Aspect of the Quasi-120 Day Oscillation in Mesospheric Wind Associated with Solar Activity as Inferred from Thumba SKiYMET Radar

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The presence of atmospheric motion such as tidal, planetary and gravity waves, and seasonal oscillations such as annual oscillation (AO), the semi-annual oscillation (SAO), and the quasi-biannual oscillation (QBO) in the neutral winds at middle atmosphere are well known and studied for the past three decades. A time-dependent spectrum characteristic for the quasi-120-day oscillation of neutral winds at mesosphere and lower thermosphere (MLT) region observed by SKiYMET radar located at equatorial station Thumba (8.5^{o}N, 76.5^{o}E, 0.5^{o}N diplat) have been studied for the first time. The amplitude and phase of quasi-120 day oscillation as a function of height and time are established using five years of high resolution daily mean winds and temperature obtained from SKiMET radar and SABER, respectively. Further investigation confirmed that there exists the quasi-120-day oscillation in the solar flux. The detailed results will be discussed in the upcoming symposium.

[Keywords : SKiYMET radar, MLT region, 120 day oscillation]

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Characteristics of high-frequency gravity wave generated by tropical cyclone using MST radar : A case study

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This paper presents the short-period gravity wave associated with the passage of tropical cyclone using mesosphere-stratosphere-troposphere (MST) radar located at Gadanki (13.5^{o}N, 79.2^{o}E). The present analysis reveals that the generative mechanism of short-period gravity wave triggered by tropical cyclone is due to obstacle effect. Another significant result from the present observation is that the short-period gravity wave generated by tropical cyclone gets enhanced in the upper troposphere and lower stratosphere (UTLS) region due to which tropopause gets disturbed and gives rise to the stratosphere-troposphere exchange (STE) process. It is also envisaged the enhanced momentum flux in the vicinity of tropopause is due to cyclone generated gravity wave. As there are very few observational evidences in support of obstacle effect as generative mechanism during convection and cyclone, especially over tropics, the present results are of important to improvement of General Circulation model. The detailed results will be discussed in the upcoming symposium.

[Keywords : Tropical cyclone, Gravity wave, MST radar]