R006-26
A 会場 ：9/26　AM2 （10:45-12:30）
11:45〜12:00

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The altitude distribution of electron conic source estimated with the Arase satellite

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We examined the source altitude of electron conics by analyzing high-angular resolution electron data obtained by the Arase satellite. We surveyed electron conic events between August and September 2017 and identified electron conics with ion beams observed at an altitude of ~30,000 km above the auroral acceleration region, on 31 August, 16 September and 25 September. Assuming that the observed electron conics have adiabatically moved upward from the source altitude and undergone a potential difference along the dipole field line, we fit energy-dependent loss cone curves to the electron flux distribution of the conics to estimate the mirror ratio and the potential difference between the source and the satellite altitude. The center and the upper edge of the source altitude of electron conic were estimated to ~5000 km and ~10,000 km, respectively, from the estimated mirror ratio. The source altitude of electron conic approximately matched the simultaneously observed AKR source altitude, at which a parallel electric field is formed. This result suggests two hypotheses for the generation of electron conics: electron heating due to time-varying electric fields that accelerate auroral electrons, and diffusive heating due to waves, such as electrostatic waves seen around this altitude. We also compared the phase space densities of downward and upward electrons to determine their heating rates. The heating rate is proportional to the potential drop below the satellite, indicating that a large parallel electric field is associated with the electron conic generation.