

The transfer of optical radiation of lightning into space

Busygin V.P. (1), Kuzmina I.J. (2)

(1) 12 CRI Ministry of Defense of the Russian Federation, Moscow Region, Russia

(2) JSC «Scientific and Production Corporation «Systems Precision Instrument», Moscow, Russia

e-mail: irkuzmina@bk.ru

Currently, scientific and practical interest in the theoretical and experimental study the nature of formation and consequences of thunderstorms increases. One of the main directions of research in this issue due to the global space monitoring lightning strokes. Significant frequency of observation creates difficulties in identifying discharges, and in the resolution of individual strokes within a flash, in the analysis of the material joint registration radio-frequency and optical signals of lightning. On the other hand, lightning create optical interference for monitoring optical signals of a different nature, therefore in the article a lot of attention paid to the selection and analysis of informative features, most clearly expressed in optical pulses of lightning, especially at the powerful reflexive strokes.

The role of clouds examines in the transport problem of the pulsed optical radiation though the atmosphere into space. Spatial- temporal characteristics of the radiation field are calculated by the Monte-Carlo method. We study the behaviors of the relative density of the radiation flux on the spacecraft for clouds with optical thickness from a fraction of one to hundreds units of sight and zenith angles from zero to 60 degrees.

Key words: optical radiation, interference, lightning strokes, distribution function, optical pulse, lightning.