

LOW LATITUDE IONOSPHERE-THERMOSPHERE DYNAMICS AS DEDUCED FROM MERIDIONAL IONOSONDE CHAIN

TAKASHI MARUYAMA¹, Mamoru Ishii¹, Susumu Saito², Jyunpei Uemoto¹, Takuya Tsugawa¹, and Minoru Kubota¹

1. National Institute of Information and Communications Technology, Tokyo, Japan

e-mail: tmaru@nict.go.jp

2. Electric Navigation Research Institute, Tokyo, Japan

Multipoint ionosonde observation has been conducted in Southeast Asia to study ionosphere-thermosphere coupling since September 2004. For this observation three ionosondes were installed along the magnetic meridian at 100°E; Chiang Mai (98.9°E, 18.8°N; maglat = 13.0°), Chumphon (99.4°E, 10.7°N; maglat = 3.3°), both in Thailand, and Kototabang (100.3°E, 0.2°S; maglat = 10.0°S), Indonesia. Chiang Mai and Kototabang are close to magnetic conjugate points and Chumphon is near the magnetic equator. The F layer virtual height, h'F, was scaled from nighttime ionograms. When the height variations at the three locations were available, thermospheric winds in the magnetic meridional plane were derived for transequatorial and convergent/divergent components (with respect to the magnetic equator). During northern winter months, a prominent 6-hr periodic variation of a transequatorial component was found. During northern summer months, a diurnal or semidiurnal variation was dominant. For the periods when data from Kototabang (Chiang Mai) and Chumphon were available, thermospheric wind effects on the height variation over the geographic equator (low latitude) were analyzed. Solar activity effects on the thermospheric wind were compared for medium (2004) to minimum (2008) activity periods. The results were also compared with recently published satellite observations of thermospheric density variations and GCM (general circulation model) outputs of the terminator wave.

ionosonde network, thermospheric wind, h'F

Takashi Maruyama, National Institute of Information and Communications Technology, 2-1 Nukui-kita 4-Chome, Koganei, Tokyo, Japan, tel: +81-42-327-7512, fax: +81-42-327-6163, e-mail: tmaru@nict.go.jp