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# Ionospheric Modeling in the Tropic Using the Malaysian GPS Reference Network Data

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One of the major sources of error in precise GPS positioning since the turn-off the Selective Availability (SA) is the ionospheric propagation delay. Current strategy requires the use of precise ionospheric models to estimate this error and correction are applied to the GPS observations for a precise positional determination. Presently, many ionospheric models are available for this purpose but they are not tailored made specifically for the tropical areas where the ionospheric activities are known to be much more intense. In this paper, a strategy to determine the total electron content (TEC) on a continuous basis and the development of a 2D grid based ionospheric modeling over the tropical area using the Malaysian GPS reference network are described. The GPS reference network consists of 17 points distributed throughout Malaysia. Analysis on the ionospheric behaviour over the tropic was conducted and taken into account in the ionopheric modeling process. Comparison with results of other organizations is described here. The 2D ionospheric model is found to be capable of giving GPS positional accuracy improvement of up to about 90% to the test baselines determined using single frequency GPS receivers.