

宇宙ステーションからの撮像画像を用いた中間圏大気光の大気波動の研究

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Airglow image of atmospheric wave captured from the International Space Station

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Whole image of the wave-like structure in the mesosphere was captured by an imaging observation from the International Space Station (ISS). Limb imaging observations with a digital single reflex camera Nikon D3s provided us mesospheric airglow images with very wide field-of-view (3,000 km width at the tangential point). The wave-like structures were seen in mesospheric airglow including OI, Na and OH airglow. A wave like structure in OI airglow intensity was captured and accompanied with a peak height modulation. The observed wavelength and width of which are about 1,000 km and 2,500 km, respectively. Anti-phase structure was seen in Na and OH airglow, which are lower layers of mesosphere airglow. Previous airglow observations captured small scale (10 - 400 km) structures by ground based airglow imagers and large scale (several 1,000s km) structures by satellite limb scanning. The observed mesoscale structure was found to be larger than small scale gravity wave structures but smaller than whole earth convective structures. The entire image of mesoscale wave (1000s km wavelength) being presented in this work fills the gap of the previous observations. In the presentation, the cause of this structure will be discussed.