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ポスター 1 ：11/4　PM1/PM2 （13:45-18:15）

#小路　真史 [1)], 三好　由純 [1)],Kistler　Lynn[2)], 浅村　和史 [3)], 笠羽　康正 [4)], 松岡　彩子 [5)], 笠原　禎也 [6)], 松田　昇也 [7)], 土屋　史紀 [8)], 熊本　篤志 [8)], 中村　紗都子 [9)], 田　采祐 [10)], 篠原　育 [11)]
([1 名大 ISEE,([2University of New Hampshire,([3 宇宙研,([4 東北大・理,([5 京都大学,([6 金沢大,([7 金沢大学,([8 東北大・理・惑星プラズマ大気,([9IAR&ISEE,([10 名大 ISEE 研,([11 宇宙研／宇宙機構

Statistical analyses on low energy ion heating by EMIC waves via WPIA: Arase observations

#Masafumi Shoji[1)], Yoshizumi Miyoshi[1)], Lynn Kistler[2)], Kazushi Asamura[3)], Yasumasa Kasaba[4)], Ayako Matsuoka[5)], Yoshiya Kasahara[6)], Shoya Matsuda[7)], Fuminori Tsuchiya[8)], Atsushi Kumamoto[8)], Satoko Nakamura[9)], ChaeWoo Jun[10)], Iku Shinohara[11)]
([1ISEE, Nagoya Univ.,([2University of New Hampshire,([3ISAS/JAXA,([4Tohoku Univ.,([5Kyoto University,([6Kanazawa Univ.,([7Kanazawa Univ.,([8Planet. Plasma Atmos. Res. Cent., Tohoku Univ.,([9IAR&ISEE,([10ISEE, Nagoya Univ.,([11ISAS/JAXA

Electromagnetic ion cyclotron (EMIC) waves are generated through the cyclotron wave-particle interaction, affecting the plasma environment in the magnetosphere. Heating of the ions by EMIC waves in the inner magnetosphere has also been investigated by spacecraft observations by comparing variations of ion distribution and waves. The energy transfer between the plasma waves and ions can be quantitatively evaluated by calculating the inner product between the wave electric field vector and the ion velocity vector, so-called WPIA (wave-particle interaction analysis). We apply the WPIA method to the Arase spacecraft data and investigate the spatial distribution of the positive qV・E region in the inner magnetosphere. Using 4.5 years data, we choose EMIC wave events associating ion flux enhancement between 10 eV/q to 100 eV/q of which the WPIA analysis can be applied for the necessary data sets observed by the Arase satellite. The occurrence peaks of the proton and helium heating events appear in the dayside and post noon regions. We classify the enhancements of low energy ion flux by their formation mechanism. Most of the ion flux enhancements are generated through the ion heating by the EMIC waves while some others are formed by the sloshing motion of the ions. We also perform test particle simulations to understand the ion heating process in the perpendicular direction by the parallel propagating EMIC waves.