

Project Details

ROSES ID: NRA-03-OSS-01

Selection Year: 2004

Program Element: Independent Investigation: LWS

Project Title:

Impact of Solar EUV Irradiance Variability on the Low- to Mid-Latitude Ionosphere

PI Name: Joseph Huba

PI Email: huba@ppd.nrl.navy.mil

Affiliation: Naval Research Laboratory

Summary:

We propose to study the impact of solar extreme ultraviolet (EUV) irradiance variability on the earth's low- to mid-latitude ionosphere. We will accomplish this by incorporating existing models of EUV irradiance variations into the NRL ionosphere codes SAMI2 and SAMI3. The EUV models to be used are NRLEUV, HFG, EUVAC, and SOLAR2000. For each EUV model we will perform a set of simulation studies using SAMI2 to determine the ionospheric conditions over the 11-year solar activity cycle. The simulations will allow us to examine the radiative and dynamical processes through which the ionosphere responds to EUV irradiance changes at different latitudes and altitudes. We will then compare the simulation results with available ionospheric data; for example, from the Millstone Hill, Arecibo, and Jicamarca radars, as well as from in situ satellite data (e.g., DMSP satellites). In addition, we intend to use these EUV models and data from the TIMED mission as inputs to SAMI3 to obtain the global response of the ionosphere to solar variability on a solar rotation period. Finally, we will also model the impact of short-time events (e.g., solar flares) as the appropriate data become available during the course of the research program.

Publication References:

no references