

Neutral Atmospheric Dynamics in the Thermosphere observed at Shigaraki Observatory during PSMOS campaign

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In PSMOS Japan campaign, several cooperative observations between optical instruments and MU radar. In this study, the lower thermospheric neutral wind deduced from two different method; MU radar meteo mode and Allsky Fabry-Perot Interferometer (CRLFPI). In the case study of three nights observations, Jan. 24, 28 and 31, the temporal variation of the winds shows very good agreement with each other. When wind shears can be found in MU radar results, the CRLFPI wind shows oscillation-like variation in the range of the shear. In addition, The CRLFPI results of two dimensional distribution shows two peaks of wind directions when the wind shear was seen in MU radar results.

PSMOS campaign in Japan was held on Jan. 1998 centered at the Shigaraki MU observatory, Kyoto University.

In this campaign several cooperative observations between Optical instruments and MU radar. In this study, the lower thermospheric neutral wind deduced from two different method; MU radar meteo mode and Allsky Fabry-Perot Interferometer (CRLFPI). CRLFPI observed horizontal distribution of airglow OI557.7nm whose effective height is thought to about 95 km. Since the height profile of neutral winds can be deduced from MU radar observations, the neutral winds at 93, 95 and 97 km altitude are used for comparison with CRLFPI wind. The temporal resolution of CRLFPI and MU radar is 11 min 06 sec and 30 min, respectively in the analysis. In the case study of three nights observations, Jan. 24, 28 and 31, the temporal variation of the winds shows very good agreement with each other. When wind shears can be found in MU radar results, the CRLFPI wind shows oscillation-like variation in the range of the shear. It can be explained that the height of the OI557.7nm emission layer oscillates in the observational region with MU radar. In addition, The CRLFPI results of two dimensional distribution shows two peaks of wind directions when the wind shear was seen in MU radar results. A possible reason of this result is the spatial difference of emission height in the observation region.