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Real-Time Ionospheric Monitoring over South Korea using KASI GPS Network

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Real-Time(RT) ionospheric monitoring is important for sub-decimeter GPS positioning, especially during the high geomagnetic activity or the Solar Maximum. A RT ionospheric monitoring system has been developed by using the data acquired from a regional GPS observation network of Korea Astronomy and Space Science Institute(KASI) in South Korea. KASI GPS network, spaced within about 100km, consists of nine reference stations which have been connected by internet(3 stations) and dedicated communication line(6 stations). Based on this communication infrastructure, GPS measurements have been obtained in real-time basis. In order to estimate vertical total electron contents(VTEC), we used dual-frequency GPS measurements observed on all KASI stations and Inverse Distance Weighted(IDW) interpolation technique was applied. The developed RT ionospheric model is based on the grid form which has a spatial resolution with $0.5^{\circ} \times 0.5^{\circ}$ on geographic latitude and longitude. The regional two-dimensional maps of ionospheric TEC can be produced in real-time with this model.