

## A case study on mesospheric bore with ISS-IMAP/VISI observation

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We report two mesospheric bore events based on O<sub>2</sub> airglow observation by Visible and near Infrared Spectral Imager (VISI) of the ISS-IMAP mission (Ionosphere, Mesosphere, upper Atmosphere and Plasmasphere mapping mission from the International Space Station). The mesospheric bore is moving front of sharp jump followed by undulations or turbulence in the mesopause region. Since previous studies of mesospheric bore were mainly based on ground-based airglow imaging that is limited in field-of-view and observing site, little is known about its horizontal extent and global behavior. Space-borne imaging by ISS-IMAP/VISI provides an opportunity to study the mesospheric bore with wide field-of-view and global coverage. A mesospheric bore was captured by VISI in two consecutive paths on 9 July 2015 over the south of African continent (48°S - 54°S and ~15°E). The wave front aligned with south-north direction and propagated to west. The phase velocity and wave length of the following undulation were estimated to 100 m/s and 30 km, respectively. Those parameters are similar to those reported by previous studies. Anti-clockwise rotation of the wave front was recognized in this event. Another mesospheric bore was captured on 9 May 2013 over the south Atlantic ocean (35°S - 43°S and 24°W - 1°E) with more than 2,200 km horizontal extent of wave front. The wave front aligned with southeast-northwest direction. Because the following undulation is recognized in the southwest side of the wave front, it is estimated to propagate to northeast direction. The wave front was modulated with 1,000 km wave length. This modulation implies inhomogeneity of the phase velocity probably due to the background ducting structure.