and switch off solid fuel rocket engines and physical conditions in the field of flight of a rocket.

Launches of powerful rockets and work of space vehicles engines are accompanied by injection in the space of combustion products with the complex structure, containing both gas and disperse components that results in development of the gas-dust clouds having certain geometrical and dynamic features. Development of such artificial formations in the upper atmosphere is accompanied by unusual enough optical phenomena caused by scattering of sunlight on combustion products and their interaction with components of the upper atmosphere.

Research of these optical phenomena allows receiving the information on anthropogenous pollution of a circumterraneous space, processes of interaction of polluting with an environment, dynamic processes in the top atmosphere.