



Influence of solar plasma upon global temperature

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This work presents a study of the relation between the aa geomagnetic activity index and global temperature through the period:1868-2004. The aa index is well correlated ($r=0.86$) to global temperature anomalies (GTAs). It leads the GTAs by 8 years. Power spectral density (PSD) of monthly GTAs has been compared to that of the aa index for the period: 1951-2006. Similar periodicities for both datasets are found (e.g. 42.7 and 10.7 years). The aa index is also well correlated to the interplanetary magnetic field strength times the square of the solar wind speed (BV^2). This suggests that the quantity BV^2 is partially responsible for the climate change. A distinguished peak is observed in the aa index spectrum at 0.5 years that agrees with the semi annual variations due to seasonal temperature variations. The magnitudes of the spectra of the GTAs are higher for positive solar polarity ($qA>0$) epochs than for the negative solar polarity ($qA<0$).