Abstract number: S2-215
2. CRs at Earth and planets (GEO)

Data on cosmic ray variations during thunderstorms: Indication to existence of a slow large-scale atmospheric discharge

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It is demonstrated that the data of an experiment studying variations of secondary cosmic rays during thunderstorms (carried out at Baksan Valley, North Caucasus) in their entirety indicate to existence of a new physical process: slow (several minutes) large-scale discharge between the top of a thundercloud and the ionosphere. This process reveals itself in different components. Most probably it is a sort of runaway electron breakdown, but occurring near the threshold of this process, when operating field exceeds the critical field only slightly. Hypothesis about this process is supported by many indirect data, but at the moment some efforts are undertaken to see the light glow produced by this discharge directly using video cameras installed very far (tens of kilometers) from the place of observation viewing the region above the cloudy layer. Preliminary results of these observations are promising.