Seasonal height variation of meteor decay time observed from SKiYMET radar at Thumba

B. Prem Kumar(1), K. Chenna Reddy(1), G. Yellaiah(1) and K. Kishore Kumar(2)

(1) Department of Astronomy, Osmania University, Hyderabad -500007, India.

(2) Space Physics Laboratory, Vikram Sarabhai Space Center, Thiruvananthapuram, India.

The duration of decay part of meteor signal strength reflected from radar, known as meteor decay time. This decay time has been used to investigate characteristics of the mesosphere and lower thermosphere (MLT) region. In the present study, we examined the height variation meteor decay time in different seasons by classifying meteor radar received signal power in to strong and weak. It has been noticed that the monthly mean decay time varies in the range of 80-85km, with about 2 km lower height in the winter than in summer. We also examined the possible relationship between meteor echo height variation and echo duration with solar activity. Increasing decay times with decreasing altitude by ambipolar diffusion of meteor trail since diffusion becomes slower because of increasing atmospheric densities with decreasing altitude. In our study, the decay time below about 85 km are followed the decreasing trend with the decreasing altitude, which is quite distinct to the behaviour of ambipolar diffusion.