

Height analyses of short-duration meteor trains

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Meteor train phenomena are mainly categorized into the two parts: short-duration meteor trains and persistent meteor trains at a threshold of about 10 seconds from appearances of parent meteors. Our observation team and cooperators could acquire many imaging data of meteor trains at a night of the highest appearance of Leonids in 2001 and opened a way to a statistical studies of persistent train (Toda et al, 2003; Yamamoto et al, 2005). However, observation examples of short-duration meteor trains disappearing within about 10 seconds are still quite limited.

In order to obtain meteor trajectory data with high accuracy, a series of double-station image-intensified TV observation with high spatial and temporal resolution has been continuously carried out by Shigeno et al. (1992-2004). Recently, the importance of imaging data of short-duration meteor trains has been recognized and we found that the TV observation archives by Shigeno et al. include many useful data for the analyses of short-duration meteor trains because these data has quite precise triangulation results. Altitudinal distribution of short-duration meteor trains has been investigated by using the archived double-station video data for Leonids 2001.

In this talk, from the generation process to dissipation, luminescence of short-duration meteor trains is investigated in detail within an altitude range between 120 km down to 90 km. Since spectroscopic studies of meteor phenomena showed luminescence of short-duration meteor trains mainly includes a line of OI (557.7 nm), it is expected that duration time of OI luminescence in the region of mesosphere and lower thermosphere could be statistically revealed by the analyses of short-duration train data.

Reference:

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- Yamamoto, M.-Y., Toda, M., Higa, Y., Maeda, K., Watanabe, J.-I.: Altitudinal Distribution of 20 Persistent Meteor Trains: Estimates Derived from METRO Campaign Archives, *Earth, Moon, Planets*, 2005, in press(already published electronically).