

Creating a Scale for Ionospheric Disturbance

Hanna Kristensen (Pepperdine University)

Advisor: Mihail Codrescu

Location: Space Weather Prediction Center at the National Oceanic and Atmospheric Administration

Abstract: The relationship between the vertical total electron content (VTEC) and geomagnetic conditions was studied in order to develop a scale informing GPS users of position errors associated with ionospheric disturbances. We have attempted to differentiate between good and poor GPS conditions illustrated by the departure of TEC values from a 10 day running average (trend) based on geomagnetic conditions characterized by the Kp index. We found no useful correlation between CONUS vertical TEC averages or CONUS trend averages, and Kp. This points to the need of a position dependent index, i.e. a map of GPS errors as a function of time, instead of a global number.