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LIDAR Observations of middle atmospheric gravity waves over Durban (29.9° S, 31.0° E), South Africa: Case study

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**Abstract content
 (Max 300 words)**

Gravity waves (GW) are known to be one of the essential phenomena for maintaining the global circulation through their momentum transport, particularly in the middle atmosphere. Thus, they also play a major role in occurrence of processes related to dynamical events such as major Sudden Stratospheric Warming (SSW). The GWs originates from the lower heights, and propagate upwards and deposit energy through wave breaking and dissipation processes in the mesosphere, thereby significantly altering its thermal structure and wind pattern. The major SSW event which is usually observed in the Northern Hemisphere was observed for the first time in the Southern Hemisphere during the year 2002 late winter. Thus, the present study investigates the GW characteristics in terms of time (frequency), height (wavenumber) and GW associated Potential Energy during the year 2002 winter using Rayleigh LIDAR observations made over Durban (29.9° S, 31.0° E), South Africa.

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