

103 -- 2017-03-08 02:05:47

Session 10A Paper 1

Miller, Ethan: JHU/APL

Characteristics and Onset Conditions of Spread F Inferred from a Long-Term Transequatorial HF Radio Experiment

Formation of large wedges of depleted plasma after sunset in the equatorial ionosphere is a long-standing aeronomy problem. These depleted regions of plasma are well-known to be unstable on scales from many tens of kilometers down to a few centimeters, causing a variety of radio effects, from

scintillation at high frequencies (VHF/UHF, L-band, and beyond) to range and frequency spreading, as well as off-great-circle propagation, at HF

frequencies. We have analyzed data from a two-year HF propagation experiment linking Hawaii and American Samoa to uncover clues about the possible mechanisms driving the occurrence of these depletions and the attendant phenomena. Key findings include multipath propagation signatures indicative of post-sunset structuring and a technique for estimating growth rate from the Doppler spectra.