

Development of atmospheric wave analysis method using advanced MST meteor observation technique

Masaki Tsutsumi[1]; Takuji Nakamura[2]; Kaoru Sato[3]; Takehiko Aso[1]; Toru Sato[4]

[1] NIPR; [2] RISH, Kyoto Univ.; [3] U. Tokyo; [4] Informatics, Kyoto Univ.

MST radars in the VHF band have a great potential in meteor echo observations due to their high transmitting power. The meteor measurement can be conducted throughout a day and compensate the turbulent echo measurement in the mesosphere, which is limited to day light hours, that is, only summer time in the case of the polar region. The MU radar of Kyoto University is one of those MST radars and has been successfully applied to meteor studies by utilizing its very high versatility.

Recently we have further improved the meteor observation technique by using the newly introduced 25 channel digital receiver system, which replaced the old 4 channel analog system in 2004. The number of meteor echoes is increased to at least 50,000 a day. Three dimensional structures of atmospheric gravity waves are now being analyzed using the high time and spatial resolution data. The estimation of momentum flux using the technique proposed by Hocking [2005] is also being tried. On the other hand a very accurate phase calibration of the 25 receivers is essentially important for these advanced analyses to be applied to the data. A new phase calibration technique is under development.