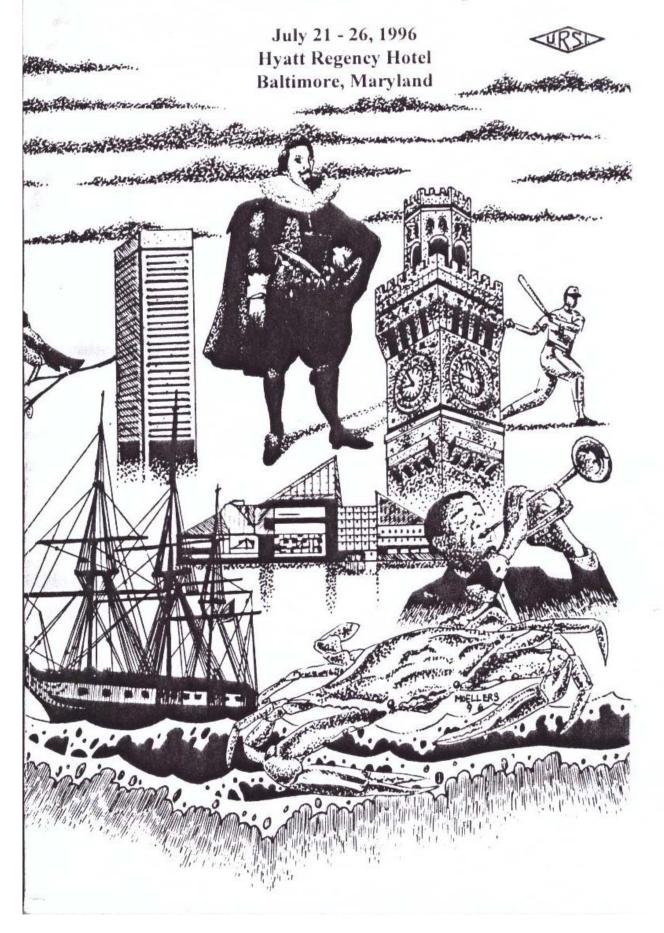
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On strong thunderstorms affecting the ionospheric D-region parameters, characteristics of noise and partially-reflected signals

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In the paper there are given results of our experimental investigation of possible effects of strong thunderstorms on the middle latitude ionospheric D-region parameters and characteristics of sounding SW radio waves by means of the partial reflection and vertical sounding (ionosonde) techniques. The total number of observation series having duration of ~ 1-10 hr over the periods of strong thunderstorms was 26.

Analyzing the experimental data has allowed to find the following features,

 Over the periods of strong thunderstorms at h = 87-105 km, the occurence probability of sporadic layers becomes ~ 2-4 times larger;

2. Strong thunderstorms may cause in the atmosphere infra-acoustic waves with f > 0.5 Hz, which penetrate into the lower ionosphere with their vertical velocities being V > 300 m/sec;

3. For thunderstorms in the lower D-region ($h < 70~\rm km$) in 40 % of the events, the background ionization has been found to become several times larger up to N < (5-7) $10^2~\rm cm^{-3}$;

4. In the upper D-region (h > 75 km), no marked (> 30 %) changes in N during thunderstorms have been found;

-5. The electron-molecule collision frequency v at h =63 km for some events has become 1.7-1.8 times larger if compared with that for the undisturbed conditions.

Possible reasons of such changes in N and v at h < 70 km may be precipitation of charged particles from the magnetosphere or variations of the ionosphere electric potential due to changes in the near-Earth atmosphere, conditioned by the strong thunderstorms.