Positional relationship of auroral precipitation region and discrete forms of auroras

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A statistical comparison of the distribution of various regions of auroral precipitation has shown, that the zone of structured precipitation (AOP) corresponded to the average ststistical auroral oval, whereas the zone of diffuse precipitation (DAZ) corresponded to the diffuse luminosity belt more equatoeward of discrete structures. To investigate the fine structure of precipitation and the lyminosity of auroras there has been studied the distribution of auroras' discrete forms by data of all sky camera right under the trajectory of satellites of DMSP series at polar orbit. We have used ascafilms by Loparskaya and Arkhangelsk stations, located at close geomagnetic meridians.

The comparison of auroral forms distribution with the position of different regions of auroral precipitation has shown, that distinct discrete luminosity forms were located in the region of structured precipitation. Normally, their position coincides with regions of electron energy maximum flux. The isotropy border (b2i) is located more equatorward of aurora discrete forms and sometimes it corresponds to the position of the most equatorward aurora forms.