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To: SRT Group

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Subject: SRT observations of the 2017 solar eclipse

The SRT at Haystack was used to observe the solar eclipse on 21 August 2017. The eclipse started at 17:28 UT, covered 63% of the solar disk at 18:46 UT and ended at 19:59 UT. The Sun was tracked and in addition, a 25 point scan of the Sun along with a calibration was performed about every 15 minutes. These scans were done to obtain a more accurate estimate of the peak antenna temperature since the tracking was not perfect. In hindsight, a more careful check of the pointing should have been made long with some mechanical adjustment of the levelling of the azimuth rotation axis. The figure shows the results of the measurements. The ratio of the peak antenna temperature to the value at maximum coverage by the moon was

$$583 \pm 5 / 233 \pm 5 = 2.502 \pm 0.07$$

which is lower than the optical ratio of $100/(100-63)=2.703$ imply that only 60 % of the radio Sun was covered or about $8 \pm 4\%$ of the Sun at 1.42 GHz was from a contribution outside the solar optical disk. The VSRT operating at 12 GHz measures a solar diameter about 4% larger which implies a corona contribution of about 8%.

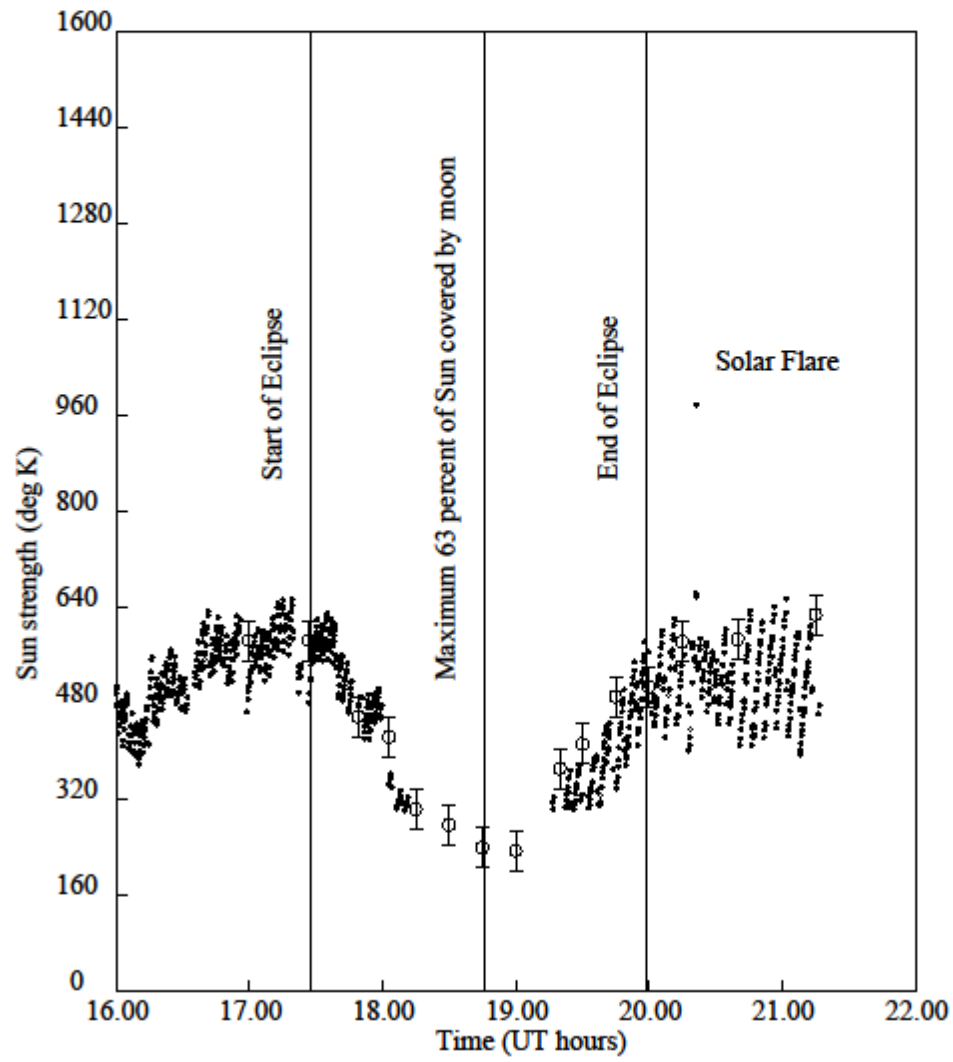


Figure 1. Plot of SRT data taken during 2017 Eclipse. Large circles with error bars are calibrated points.