



Satellite observations of gravity waves, generated by convective storms

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By the end of 1980's, convective storms have been identified as a source of concentric gravity waves (CGW), occasionally affecting atmospheric nightglow layers (Taylor and Hapgood, 1988). Since then, various methods of gravity wave detection in the upper stratosphere and mesosphere have significantly evolved and improved, including satellite observations. Among the satellite methods, hyperspectral observations by sounders aboard some of the low-Earth orbit satellites (e.g. Yue et al, 2015), and nocturnal low-light observations by Day/Night Band (DNB) of the Suomi-NPP satellite (e.g. Miller et al, 2012) belong among the most recent ones. We focus on observations of gravity waves from cloud-top levels (namely using the 375m VIIRS IR bands of Suomi-NPP, and Meteosat SEVIRI data documenting evolution of the storms), through attempts of detection of the storm-generated CGW by hyperspectral sounders AIRS (Aqua satellite) and CrIS (Suomi-NPP), up to survey of these CGW in nightglow emissions near the mesopause. We address namely cases occurring above north parts of Africa, offering sufficiently dark background over large area of the Sahara Desert, essential for nightglow observations in DNB.

References:

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