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NEW APPROACH INTO UNDERSTANDING THE CORRELATION BETWEEN SOLAR ACTIVITY
AND SUNSPOT AREA (SSA)

Abstract

Sunspots are relatively cooler regions on the surface of the Sun which confine the magnetic field. The interaction of the plasma and this magnetic field gives rise to many solar events viz. coronal loop formation, solar flares, coronal mass ejections (CMEs) etc. Based on the basic principle that the magnetic field strength is high when the field lines are closer and the fact that the magnetic field is a proxy for solar activity, we intend to test our hypothesis that the solar activity and Sunspot Area (SSA) are inversely correlated under constant magnetic flux. Since no two epochs were found to have the same Sunspot Number (SSN) and the same amount of magnetic flux simultaneously, the epochs were refined for different sets of SSN ranges: 11-15, 21-25, 26-30. Further refinement was carried out with magnetic flux difference ranges. The data were analyzed using Spearman's Correlation Coefficient and the results are presented for the same.