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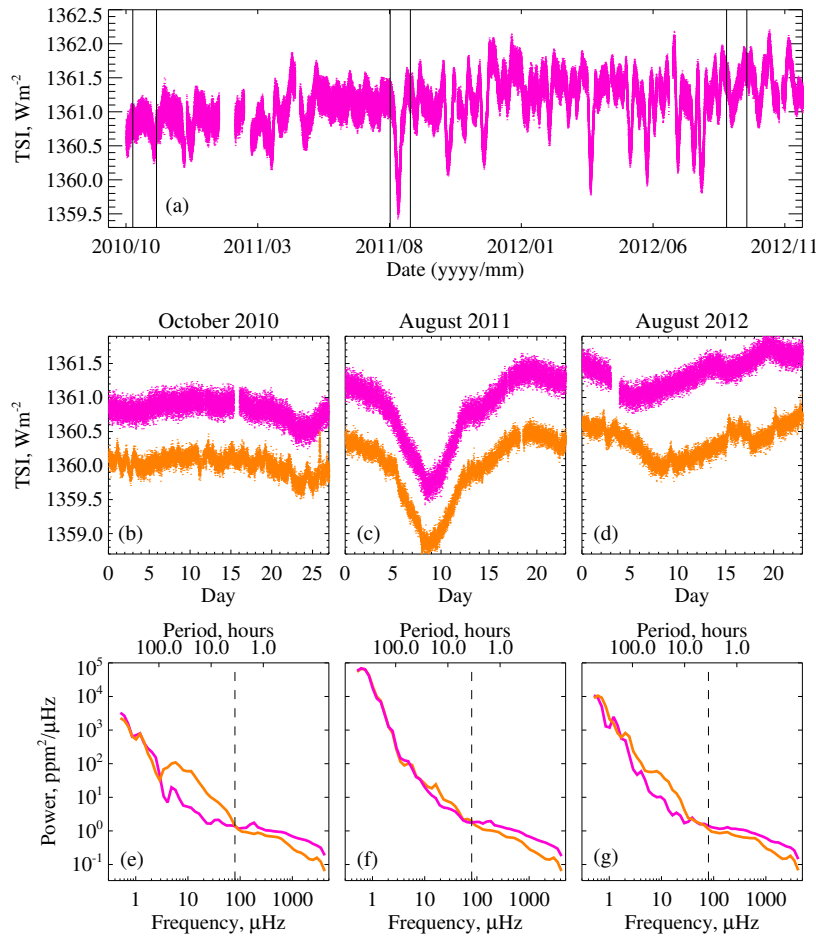
The nature of solar brightness variations

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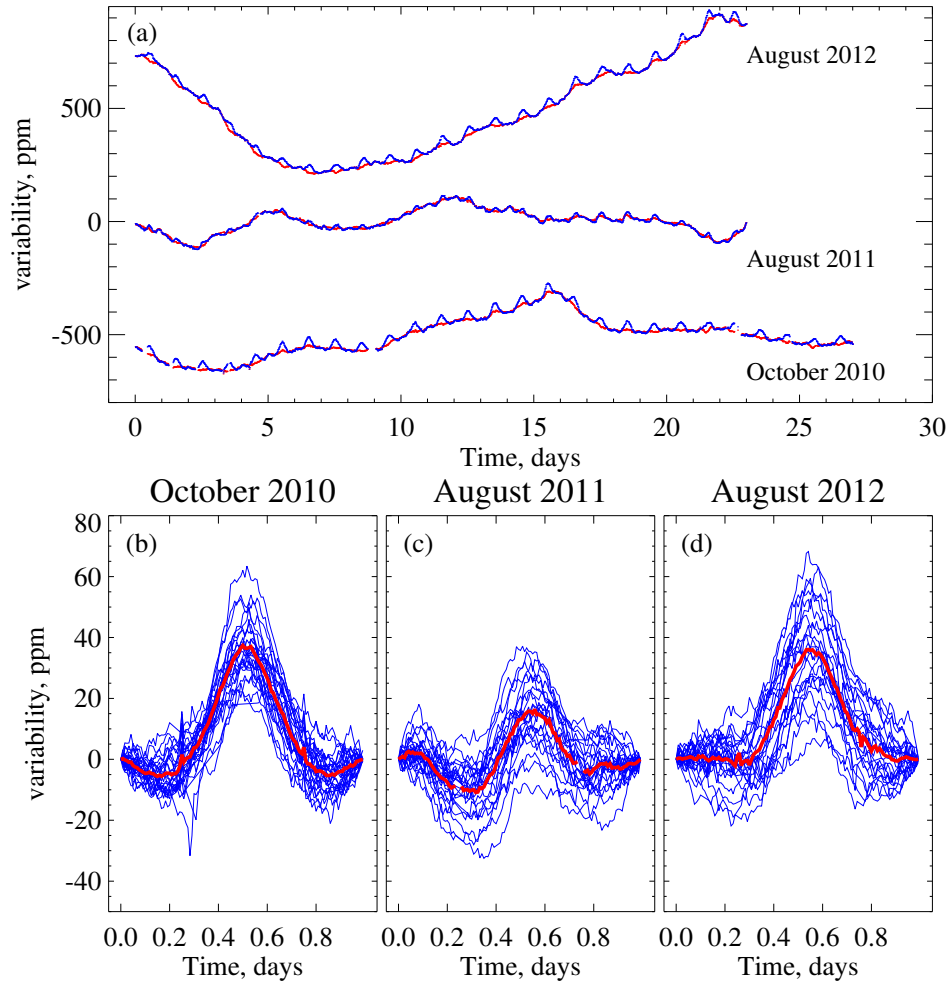
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Supplementary Information: Nature of solar brightness variations

