

Long-Term Variability

ABSTRACT

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Measurements of the solar energy throughout the solar spectrum and understanding its variability provide important information about the physical processes and structural changes in the solar atmosphere. Solar irradiance measurements (both bolometric and at various wavelengths) over the last two decades have demonstrated that the solar radiative output changes with time as an effect of the waning and waxing solar activity. Although the overall pattern of the long-term variations is similar in the entire spectrum and at various wavelengths from X-ray to radio, being higher during high solar activity conditions, remarkable differences exist between the magnitude and shape of the observed changes. These differences arise from the different physical conditions in the solar atmosphere where the irradiances are emitted. The aim of this paper is to discuss the solar-cycle-related long-term changes in solar total and UV irradiances. The space-borne irradiance observations will be compared to ground-based indices of solar magnetic activity, such as the full disk magnetic flux, Photometric Sunspot, Index and the Mt. Wilson Magnetic Plage Strength index.