

R006-29

Zoom meeting B : 11/2 AM2 (10:45-12:30)

10:45~11:00

Multipoint Measurement of Fine-Structured EMIC Waves by Arase, Van Allen Probe A and Ground Stations

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Electromagnetic ion cyclotron (EMIC) waves are an important plasma waves that control energetic ion and relativistic electron precipitations in the terrestrial inner magnetosphere. We examined the growth and propagation of fine-structured EMIC waves related to time-varying density irregularities using multipoint measurement data observed by two spacecraft (Japanese Arase and U.S. Van Allen Probe A) and two ground stations (Gakona and Dawson) during a field-line conjunction event on 18 April 2019. We analyzed the wave data obtained by the aforementioned spacecraft and stations, and found that the appearance of fine structures in the observed EMIC waves clearly coincided with the ambient electron density irregularities in the magnetosphere, which can cause periodic wave growth and waveguiding on their propagation. Furthermore, we found that the observed fine-structured EMIC waves were spatially localized in approximately a 185 km range in geomagnetic latitude at an auroral altitude of 100 km. We also found thermal H⁺ and He⁺ heating (<200 eV/q) during the EMIC wave activity.