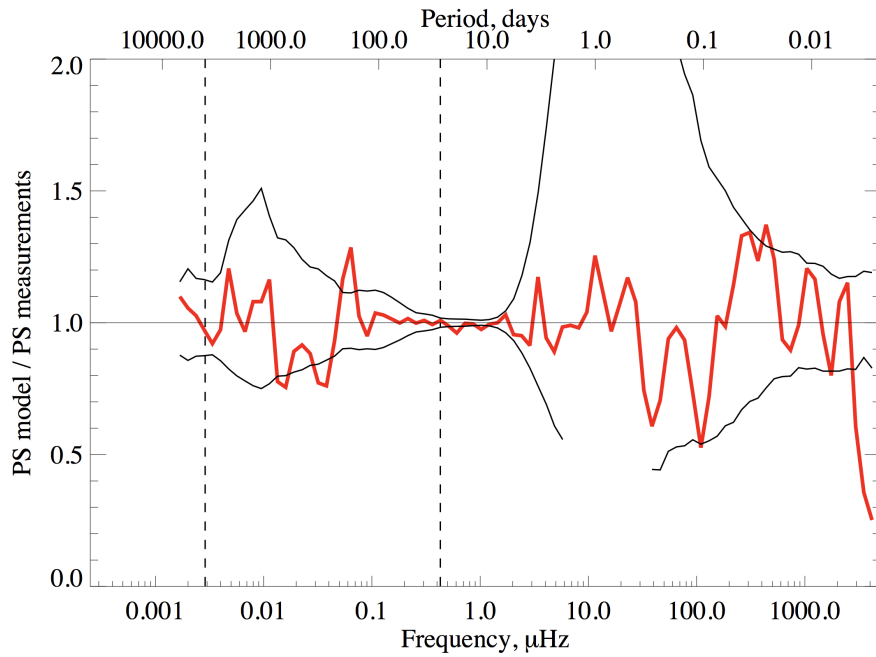
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Supplementary Figure 1: **Spaceborne measurements of TSI variability.** **a.** TSI measured by PREMOS/PICARD between October 2010 and December 2012. Black vertical lines constrain three one-month intervals studied here (Table 1). **b, c, d.** TSI measured by VIRGO (orange) and PREMOS (magenta) during the three intervals studied here. In all three panels day zero refers to the first day of the corresponding interval. **e, f, g.** Global wavelet power spectra of the TSI variability measured by PREMOS (magenta) and VIRGO (orange) calculated for intervals shown in b, c, d. The vertical dashed lines indicate the period of 3.5 hours used as a threshold, with the PREMOS data being taken on the left (lower frequencies) and the VIRGO data on the right (high frequencies) to form the composite power spectra (which is plotted in Fig. 2 together with the corresponding 1σ uncertainty).



Supplementary Figure 2: **Correction of the facular TSI component for the instrumental 24-hour harmonic.** **a.** The facular TSI component calculated utilising 12-minute HMI/SDO magnetograms before (blue) and after (red) correction for the instrumental 24-hour harmonic. **b, c, d** The facular TSI component calculated utilising 12-minute HMI/SDO magnetograms is split into 24-hour intervals. Its variations in each interval are detrended and plotted over each other (blue curves). Red curves represent the averages of blue curves in each of the panels and are used to correct the TSI variations for the instrumental 24-hour harmonic. The associated statistical uncertainty of such a correction is about 10 ppm.



Supplementary Figure 3: **Residuals between our model and the data.** Plotted are the ratio between power spectra (PS) of modelled and measured TSI variations (red) as well as the 1σ error intervals for the ratio (black). The vertical dashed lines indicate 11-year and 27-day periods.