

Project Details

ROSES ID: NNH10ZDA001N

Selection Year: 2011

Program Element: Sun Climate

Project Title:

Investigation of Climate Response to Solar Spectral Variability on Decadal, Centennial, and Millennium Time Scales

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Project Member(s):

- Cahalan, Robert F; Co-I; John Hopkins University Applied Physics Laboratory
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Summary:

This investigation is in the category of the Sun-Climate Theme of the Living With a Star (LWS) Program. We propose to evaluate the spectral details necessary for proper treatment of the radiative and photochemical response to solar spectral variability in climate models, and to investigate climate responses to solar spectral variability for a range of time scales ranging from decadal to centennial to millennial time scales. We will apply the existing coupled ocean-atmosphere radiative convective model (RCM) and GISS GCM Model 3 (GCMAM) to different spectral solar forcing scenarios on decadal, centennial, and millennium time scales, focusing on understanding the pathways of solar impacts from upper atmosphere through the troposphere and into the land and oceans. By analyzing the GCM simulation results we explore and test recent proposed amplification mechanisms for solar impacts on climate.

Publication References:

Summary: no summary

Reference: Wen, Guoyong; Cahalan, Robert F.; Rind, David; Jonas, Jeffrey; Pilewskie, Peter; Wu, Dong L.; Krivova, Natalie A.; (2017), Climate responses to SATIRE and SIM-based spectral solar forcing in a 3D atmosphere-ocean coupled GCM, Journal of Space Weather and Space Climate, Volume 7, id.A11, 14 pp, doi: 10.1051/swsc/2017009