

Analysis of Photometric Images of the Quiet Sun during Solar Minimum

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The variation in the Total Solar Irradiance (TSI) has been shown by spacecraft experiments to follow the solar activity cycle, with maximum irradiance at times of maximum activity. Full-disk multi-wavelength photometry at the San Fernando Observatory (SFO) correlates well with the TSI variation, producing correlation coefficients of 0.95 or higher. Several solar indices are based on magnetic features, mainly sunspots and faculae, and the correlations assume a non-varying quiet Sun over the entire solar cycle. Just as space-based instruments and related data collection are continually re-examined to ensure their reliability and accuracy, so are the SFO instruments and algorithms in order to ensure we build the most accurate data set we can. When identifying solar features on SFO images, where small-scale brightness fluctuations are used to set limits on the detection of faint solar features, it's important to understand the extent of introduced noise. Here, we investigate the background quiet Sun, in a statistical manner, at cycle minima, in order to better characterize the background noise, both solar and instrumental, in SFO images.