

## Beacon experiment of the ionosphere in Japan and southeast Asia

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We have been successfully conducted observations of total-electron content (TEC) of the ionosphere by the satellite-ground beacon experiment. An unique dual-band (150/400MHz) digital receiver GRBR (GNU Radio Beacon Receiver) were developed based on the recent digital signal processing technologies. The GRBR receivers were deployed first in Japan, and then in southeast Asia, and other areas. Data from the GRBR network were used for the investigations of variety of ionospheric phenomena. We have found mid-latitude summer nighttime anomaly (MSNA) over Japan, which is summer nighttime TEC enhancement at higher latitudes. Longitudinal "large-scale wave structures (LSWS)" in the low latitude were studied in detail as a source of equatorial Spread-F (ESF) events. Also we were successful to measure the equatorial ionospheric anomaly (EIA) near 100E longitude in large latitudinal extent of at most +/-20 degrees around the geomagnetic equator. The technique is utilized for sounding rocket-ground experiment as well. We review the ionospheric studies with the GRBR network, and will discuss future direction of the related studies.

Keywords: Satellite-ground beacon experiment, Total electron content, Middle- and low-latitude ionosphere, GRBR network