Vertical structure of the quasi-2-day wave in the thermosphere

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At previous meetings, the horizontal structure of the low-latitude geomagnetic 2-day variation was clarified: westward traveling structure was deduced from the variation in the east-west component, the zonal wave number seems to be three, and the seasonal variation of its amplitude has maxima in January and July. These characteristics are in good agreement with those of the quasi-2-day wave in the mesosphere and the lower thermosphere, which suggests that a dynamo current is driven in a conductive layer of the ionosphere by a wind system which has the same structure as that in lower atmosphere.

In this report, a temporal variation of the wind at around 90 km altitude observed by the Kyoto meteor radar was analyzed. The quasi-2-day oscillation in the wind was statistically compared with the geomagnetic 2-day variation in order to estimate the differences in the amplitude and phase of the wave between the dynamo layer and the lower thermosphere. We will discuss the vertical structure of the quasi-2-day wave through the results of the analysis.