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Title: The Role of the Solar Center-to-Limb Variation in Deduced Photometric Trends

Abstract: We examine the sensitivity of previously reported changes in the Sun’s continuum photometric contrast to the measured center-to-limb profile using eight years of data from the Precision Solar Photometric Telescope at the Mauna Loa Solar Observatory. We compute the solar center-to-limb variation using two commonly employed methods, and show that the continuum band photometric sum, the relative contribution of solar features to the disk integrated intensity, correlates negatively with the solar cycle, as previously reported by Preminger et al. (2011). Further analysis shows that sunspots dominate this trend, while the background disk appears to brighten with increased magnetic activity. Additionally, the changing number of magnetic elements on the solar disk introduces systematic variations with magnetic activity in the deduced center-to-limb profile, which contaminates the quiet sun photometric trends. We conclude that without absolute photometry it is difficult, if not impossible, to quantify quiet-sun contributions in solar irradiance variations.