Abstract Submitted
for the TSF17 Meeting of
The American Physical Society

Modeling the Effects of Equatorial Ionospheric Disturbances on High Frequency Transmissions Through Ray Tracing.[1] MATTHEW PROCTOR, University of Texas - Dallas — Ionospheric disturbances in low latitudes can alter HF transmission paths from the path in a quiet ionosphere; which can cause false target readings in over-the-horizon (OTH) radar. We have developed a two-dimensional ray tracing model from which we are quantifying disturbance effects on OTH radar. Our model uses a Runge-Kutta 4th order integration method to determine the rays path from the provided initial values of the take-off angle of the transmission with the longitude and altitude of the transmitter. These disturbances are specified by the output of the High-Resolution Bubble Model with spatial resolution of 1 km. We show that the rays paths are greatly altered from quiet time and a perturbed ionosphere.

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Date submitted: 21 Sep 2017 Electronic form version 1.4