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Examining The Effects of Huge Sunspots of 7 January 2014 over Local TEC Variation in Mid-Latitudes

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The ionosphere is the major contributor of errors in Global Positioning System (GPS). The activity of the Sun is associated with the sunspot cycle and solar flares. Solar activity rises and falls periodically, repeated every 11 years known as a solar cycle. Hence, the ionosphere is the major contributor of errors in Global Positioning System (GPS), especially during the 11-year sunspot cycle. One of the largest sunspots in the last nine years, named AR1944, was captured by NASA's Solar Dynamics Observatory in 01/07/2014. As an important parameter, Total Electron Content (TEC) is appropriate for the study of the Sun–Ionosphere connection. In this study, the mid-latitude IGS stations RINEX observation data was used to determine the local TEC variations. This study monitors the local TEC changes on the effects of sunspots over mid-latitude region in January 7th 2014.