Characteristics of gravity waves in Antarctic mesosphere

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Observations of the Antarctic mesosphere have been very limited so far. We began continuous MF radar observation of horizontal wind velocity in April 1999, and Na lidar observation of neutral temperature in February 2000 at Syowa station (69S,39E). Short period gravity waves (20-120 min) observaed with the MF radar show conspicuous seasonal variations of wave activity and horizontal propagation diretions, which are considered to be closely related to the behavior background winds. Temperature fluctuations observed with the lidar often propagate downward with time, exhibiting the activity of upward energy propagating atmospheric waves.

Observations of the Antarctic mesosphere have been very limited so far, and the behavior of atmospheric gravity waves in the region is not well understood. We began continuous MF radar observation of horizontal wind velocity in April 1999, and Na lidar observation of neutral temperature in February 2000 at Syowa station (69S,39E). Short period gravity waves in the period range of 20-120 min observaed with the MF radar show conspicuous seasonal variations of wave activity and horizontal propagation diretions. These variations are considered to be closely related to the behavior of background winds. Temperature fluctuations observed with the lidar often propagate downward with time, exhibiting the activity of upward energy propagating atmospheric waves.