

## The global total electron content reconstruction in the local time frame

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The total electron content (TEC) data from Global Ionosphere Maps provide a global TEC map in the region between latitude 87.5°S to 87.5°N, and longitude 180°W to 180°E. The TEC data in geographic coordinates are first transformed into geomagnetic coordinates through Altitude-Adjusted Corrected Geomagnetic Model (AACGM). We then use 2-dimensional (longitude, 180°W~180°E and time, 10 days) Fourier transform (FT) of TEC variations along different geomagnetic latitude to obtain all wave modes for the period from November 18, to October 15, 2014. By the summation of all non-migrating tides, migrating tides, and zonal mean, the TEC global map in the local time frame is reconstructed. Again, the AACGM is applied to transform from geomagnetic coordinates back to geographic coordinates. The local time evolution in geographic coordinates of TEC is then produced. The features of TEC peaks in the local time frame are presented.

Keywords: geomagnetic coordinates, Global Ionospheric Maps, Fourier transform, Ionospheric tides