



# SPACE PHYSICS SEMINAR

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## The Variability of the Near Space Environment Due to Lower Atmosphere Forcing

**725 Commonwealth Ave.**

**Thursday, January 31, 2013**

**Refreshments at 3:30pm in CAS 500**

**Talk begins at 4:00pm in CAS 502**

### Abstract:

It is well known that the Earth's near space environment (mesosphere, thermosphere and ionosphere) is strongly driven by solar and magnetospheric forcing. The influence of the lower atmosphere, on the other hand, has long been speculated but the specific pathways are not well understood. This unfortunate situation is changing rapidly thanks to better observations, in particular during the recent extended solar minimum, and the development of numerical models that take into account the lower atmosphere forcing. In this talk, I will discuss recent studies of the upper atmosphere variability due to coupling with the lower atmosphere using two such models: the NCAR Thermosphere-ionosphere-mesosphere-electrodynamics general circulation model (TIME-GCM) and the Whole Atmosphere Community Climate Model (WACCM). I will focus on the roles of atmospheric waves in the coupling process, and on how they affect the circulation, transport, and electrodynamics in the near space environment. Their impacts on the day-to-day variability of the upper atmosphere and the implications for upper atmosphere predictability will also be discussed.