

Characteristics of medium energy precipitating electrons (20-80keV) in the polar ionosphere

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We have studied the relation between optical aurora and Cosmic Noise Absorption (CNA), and attempted to estimate the energy spectrum of precipitating electrons. The main purpose of this study is to research the influence of precipitating electrons to atmosphere of earth. The dataset of CNA is obtained with the Imaging Riometer (IR) at Poker Flat Research Range (65.1N, 147.5W), Alaska. The IR started to operate on October 1995. This system has a field of view of 400*400km square at 90km altitude. Maximum time resolution is 1 second. Horizontal spatial resolution is 11km near the zenith. The dataset of the Meridian Scanning Photometer (MSP) is used for the comparison with CNA. The MSP measured the absolute intensities of optical aurora emissions, i.e., 557.7nm, 630.0nm, 427.8nm and 486.1nm in every 16 second. We will show some case study results and discuss local time and substorm dependence of the relation between optical aurora and CNA.