



The identification of Borneo vortex and its synoptic features in boreal winter

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The improved identification of Borneo vortex and its synoptic features are investigated in this paper using the daily ERA-Interim data during boreal winter for the period from 1979 to 2015. The improved method based on wind direction can identify vortex automatically. The results indicate that the average lifetime of a vortex event is 1.6 days, and the vortex mainly locates at middle to lower levels of the troposphere and reaches its strongest vorticity in 850hPa. Vorticity budget analysis reveals that the divergence, horizontal advection and β effect are responsible for the formation and decay of Borneo vortex. The divergence term, which is related to the strengthened winter monsoon and synoptic wave in the middle latitude, reaches its peak when the vortex generates. However, the horizontal advection and β effect terms both make positive contribution before the generation, but negative after the generation. Further analysis implies that the β effect may be associated with the equatorial waves especially the MRG-TD wave.