TWEEK ATMOSPHERICS REFLECTION HEIGHT MEASUREMENTS DUE TO GEOMAGNETIC STORM OBSERVED IN THE LOW LATITUDE REGION

Thesis presented in partial for the award of the

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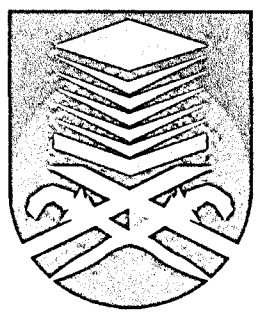

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ABSTRACT

Tweek atmospherics are ELF/VLF pulse signals with frequency dispersion characteristics that originate from lightning discharge and propagate in the Earth-ionosphere waveguide mode over long distances. In this present paper, investigations are made to examine the response of the D-region ionosphere to major magnetic storm by the tweek observations. This paper is to address issues that might be faced because of geomagnetic storm events due to our communication especially to radio frequency waves and signal strength transmission. The purpose of doing this project is to analyse and identify the tweek atmospheric characteristics in Malaysia, estimate the ionospheric reflection height (*h*), equivalent electron densities (*Ne*) at reflection heights, propagation distance (*d*) using Matlab simulation process and to indicated the correlation on reflection height between active geomagnetic storm on 3^{rd}-5^{th} August 2010 and quiet day. Major geomagnetic storm on 3^{rd} – 5^{th} August 2010 is selected due to the changes in the Dst-index executions. The correlation between geomagnetic activity due to active and quiet time based on Kp index and observation of tweek will be investigates. VLF signal is deployed from system called Atmospheric Weather Electromagnetic System for observation Modelling and Education (AWESOME) through its VLF receiver. Located at low latitude station, Selangor (03.5°N 101.31°E) Malaysia, VLF tweek data were recorded for 60 second at every hour only at the night time are presented. Matlab is used to stimulate the data to produced spectrogram to be analysed. The value of ionospheric reflection height varies in the range ~80–90 km. Based on the clarity of dispersion seen in the spectrogram, the analysis for *h* was made using few selected tweeks observed during August 2010.

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