



HAO Colloquium Series

(Refreshments served)

Speaker: Qian Wu, HAO/NCAR

Time: 1:30–2:30 pm

Date: Wednesday, February 1, 2012

Location: CG1-South Auditorium

Title: HIWIND Daytime Thermospheric Wind Observation

Abstract:

HIWIND is the first balloon borne Fabry-Perot interferometer designed to measure daytime thermospheric winds. Thermospheric wind is a key parameter for understanding ionosphere at all latitudes. The most common method of measuring the wind is through Doppler airglow remote sensing using a Fabry-Perot interferometer. Optical remote sensing is difficult during the day due to the high solar scattering background. HIWIND overcomes this problem by flying at 40 km, where the scattering intensity is only 0.1 % of that at the sea level. In June 2011, HIWIND flew from Kiruna Sweden across the Atlantic Ocean and landed in northern Canada. HIWIND was able to obtain high quality daytime thermospheric winds as we had expected. During the HIWIND flight, local ground based incoherent scatter radar from EISCAT provided simultaneous ionosphere observation. The combined neutral-ion observation offers a great opportunity to explore the interaction between the thermosphere and ionosphere. The daytime observation allows us to estimate the ion-neutral collision with a much higher accuracy. HIWIND data also gives a rare chance to validate daytime NCAR TIEGCM simulation and is a good reference for future refinements. A short flight of HIWIND certainly cannot satisfy all the need for thermospheric winds. We hope to fly HIWIND more in the future to realize its full potential.