

Propagation characteristics of gravity waves observed by airglow imaging At Syowa Station(69S,39E), Antarctica

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Atmospheric gravity waves (AGWs), which are generated in the lower atmosphere, transport significant amount of energy and momentum into the mesosphere and lower thermosphere and cause the mean wind accelerations in the mesosphere. This momentum deposit drives the general circulation and affects the temperature structure. Observational techniques, such as radar, lidar, airglow imaging, have been used for investigating AGWs, but in Antarctica observations of AGWs are very limited because of the lack of observation site.

Airglow imaging is useful for investigating the horizontal structures of AGWs and had been operated at Rothera Station (67S, 68W) (Diettrich et al., 2005; Espy et al 2006), Halley Station (75S, 26W)(Nielsen et al., 2012; Espy et al., 2006), Ferraz Station (62S, 58W)(Bageston et al., 2011), South Pole Station (90S)(S.Suzuki et al., 2011). Airglow imagers have been operated by the Japanese Antarctic Research Expedition (JARE) at Syowa Station (69S, 39E), Antarctica in 2002 and between 2008 and 2012.

We report inter-annual and seasonal variations of AGW parameters such as horizontal propagation direction, wavelength, and phase velocity over Syowa Station, and comparisons of those with those at other Antarctic sites will be presented.

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