Investigation of Characteristics of Sprite Halo Based on Photometric and high speed Image Data

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Sprite halo often occurs preceding and being accompanied by sprites. Their time duration is several milliseconds, while the altitude range and the horizontal extent are 70 to 85 km and about 70 km, respectively. We carried out optical observations of sprites and elves at Yucca Ridge Field Station, Colorado, USA, from 1996 to 2000 with two multi-anode array photometers (MAP) and an image intensified CCD camera and other optical instruments.

Using these MAP spectral data and image data of Utah State University obtained in Colorado in 1996 and of University of Alaska obtained in Wyoming in 1999, we investigated some characteristics of sprite halos and estimated the energies of electrons inducing them by calculating the ratio of N2 2nd positive band (2P) and N2 1st positive band (1P) emission

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