

Ground-based optical TV and satellite observations during two cases of auroral disturbances

V.R. Tagirov (*Polar Geophysical Institute, Russian Academy of Sciences, Apatity, Russia*)

C.W. Carlson (*Space Science Laboratory, University of California, Berkley, California, USA*)

K. Liou (*The John Hopkins University, Applied Physics Laboratory, Laurel, USA*)

On the basis of ground-based optical TV observations and observations by FAST and POLAR satellites the analysis of characteristics of precipitating particles and corresponding different auroral forms for two cases of FAST satellite passages over Kola Peninsula (North-West Russia) on 9 and 28 February 1997 were carried out. Both cases took place in the pre-midnight sector at the periods of very high magnetic activity. There were both typical features and also peculiar ones in each case. In particular in the first case (09 February 1997) when the FAST satellite passed across the broad auroral bulge, which consisted of multiple arcs the region of electron counter-flux was observed at the equatorwardmost bright and stable auroral arc. It can indicate existence of fine structure of the field-aligned currents connected with the arc consisting of counter-directed thin current sheets the dawnward one being at the equatorward side from the arc. Another peculiarity in the same case was the observation of the region of "pure" ion monoenergetic (3-4 KeV) precipitation in the poleward region of auroral bulge. The peculiarity of the second case (28 February 1997) was that auroral forms in the evening sector moved eastward and also existence of wide proton precipitation equatorward from them. It was shown that this was caused by turning of IMF B_z - component northward and simultaneous impulse of solar wind dynamic pressure which lead to removal of auroral activity from the dayside sector toward evening one.