

R006-61

Zoom meeting B : 11/4 PM2 (15:45-18:15)

16:15~16:30

2018年12月28日の地上EMCCDカメラとあらせ衛星の共役観測に基づくPi2波とイオン振動とオーロラ光振動との対応関係

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Correspondence of Pi2 pulsations, ion pressure fluctuations, and aurora luminosity measured by a conjugate observation

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While many substorm-related observations were made, few conjugate observations of substorm auroral arcs have been reported particularly on such arcs connecting to in the inner magnetosphere at L[~]5. In this presentation, we show a substorm event where the footprint of the Arase satellite was located equatorward (earthward in the equatorial magnetosphere) of the a brightening arc at L[~]5. The event was observed on December 28, 2018. The ground-based electron-multiplying charge-coupled device (EMCCD) camera at Gakona (62.39oN, 214.78oE), Alaska observed the substorm auroral break-up at ~0743 UT, while the Arase satellite just equatorward of the brightening arc observed a series of quasi-periodic variations in the electric and magnetic field and medium-energy ion spectra with periods of ~100-300 s when the auroral break-up happened. Ground-based magnetometers over North American continent and Hawaii observed Pi2 pulsations with periods of ~110 s. The Pi2 pulsations at high latitudes present approximately one-to-one correspondence with the oscillation of the substorm aurora brightness, suggesting that high-latitude Pi2 oscillations are caused by field-aligned current oscillations. Another correlation between the variation in plasma sheet ion pressure and the luminosity of the substorm brightening arc was also identified. This may indicate that the field-aligned current oscillation is caused by the pressure oscillation of the plasma sheet ions. The amplitude of the filtered ion pressure variation is several times larger than that of the filtered magnetic pressure, suggesting a pressure-driven instability plays a role in the formation of these oscillations and substorm brightening arc in this event. Through this event we will present the relationship between the auroral arc evolution on the ionosphere and the source wave and particle features in the magnetosphere on the basis of these measurements at just earthward of the brightening arc.