HAO Colloquium Series

(Refreshments served)

Speaker: **Susan Nossal, University of Wisconsin**

Time: **3:00–4:00 pm**

Date: **Monday, July 8, 2013**

Location: **CG1-2126**

Title: **Hydrogen Response to Solar Cyclic Variability and Greenhouse Gases**

Abstract:

Geocoronal hydrogen forms the upper boundary of the Earth's atmospheric hydrogen distribution and is a byproduct of radiatively important methane and water vapor. We will discuss reanalysis in progress to improve the accuracy of the Wisconsin Northern hemisphere mid-latitude hydrogen emission data set to facilitate inter-comparison of observations by the high precision Wisconsin H-alpha Mapper Fabry-Perot with earlier observations spanning three solar minima. We will also discuss sensitivity studies using the National Center for Atmospheric Research's single column global-average version of the Thermosphere Ionosphere Mesosphere Electrodynamics General Circulation Model to investigate solar cyclic and climatic influences on upper atmospheric hydrogen distributions. Modeling results suggest a larger response of atmospheric hydrogen to greenhouse gas increases at solar minimum than at solar maximum. At solar minimum, carbon dioxide cooling, as well as methane, appears to have a significant influence in defining the change in the hydrogen distribution at thermospheric altitudes.