

Airglow imaging observations during WAVE2004 campaign in Japan

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As part of the WAVES in airglow campaign in 2004 (WAVE2004), we carried out ground-based imaging observations of airglows during the new moon periods of January 2004. To determine altitudes of airglow wave structures, three all-sky imagers were set up at the following three separated sites: Uchinoura Space Center of JAXA (USC, 31.25N, 131.08E), Yamagawa Radio Observatory of NICT (31.20N, 130.62E), and Sata Observatory of STEL (31.0N, 130.7E). The ranges between the sites are 24-46 km. Observed emissions are OI 557.7-nm, OH Meinel bands, O2 (0,1) bands, and OI 630.0-nm.

At 15:30 UT on 17 January, the S-310-33 rocket was launched from USC, and observed vertical profile of atomic oxygen density, electron density, airglow intensities, horizontal wind, etc. We successfully observed airglow images simultaneously from Yamagawa and Sata. A wave structure propagating northward with a horizontal wavelength of ~50 km was found in the airglow images at first glance. These image data will be analyzed with horizontal wind data obtained by MF radar at Yamagawa using a spectral analysis technique, to bring out characteristics of propagating waves in more detail. The altitude estimations of airglow structures will also be made. We will report the analysis results, and discuss relationship between the horizontal and vertical wave structures derived by the ground-based and the rocket in-situ measurements, respectively.