

**OBSERVATION OF PLASMA BUBBLE IONOSPHERIC EQUATORIAL
AT PENINSULAR MALAYSIA BY USING MyRTKNET**

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ABSTRACT

This thesis presents the research on observation of plasma bubble ionospheric equatorial at peninsular Malaysia by using Malaysian Real Time Kinematic Global Positioning System Network (myRTKnet). Depletion layer in Total Electron Content (TEC) in ionospheric layer is called plasma bubbles which usually occur during midnight. The research on observation of equatorial plasma bubbles (EPBs) ionospheric at peninsular Malaysia by using Malaysian Real Time Kinematic Global Positioning System Network (MyRTKnet) can be observed by ionosonde, radar, satellite, Global Positioning System (GPS)-receiver and being measured by using MyRTKnet. In this project, we will focus on data taken by GPS receiver only. This determination is made for satellites in Peninsular Malaysia in the September period of 2007. But only satellites at Universiti Utara Malaysia (UUMK) and Sungai Petani (SGPT) will be considered in this research. The important parameter in this project is TEC which is the value of TEC change rate; ΔTEC is taken within the period of every 15 seconds in order to detect Plasma Bubble. TEC is extracted using GPS receiver which in RINEX format that supplied by JUPEM (Department Of Survey and Mapping Malaysia) and taken from receiver station located at UUMK and SGPT. The value of ΔTEC is compared base on the dropness of TEC value within the scale. It is shown that most equatorial plasma-bubble events commence at 18:00 UT on 6th September 2007 for PRN 26, and may last for less than 60 min.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Global positioning system (GPS) providing accurate position, velocity and time information globally and continuously. The preciseness data of GPS make it as enhancing many military operations including enroute navigation, weapons delivery, channel navigation and coordinated operations. Through the use of a common reference grid and precise position, velocity and time information make GPS as a force multiplier by allowing combined operations to be executed. GPS will ensure that it eventually becomes an essential part of most military systems, replacing existing, more costly navigation systems [1].

GPS signal can be disturb and has potential to degrade the accuracy and reliability because of the distortion of the satellite signals as they propagate through the ionosphere layers. This cause loss-of-lock on the GPS signals because the noise mixed in the measurements of satellite range which added more difficulties in acquiring and maintaining it.