HAO Colloquium Series

(Refreshments served)

Speaker: **Larisza Krista, NOAA/SWPC**

Time: **1:30–2:30 pm**

Date: **Wednesday, October 31, 2012**

Location: **CG1-2126**

Title: **Study of the recurring dimming region detected at AR 11305 using the Coronal Dimming Tracker (CoDiT)**

Abstract:

We present a new approach to coronal dimming detection using the COronal DImming Tracker tool (CODIT), which was found to be successful in locating and tracking multiple dimming regions appearing near active regions (ARs). This tool allows us to study the properties and the spatial evolution of dimming regions at high temporal and spatial cadence from the time of their appearance to the time of their disappearance. We use the SDO/AIA 193 Angstrom observations and HMI magnetograms to study dimmings. As a demonstration of the detection technique we analyzed six reoccurrences of a dimming observed near AR 11305 from 29 September–2 October 2011. The dimming repeatedly appeared and formed in a similar way, first expanding then shrinking and occasionally stabilizing in the same location until the next eruption. The dimming areas were studied in conjunction with the corresponding flare magnitudes and CME masses. These properties were found to follow a similar trend during the observation period, which is consistent with the idea that the magnitude of the eruption and the CME mass affect the relative sizes of the consecutive dimmings. We also present a hypothesis to explain the evolution of the recurrent single dimming region through interchange reconnection. This process would accommodate the relocation of quasi-open magnetic field lines and hence allow the CME flux rope footpoint (the dimming) to expand into quiet Sun regions. By relating the properties of dimmings, flares and CMEs we improve our understanding of the magnetic field reconfiguration caused by reconnection.