

R005-31

B会場：11/5 PM1 (13:45-15:30)

14:45~15:00

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Gravity wave and TID analysis using horizontal phase velocity spectrum: advantage of M-transform and tips for better performance

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Phase velocity spectrum of the airglow images obtained by 3-D Fourier transform, i.e. M-transform, introduced by Matsuda et al. (2014) is the power spectrum of airglow intensity perturbation in horizontal phase velocity domain. This method quantitatively displays the wave energy of transient wave packets of the gravity waves, and clearly shows the wind filtering effects, direction of momentum, and possible source of the gravity waves. M-transform can also be used to analyze TID (Traveling Ionospheric Disturbance) characteristics observed in the GPS/TEC maps (Perwitasari et al., 2022). It has further been applied to the horizontal mapping of Doppler velocity observed by SuperDARN HF radar (Hazeyama et al., 2022). The software package of M-transform is delivered as an open software on the web site of National Institute of Polar Research. This presentation reviews the M-transform analysis applied to various dataset with different sampling in time and horizontal space, and discusses the advantage of M-transform analysis. Further discussed will be the tips for better performance of the M-transform when used to various new datasets, that could help a wider usage of the M-transform.