

Name: Pushp Raj Tiwari
pushprajitd@gmail.com
Research Scholar, IIT Delhi
Room No. 311^M
Centre for Atmospheric sciences^M
Indian Institute of Technology Delhi, India
Country: India

Title: A novel downscaling approach for seasonal scale prediction of winter precipitation over north India

Additional authors: S. C. KAR (2), U. C. Mohanty (1), S. Dey (1)

Additional Affiliations: NCMRWF (2), IIT Delhi (1), IIT Delhi (1)

Abstract:

Northern parts of India, known as the <91><91>wheat bowl<94> of the country is a vast landmass which receives most of its precipitation during winter season (December, January and February; DJF). Precipitation during winter season in north India is very important for Rabi crops, particularly for wheat, as it supplements the moisture and maintains low temperature for the crops. So far, there is a huge gap of any novel statistical downscaling approach to predict the wintertime precipitation on seasonal scale over north India. ^M

Therefore, in the present study a Canonical Correlation Analysis (CCA) model has been developed to statistically downscale the wintertime precipitation in seasonal timescales using the NCMRWF global spectral model products. Based on 28 years (1982<96>2009) model predicted data, it was found that the precipitation distribution and magnitude over the north India is forecasted better using CCA than the AGCM model itself. The interannual variance of spatially averaged north India precipitation is higher in the model than in observed data, while the model underestimates the interannual variability at smaller spatial scales. ^M

Overall statistical downscaling using CCA provides a credible means that improves the forecast skill over the region of interest where performance of the NCMRWF global spectral model is not satisfactory in simulation of wintertime precipitation. ^M

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