THE INVESTIGATION ON IONOSPHERIC RESPONSE TO THE ANNUAL SOLAR ECLIPSE BY USING TOTAL ELECTRON CONTENT MEASUREMENTS

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ABSTRACT

This research investigates the ionosphere response to the annual solar eclipse on 26th January 2009 over Indonesia and Singapore. During solar eclipse, ionosphere will be affect due to the partial or complete obstruction of solar emission. It makes the number of electrons and ions decreases. There are several factors that will contribute to the ionosphere response which are the level of solar and geomagnetic disturbances, geographical latitude and longitude and local time. There are some methods that use to determine the behaviour of ionosphere response during solar eclipse. It includes ionosonde measurements, incoherent scatter radar (ISR) and Global Positioning System (GPS) satellite. In this research, GPS satellite is use in order to investigate the ionosphere response. This method is use because the result can easily take out from GPS station. This research focuses on the measurement of Total Electron Content (TEC) obtained from three GPS station which are Bako and Coco station in Indonesia and Ntus station in Singapore. The location of these three GPS stations from the path of solar eclipse occur is different. The data is obtained a day before and during solar eclipse occur. The variation level of TEC had analyzed by using Matlab software to compare the TEC level on a day before and during solar eclipse phenomena. From the data observation it shows that TEC level will reduce during solar eclipse due to the declining of ionizing radiation.

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