E138-P010 **Room: Poster Session Hall** **Time: May 17**

Statistical analysis of the F3 layer using the SEALION ionosonde network

Jyunpei Uemoto[1]; Takashi Maruyama[2]; Takayuki Ono[3]; Susumu Saito[4]; Masahide Iizima[5]; Atsushi Kumamoto[6]

[1] Geophys Sci, Tohoku Univ; [2] NICT; [3] Department of Astronomy and Geophysics, Tohoku Univ.; [4] IRPG, NICT; [5] Geophysical Inst., Tohoku Univ.; [6] Tohoku Univ.

http://stpp1.geophys.tohoku.ac.jp/

The occurrence probability, local time, solar and magnetic activity dependences of the F3 layer have been clarified experimentally from ionosonde observations. It has been suggested that combined effects of the E x B drift and the drag between plasma and the trans-equatorial neutral wind are important to form the F3 layer. Considering the effect of trans-equatorial neutral wind, the occurrence probability of the F3 layer is expected to be higher in the summer hemisphere and lower in the winter hemisphere. On the other hand, when the effect of the eastward electric field is taken into account, the occurrence probability is expected to be higher in the season when the electric field is stronger in afternoon local time. However, the occurrence of the F3 layer was analyzed by using a single ionosonde data. Then it has been difficult to clarify the electric field effect and the trans-equatorial neutral wind effect, individually.

To solve the problem described above, we are analyzing the ionosonde data of the South East Asian Low-latitude IOnosonde Network [SEALION] provided by the National Institute of Information and Communications Technology [NiCT]. In this paper, we report some preliminary results of the statistical analysis of the ionosonde data observed at Chiang Mai (CMU [geographic latitude 18.8 deg, longitude 98.9 deg, dip latitude 13.0 deg]), Chumphon(CPN [10.7 deg, 99.4 deg, 3.3 deg]) and Koto Tabang(KTB [-0.2 deg, 100.3 deg, -10.0 deg]) in the period from October, 2004 to September, 2005.

As a result of analyzing the ionosonde data in December, 2004, March, June, and September, 2005, the averages of the occurrence probability of the F3 layer were 80.2%, 24.8% and 57.7% at CMU, CPN and KTB, respectively. The F3 layer occurred at local times from 9 to 16 LT at CMU and KTB, and from 9 to 11 LT at CPN, respectively.

At 3 stations, occurrence probabilities on December were lower than those on other months. This result is consistent with the seasonal dependence of the eastward electric field in this longitude sector calculated from the equatorial vertical drift model proposed by Scherliess and Fejer [1999]; namely, the calculated vertical drift velocity was smallest in the December solstice. At CPN, the occurrence probability was smaller than those at other stations, and the F3 layer disappeared in earlier local time than other two stations. It is suggested that plasma, which lifted upward from the altitude near the F2 peak in morning local times, diffused along the magnetic field line to higher latitude at noon local time sector, so that the F3 layer structure could not be maintained for a long time in the vicinity of the dip equator. On the other hand, occurrence probabilities at CMU were lower than those at KTB. It seems to be caused by a combined effect of the trans-equatorial neutral wind effect and the difference between the dip equator and the geographic equator in this longitude sector. From this point of view, CMU is located in the northern hemisphere so that the neutral wind makes downward motion of plasma along the magnetic field line except June. On the other hand, since KTB is located in the vicinity of the geographic equator, the neutral wind makes downward motion of plasma only in June.

In the future study, we are planning to analyze the data of other seasons and to compare with a model calculation.