

Two-Station Height Measurements of Mesospheric Bores at Equatorial Latitudes

Show affiliations

Taylor, M. J.; Medeiros, A. F.; Taylor, V.; Buriti, R. A.; Takahashi, H.

Since their discovery in the early 1990s mesospheric bores have become a topic of considerable interest. These are most unusual gravity wave events that are characterized in the nightglow emissions by a sharp leading front usually followed by a coherent train of waves that grow in number with time. Recent coordinated imaging and Na lidar wind/ temperature measurements have established the coexistence of mesospheric temperature inversion layers which act as a duct supporting the horizontal propagation of the bores. Depending on the altitude of the thermal duct, the optical signatures of the bore induced in the near infrared OH Meinel bands (peak altitude ~87 km), O₂ (0,1) band (altitude ~94 km), and the OI (557.7 nm) line (altitude ~96 km) will be quite different. However, to date there have been no direct height measurements of such bore events. This poster presents novel two-station measurements of mesospheric bores imaged near simultaneously in the OH emission at equatorial latitudes during 2006--2007. The observations were made from north-eastern Brazil using two all-sky CCD cameras, one located at São João do Cariri (7°S, 36°W) and operated by the Federal University of Campina Grande. The second camera, from Utah State University, was located at Monteiro (7.9°S, 37.1°W) giving a site separation of ~85 km. At least four bore events have been identified in both data sets. Their signatures are faint but sufficient to permit an initial investigation of their height ranges.

Publication:

American Geophysical Union, Spring Meeting 2007, abstract id.SA31A-15

Pub Date:


May 2007

Bibcode:

2007AGUSMSA31A..15T

Keywords:

0310 Airglow and aurora; 3332 Mesospheric dynamics;
3334 Middle atmosphere dynamics (0341; 0342);
3384 Acoustic-gravity waves

 Feedback/Corrections? (http://adsabs.harvard.edu/adsfeedback/submit_abstract.php?bibcode=2007AGUSMSA31A..15T)