Pre-Monsoon Thermal Index over Central Indian Region and South West Monsoon Variability

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The pre-monsoon months (April- May), north- South surface air temperature gradient over the central Indian region is a crucial for forth-coming monsoon activity. In this paper, by using the Principal component Analysis (PCA) the monthly temperature gradient series have been prepared. For analysis, the grid (1°*1°) point surface air temperature data taken from the Climate Research Unit (CRU) at the University of East Anglia Is used. The analysis is carried out for 105 years 1901-2006. For finding the thermal index gradients anomalies, we have consider the three blocks ;one block (74-80°E, 16-22° N), second block (74-80°E, 22-28° N) and third is (74-80°E, 28-34° N). The monthly time series are prepared from the PCA analysis over these blocks. From these monthly series the North-south temperature gradient anomalies are calculated and the statistical relationship between the Indian southwest monsoon rainfall over all India (AIR), northwest India (NWR) , north east India (NEIR), central north east India (CNEIR) and peninsular India (PIR) and surface temperature gradient (STG) anomaly over central Indian region has been examined for the period 1901-2006. The study is furthered by means of sliding 30 years correlation coefficients. The results indicate that the previous Mays STG anomaly has a strong and direct relationship with southwest monsoon rainfall, suggesting that positive STG over central India in May leads to good/bad southwest monsoon rainfall over India. The correlations are stronger for AIR and CNEI followed by NEI. The result also suggests that antecedent May STG anomaly may be useful in the long range prediction of the following southwest monsoon rainfall over India

The physical reason may be like this; the weak STG during pre-monsoon will slow down the progress of onset of monsoon and subsequently affect the performance of monsoon and vice versa.