MU radar observation of the strong activity of 2006 Quadrantids

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Prominent activity of the 2006 Quadrantid meteor shower was observed from 18h through 21h UT on January 3 in Japan. We carried out using a MU radar located in Shigaraki, Japan, which is a Mesosphere Stratosphere and Troposphere radar with a frequency and a peak power of 46.5 MHz and 1MW, respectively. The radar is consists of 475 Yagi antenna elements and the observation was performed in the meteor observation mode.

In order to calculate the ideal echo rate, a response function, which is the response of the radar system to a radiant in any position on the sky, was considered. Background activities were subtracted to estimate the Quadrantids activity with sufficient accuracy. Velocity and echo height distribution were also derived. Finally, meteor radiant distribution, RA=231 deg, DEC= 51 deg, was calculated by using several thousands of echoes during Quadrantids activity.

A new system was installed to enhance the performance of the radar. It consists of an Ultra Multi-channel Digital Receiving Subsystem and a Low-loss Signal Transfer Subsystem.

We will present the details of the 2006 Quadrantids characteristics by means of the new analysis method and the new system.