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Simulating Amateur Radio During the August 21, 2017 Total Solar Eclipse J.S. VEGA, N.A. FRISSELL, J.D. KATZ, New Jersey Institute of Technology, J.D. HUBA, U.S. Naval Research Laboratory — As the shadow of a total solar eclipse passes across the Earth it causes a temporary change in the shadowed portion of the ionosphere. This change affects the propagation of radio waves and radio communications, especially in the MF and HF frequency ranges (0.3-3 MHz and 3-30 MHz, respectively). Such was the case during the August 21, 2017 total solar eclipse that traveled across the contiguous United States from Oregon to South Carolina. During the eclipse, the Ham Radio Science Citizen Investigation (HamSCI) project conducted a nation-wide experiment called the Solar Eclipse QSO Party (SEQP) in order to crowd-source data from the vast number of amateur "ham" radio operators to show how the eclipse affected radio propagation. We present the results generated from a simulation of the SEQP as well as a comparison between the simulated results and actual results. The simulation program uses the SAMI3 ionospheric model developed by the U.S. Naval Research Laboratory which, in addition to a "normal" model, includes a special "eclipse" model specifically created for the August 21, 2017 eclipse. The program also uses the PHaRLAP ionospheric raytracing toolkit to compute the path of individual rays from transmitters to receivers.

Joshua Vega
New Jersey Institute of Technology

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