

Solar Irradiance Variations in Chromospheric Spectral Lines

Debi Prasad Choudhary [debiprasad.choudhary@csun.edu]¹, **Cristina Cadavid**¹, **Angie Cookson**¹, **Gary Chapman**¹, and **Sergey Marchenko**^{2,3}

¹ *San Fernando Observatory, California State University – Northridge, CA, USA*

² *Space Science Systems and Applications, Inc. (SSAI), Lanham, MD, USA*

³ *NASA Goddard Space Flight Center (GSFC), Greenbelt, MD, USA*

The chromospheric activity of the Sun is governed by the magnetic field anchored at the photosphere. We study the dependence of chromospheric activity on magnetic field of the Sun-as-a-star by using observations by Integrated Sunlight Spectrometer (ISS) and Vector Spectromagnetograph (VSM) of Synoptic Optical Long-term Investigations of the Sun (SOLIS) instrument. The chromospheric activity is measured as the line depth and equivalent width (EW) of spectral lines in H α , He I 10830 nm, Ca II 854.2 nm, Ca II H and K, and Na D I 589.6 nm obtained with the ISS. The full disk mean total magnetic flux (FDMTMF) observed with the VSM is used as the measure of magnetic activity of the Sun. The equivalent width of Ca II K and He I 10830 nm measured by Livingston along with the Magnetic Plage Strength Index (MPSI) value and a Mount Wilson Sunspot Index (MWSI) obtained with 150-foot Solar Tower in Mt. Wilson Observatory are used to further study the relationship between the magnetic field and chromospheric activity.