R006-P29
ポスター 1 ：11/24　PM1/PM2 （13:15-18:15）

#寺本 万里子 [1)], 片岡 龍峰 [2)], 三好 由純 [3)], 鳥居 祥二 [4)], 笠原 禎也 [5)], 松岡 彩子 [6)], 三宅 晶子 [7)], 中平 聡志 [8)], 松田 昇也 [5)], 尾崎 光紀 [5)], 山本 和弘 [3)], 篠原 育 [8)], 北村 健太郎 [1)]
([1] 九工大, [2] 極地研, [3] 名大 ISEE, [4] 早稲田大, [5] 金沢大, [6] 京都大学, [7] 岐阜高専, [8] 宇宙研

Characteristics of MeV Electron Precipitation Observed by CALET/CHD for Geomagnetic Disturbances

#Mariko Teramoto[1)], Ryuho Kataoka[2)], Yoshizumi Miyoshi[3)], Shoji Torii[4)], Yoshiya Kasahara[5)], Ayako Matsuoka[6)], Shoko Miyake[7)], Satoshi NAKAHIRA[8)], Shoya Matsuda[5)], Mitsunori Ozaki[5)], Kazuhiro Yamamoto[3)], Iku Shinohara[8)], Kentarou Kitamura[1)]
([1]Kyushu Institute of Technology, [2]National Institute of Polar Research, [3]Institute for Space-Earth Environement Research, Nagoya University, [4]Waseda University, [5]Emerging Media Initiative, Kanazawa University, [6]Graduate School of Science, Kyoto University, [7]National Institute of Technology, Gifu College, [8]Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency

Relativistic electron precipitation (REP) from the outer radiation belt into the Earth's atmosphere is caused by electron resonance interaction with the whistler mode and electromagnetic ion cyclotron (EMIC) waves via pitch angle scattering. The characteristics of the energy spectra of the precipitating MeV electrons are not fully understood.

We investigate the spatial distributions of precipitating MeV electrons and their geomagnetic dependence. To detect REP events, the CALET (Calorimetric Electron Telescope)/CHD (Charge Detector) on board the International Space Station (ISS) was utilized. CALET is the instrument for observing GeV-TeV electrons, nuclei in Z = 1-40, gamma rays above 1 GeV, and gamma ray bursts. The CALET-CHD consists of two orthogonal layers, CHD-X and CHD-Y, of plastic scintillator charge measurement modules. The two layers determine the incident position of the cosmic rays. The trigger counter signals are counted and the accumulated numbers are recorded every 1 s. Kataoka et al. (2016, 2020) show that the count rate observed by CHD can be used for REP studies. CHD-X and CHD-Y observe $>$1.6 MeV and $>$3.6 MeV electrons, respectively. We use the data from March 2017 to December 2023 to identify periods of abrupt changes in the CHD count rate and identified them as REP events. To investigate the dependence of the geomagnetic disturbances on the REP at $>$1.6 MeV and $>$3.6 MeV, the SME$*$at the REP events is calculated, which is the average of the SME index of the identified REP events up to 1 h before. In addition, we calculate R_{XY} , which is the ratio of the CHD-X count rate to the CHD-Y count rate. High R_{XY} values indicate that the energy spectra of REP events are soft. During geomagnetic quiet periods (SME$*<$200 nT) the high R_{XY} regions appear at Lm $>$5 and mainly on the night side (21-03 MLT). As the degree of geomagnetic disturbance increased, the high R_{XY} regions spread to the dawn and dusk side at Lm $<$5. We also find that the high R_{XY} regions appear outside the plasmapause, while R_{XY} is low inside the plasmapause. We identify REP events with good Arase-ISS conjunction and found that the Arase satellite observed chorus waves on the dawnside during some REP events. These results indicate that REP events near the plasmapause and outside the plasmapause are caused by the EMIC waves and chorus waves, respectively.