HAO Colloquium Series

(Refreshments served)

Speaker: **Ellen Cousins, HAO**

Time: **1:30–2:30 pm**

Date: **Wednesday, February 13, 2013**

Location: **CG1-2139 Captain Mary Room**

Title: **Characteristics of variability in high-latitude ionospheric plasma drifts**

Abstract:

Plasma drifts in the Earth's high-latitude ionosphere are one important component of the coupled magnetosphere-ionosphere-thermosphere system. These drifts are primarily driven by interactions between the magnetosphere and the solar wind, and they are an important energy source in the polar regions of the upper atmosphere. While the average or climatological behavior of these drifts is well studied and well characterized, variability in the drifts on various scales is less well understood. This variability is expected to contribute an unknown, but likely significant, amount of energy to the upper atmosphere through Joule heating. In this study, the statistical characteristics of such variability are investigated using a large database of plasma drift measurements from the Super Dual Auroral Radar Network (SuperDARN) high-frequency coherent backscatter radars. It is found that variability in the drifts is of the same order of magnitude as the smooth background drifts. Possible drivers of variability on small and large scales are identified and initial results regarding the spatial and temporal coherence of the variability are described. Finally, the possible implications and applications of the results to problems such as ionosphere-thermosphere modeling and ionospheric data assimilation are discussed.