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Monitoring atmospheric gravity waves in the middle atmosphere as an innovative approach to estimate the differential energy content of a strong cyclone

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It is well-known that atmospheric gravity waves are generated not only by orographic forcing but also by strong convective areas like storms. It is proposed that monitoring of the cyclone induced atmospheric wave activity by remote sensing and in situ techniques allows helping quantifying the change of the underlying cyclones angular momentum and energy content. This effect might be used to allow a better mid-term storm forecast.

Based on meteorological rocket measurements ("falling spheres") above Wallops Island (37°N, 75°W) a case study is presented revealing the presence of gravity wave signatures in 50km to 70km height. Evidence is given that these waves are connected to an underlying low pressure system.