

MIS014-06

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Ionospheric observations during the solar eclipse on July 22, 2009

Takuya Tsugawa^{1*}, Hisao Kato¹, Minoru Kubota¹, Hiroyuki Shinagawa¹,
Tsutomu Nagatsuma¹, Ken T. Murata¹

¹NICT

National Institute of Information and Communications Technology (NICT) conducted special ionospheric observations during the solar eclipse on July 22, 2009. Ionosonde observations had been operated every minute at all four ionosonde stations in Japan. We examine the ionospheric variations during the solar eclipse using the time series of the critical frequency of ionospheric F2 region and sporadic E layer automatically scaled from ionograms. We also examine the ionospheric variations using two-dimensional maps of total electron content (TEC), detrended TEC with 60, 30, 15-minute window, rate of TEC change index (ROTI), and loss of lock on GPS signal over Japan.

The observational results show that the TEC decreases all over Japan during the solar eclipse. This TEC variations are consistent with those from simulation with the ionospheric model. On the other hand, any remarkable solar eclipse-induced wave structure is not found in the detrended TEC maps.

Keywords: solar eclipse, ionosphere, GPS, ionosonde, traveling ionospheric disturbance, atmospheric gravity wave