

Thesis Title	Study of Ionospheric Electron Content by Using GPS Satellites Signals
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Level of Study	Master of Engineering in Electrical Engineering King Monkut's Institute of Technology Ladkrabang
Year	1997

ABSTRACT

At present, satellite communications are important to use in every day communication. But there are some effects from signals propagate through ionosphere. The types of effect such as Faraday rotation, time delay and the important effect is scintillation, which due to the variation of structures and electron density in each region of the ionosphere that vary on the times of the day and other factors. This thesis presents the variation of total ionospheric electron content (TEC) in Bangkok, Chiang mai and Phuket for comparision the variation of TEC on latitude. Using the correlation of different time delay of 2 L-band signals from GPS satellites, the TEC value can be determined. The results show that, the seasonal variation of TEC in Thailand, the maximum are in May and the other are in October, TEC value is about 53×10^{16} electrons/m². The minimum are in June and December, that corresponds to the distance between the earth and the sun, and the solar zenith. The diurnal variation of TEC, the lowest is just before sunrise and peak during 14.00 LT. The standard deviation (SD) of TEC data at day time is about 15%, at night time is about 25% ,the peak of day is in the night time during 02.00-05.00 LT about 40-70%, because in the night time electron density in ionosphere is not uniform and that maybe a factor for scintillation. Furthermore, the comparison of TEC data between Bangkok and Chiangmai shows the good correlation and depend on season. The geomagnetic latitude variation, the maximum TEC value at Chiangmai is larger than Bangkok because of electron crest in the day time are on magnetic dip latitude $\pm 15-20^\circ$ which closer Chiangmai than Bangkok. The year-to-year variations of TEC have decreased since 1993, the minimum is in 1996 which corresponded to a 11-years solar cycle in the minimum of the cycle. At this moment, there are some strong effects of satellite signals, but the stronger effects will be coming in the next 2-3 year.