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**Resolving Ionospheric E-region Modeling Challenges: The Solar Photon Flux Dependence** JOSEPH JENSEN, JAN SOJKA, MICHAEL DAVID, KENT TOBISKA, ROBERT SCHUNK, Utah State University, TOM WOODS, FRANK EPARVIER, LASP University of Colorado Boulder, UTAH STATE UNIVERSITY TEAM, LASP UNIVERSITY OF COLORADO BOULDER TEAM — The EVE instrument of the NASA Solar Dynamics Observatory (SDO) provides for the first time EUV and XUV measurements of the solar irradiance that adequately define the major source of ionization of the atmosphere. In our study we modeled the E-region of the ionosphere and analyzed how it is affected by the solar irradiance data obtained by EVE and contrast this with the S2000 Solar Irradiance model, used previously. The ionosphere has two major layers, the E-layer at 100 km, and the F-layer at 300 km. The difference in solar irradiances are small except at some wavelength bands, it is these differences that lead to a better understanding of the physical/chemical processes of the E-region. Observations of the ionospheric layers is best achieved using incoherent scatter radars (ISR). We have compared our model with ISR data available from Arecibo Puerto Rico in an effort to understand how specific solar irradiance wavelength bands affect the E-region. This study focuses on two specific wavelength bands 0.1-15 nm and 91-103 nm. Both are responsible for E-region production, but in quite different manners.

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