R006-26
A 会場 ：11/7　AM1 （9:00-10:30）
10:00〜10:15

#永谷　朱佳理 [1)], 三好　由純 [2)], 浅村　和史 [3)], 中村　紗都子 [4)], 小路　真史 [2)],Kistler　Lynn M.[2,5)], 小川　泰信 [6)], 関　華奈子 [7)], 篠原　育 [8)]
([1] 名大 ISEE,[2] 名大 ISEE,[3] 宇宙研,[4]IAR&ISEE,[5] ニューハンプシャー大,[6] 極地研,[7] 東大理・地球惑星科学専攻,[8] 宇宙研／宇宙機構

Time variations of molecular ions in the inner magnetosphere observed by Arase

#Akari Nagatani[1)], Yoshizumi Miyoshi[2)], Kazushi Asamura[3)], Satoko Nakamura[4)], Masafumi Shoji[2)], Lynn M. Kistler[2,5)], Yasunobu Ogawa[6)], Kanako Seki[7)], Iku Shinohara[8)]
([1]ISEE, Nagoya Univ.,[2]ISEE, Nagoya Univ.,[3]ISAS/JAXA,[4]IAR&ISEE,[5]ISEOS, University of New Hampshire,[6]NIPR,[7]Dept. Earth & Planetary Sci., Science, Univ. Tokyo,[8]ISAS/JAXA

In the Earth's magnetosphere, there are several kinds of ions originated from both the solar wind and the ionosphere. Molecular ions in the magnetosphere are originated in the Earth's ionosphere. For example, statistical studies based on 20 years of Geotail/STICS data has indicated that the count rates of magnetospheric molecular ion are sensitive to geomagnetic activity [Christon+, 2020].The Arase satellite has observed various kinds of ions since 2017 and two ion analyzers LEPi and MEPi cover energy range from 10 eV/q to 180 keV/q. Using the data from the MEPi instrument, variations of molecular ions to magnetic storms and solar wind conditions have been investigated, and molecular ions are observed in the inner magnetosphere even during small magnetic storms [Seki+, 2019]. However, observations about molecular ions are still not enough compared with other ion observations, and the mechanism of the outflow from the ionosphere as well as the long-term variations are not well known. In this study, we analyzed the time-of-flight (TOF) data from LEPi [Asamura+, 2018] onboard Arase to investigate variations of molecular ions in the inner magnetosphere and their dependence about magnetic activities and solar wind conditions. LEPi covers the energy range from 10 eV/q to 25 keV/q and counts as function of energy and TOF are obtained every 16 seconds. The TOF measurements of LEPi have been operated in the outbound pass every four revolutions around the Earth. In the analysis, we estimated counts of molecular ions by fitting the empirical functions onthe TOF profile using the non-linear least squares method. The estimated counts were calibrated by the time variations of efficiency of the LEPi instrument. Using this data set, we investigated relationships between molecular ion count and geomagnetic index and solar wind parameters. The results suggest that counts of molecular ions increase with solar wind speed as well as density. Also, we found that molecular ions appear in the magnetosphere during not only magnetic storms but also non-magnetic storms.