

Rocket experiment in a coupling process between neutral atmosphere and plasma

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Rocket experiment is carried out to investigate a coupling process between neutral atmosphere and plasma of thermosphere and ionosphere at Kagoshima Space Center (KSC) of JAXA. The rocket launch window is in the evening of July 31 - August 15, 2007. Momentum transfer through collisional process of the neutral atmosphere and the plasma is a basic problem of atmospheric circulation and super rotation in the low latitude thermosphere, and a medium scale traveling ionospheric disturbance (MS-TID) occurring in the mid-latitude ionosphere, but the direct observation is not yet performed. In the rocket experiment, we observe plasma drift velocity, plasma density and temperature and its fluctuations, electric field, magnetic field and neutral wind. The neutral winds are estimated from the movements of Lithium clouds, which are released at altitudes between 150km and 300km and scatter sunlight by resonance scattering with wavelength of 670 nm. The Lithium clouds are observed by CCD imagers on ground. The plan of rocket experiment, ground observation system and science objectives are presented.