

TSI Variation: What can we Learn from the Last Three Solar Cycles?

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Total solar irradiance measurements from different satellites are available since late 1978 and may be extended back to the minimum between cycles 19 and 20. This time series shows a downward trend of the values of the three minima since 1986. Although the present one may still have not yet reached its minimum value it is already lower than the previous one and the trend observed by VIRGO is confirmed by comparison with ACRIM-II/III and TIM. This trend is not explained by the long-term part of the MgII index; in contrary this index is presently still higher than during the last minimum. On the other hand the values of the IMF at Earth, which is proportional to the open magnetic flux, shows a similar behavior and the cycle-to-cycle variation is very similar to the variation of the 11-year averaged TSI. This may indicate that MgII index does not see the weak magnetic fields which finally seem to produce an important part of the cycle variation and more importantly also the longer term changes.