

Project Details

ROSES ID: NRA-NNH04ZSS001N

Selection Year: 2005

Program Element: Focused Science Topic

Topic: Sensitivity of regional and global climate to solar forcing

Project Title:

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Summary:

NCAR's Whole Atmosphere Community Climate Model (WACCM) will be used to study the impact of 11-year solar variability from the troposphere to the lower thermosphere. The model domain extends from the ground to ~150 km, and includes fully interactive chemical, dynamical and radiative processes over this range of altitude. We propose a series of integrations over 8-10 simulated solar cycles to establish the statistical significance of the results, and help elucidate the physical mechanisms responsible for atmospheric variability on 11-year time scales; this approach is especially important in the troposphere and lower stratosphere, where solar signals are expected to be small. In addition to the model, we will use NASA satellite observations (UARS, TIMED, SNOE, etc.), plus ground-based observations, to specify the variability of solar irradiance and particle precipitation over the 11-year solar cycle, to validate model results, and to help elucidate the mechanisms whereby solar variability impacts the state of the atmosphere.

Publication References:

no references