

Solar photospheric activity as observed in white light from Sri Lanka in 2002

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This study utilized observation in white light (400 – 700 nm) to monitor solar activity from 1 January to 31 December 2002. A tripod-mounted terrestrial refractor telescope (aperture 4.0 cm, magnification 30 x) fitted with a Baader full-aperture solar filter was used to make the observations. Using this instrumentation sunspot groups and individual spots were counted visually on a daily basis (weather permitting). The Waldmeier Sunspot Classification was used to distinguish between ambiguous sunspots and groups. The Wolf Sunspot Number (the standard measure of solar activity) was computed from the formula $R = k(10g + f)$, where g is the number of sunspot groups, f the number of individual spots and k a constant for the observer, telescope and site. (The value of k was predetermined from analysis of a long series of earlier observations which showed it to be 1.17). The derived monthly values of R are significant as they illustrate the actual intensity of solar activity as observed when the sun was in the hemisphere of observation.

In 2002 a total of 298 observations (days) were carried out. The mean value of R for 2002 was 106 (monthly range 79 – 127). The mean monthly values of R exceeded 100 in January, February, March, April, May, August and September. Maximum solar activity ($R = 219$) occurred on 13 April and minimum ($R = 14$) on 29 December. No “spotless days” (i.e. when $R = 0$) were recorded.

This data shows that although the study was carried out approximately two years after solar maximum (the period of highest activity in the 11 year solar cycle) the sun continued to maintain a relatively high degree of activity in 2002. Nevertheless, the data shows that there was considerable fluctuation in solar activity from day-to-day. The study also emphasizes that useful data on solar activity can be obtained by a regular programme of systematic observations using relatively basic instrumentation.