



## **Study of solar kilometer radio bursts preceding the strong geomagnetic storms**

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Radio bursts in waverange of 100-1500 kHz and energetic electrons with energy  $E > 10$ -100 keV during solar flares for interval 1997-2000 are analyzed and compared with geomagnetic storms with  $Dst < -100$  nT. It is noticed, that the onset of radio bursts of III type (with rapid drift) coincided with impulsive phase of the flare. It means that the acceleration of the energetic electrons generated the long wave radio bursts originate at the flare on the chromospheric level. On the basis of the time of electron arrival to the Earth and comparison with onset of generation of radio bursts we evaluated the duration of propagation of energetic electrons to the Earth. Analysis allows us to conclude that solar flares on the west hemisphere of the Sun accompanied by radio bursts (with flux  $P_f = 10^{-15} - 10^{-17}$  W/(m<sup>2</sup> Hz str) and duration  $> 10$  min at frequency of 1460 kHz) and by energetic electron events can be considered as sources of the strong geomagnetic storms. The work was supported in part by RFBR, grant 04-02-16131, and by Program N18 of Physics Sciences Department of Russian Academy of Sciences.