

The correlation between the gamma-ray flashes and electron bursts associated with thunderstorm activity in the near-Earth space

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Associated with thunderstorm activity gamma-ray bursts (TGF - Terrestrial Gamma-Flash) were discovered in 1994, by the BATSE instrument on board the satellite (cosmic gamma-ray observatory Compton, NASA). As expected one of the main mechanisms of their generation is bremsstrahlung emission of relativistic electrons, accelerated by atmospheric electric field above thunderclouds. This work is devoted to investigation of the interrelation between TGFs and of high-energy electron bursts, which have been registered into near-Earth space below the radiation belt. The database of high-energy electron bursts with energies from 3 to 30 MeV obtained in ARINA and VSPLESK satellite experiments and the database of TGFs registered by RHESSI satellite (with energies up to 17 MeV) were used in this work. As it was shown earlier the most of electron bursts (70-80%) have the thunderstorm origin. Most of these bursts are associated with precipitations of the electrons from the radiation belts caused by electromagnetic disturbance generated by the lightning discharges. But some bursts could have another origin, for example, associated with acceleration-runaway mechanism (Gurevich's mechanism). In this case, the electron bursts must be accompanied with flashes of bremsstrahlung. The database of TGFs and the data of the high-energy electron bursts were analyzed. The results of the analysis are presented at this work.

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