

Direct and Indirect effects of neutral winds on the Midlatitude Ionosphere

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The direct and indirect effects of neutral winds on the annual and semiannual variations of the midlatitude ionosphere are studied using MU radar (135E, 35N) incoherent scatter observations and Sheffield University plasmasphere-ionosphere model (SUPIM). The variations of the daytime electron density (N_e) and electron and ion temperatures (T_e and T_i) at 200-600 km altitudes measured by the radar under low solar activity ($F_{10.7} \leq 120$) are satisfactorily reproduced for the first time by incorporating the radar measured values of the magnetic meridional neutral wind velocity and northward perpendicular plasma drift velocity into SUPIM that uses MSIS-86 for neutral densities and neutral temperatures.