

COORDINATED MEASUREMENTS OF MESOSPHERIC GRAVITY WAVES DURING A MULTI-INSTRUMENT/-STATION OBSERVATION CAMPAIGN IN JAPAN

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We have conducted simultaneous observations of mesospheric gravity waves at three separated stations within ~100 km in Japan from September 2008. Two airglow imagers were used in this campaign to observe two-dimensional structure of gravity waves: one has been operated by Nagoya university as a part of the optical mesosphere thermosphere imagers (OMTIS) at the MU observatory in Shigaraki (34.9N, 136.1E), and the other imager, named ANDON, is newly developed by Kyoto University and installed at the DYNIC observatory in Tago (35.2N, 136.3E). Since fields-of-view of two imager overlap in a certain area, airglow layer heights in the mesopause region can be determined by triangulation method. Winds and temperature in the mesosphere and lower thermosphere (MLT) region are simultaneously obtained from meteor-mode observations of the MU radar at Shigaraki and the sodium lidar observations at Uji (34.9N, 135.8E), respectively. In the presentation, we will report initial results of this campaign. On the night of 2 October 2008, large-scale gravity wave with a horizontal wavelength of ~200 km propagating northeastward was observed in the airglow keograms of OMTI. Similar wave structure was also found in those of ANDON. Setup of this campaign would allow us to calculate the momentum flux of this large-scale wave by using the observed dataset without cancellation factor model that connects temperature variation to airglow intensity perturbation.

gravity wave, airglow imaging, mesospheric dynamics

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