



Climatic variability and its Effects on the Eurasian Snow Cover and SST in the context of its impact on the Monsoon of Pakistan

M.H.A. Baig

Research and Development Division, Pakistan Meteorological Department, Pakistan Meteorological Department, Islamabad, Pakistan (mhasanbaig@gmail.com, +92519250368)

In the past decades significant rise in temperature (SST) has been observed. In the present study it has been observed that rise in the SST of Arabian sea was more than that of Bay of Bengal. Similarly, retreat of 1.7 km has also been noted from 1999-2006 in Siachen glacier. Moreover, the Eurasian winter and spring snow cover anomalies along with spring snowmelt have been considered as the important factors affecting the Indian summer monsoon rainfall (ISMR) in particular and the Asian summer monsoon rainfall (ASMR) in general. Climate dynamics has a significant impact on the coverage area of cryosphere. No previous study has been found in which the effects of Eurasian snow cover on the monsoon of Pakistan would have been analyzed. In this study author tried to examine the snow cover effects on summer monsoon rainfall of Pakistan (PSMR). Surprisingly, my findings appear as contrary to the findings of previous studies for ASMR and ISMR and no significant negative correlation is found. Only monsoon rainfall of Punjab appears to be negative for both winter snow cover and spring snowmelt and not for spring snow cover. Rainfall of NWFP in summer holds better negative correlation as compared to rest of the provinces only for spring snowmelt. Negative correlation is also found between spring snow cover and spring snowmelt. Summer snow cover shows good positive correlation with PSMR and with rainfall of Punjab. As far as El Nino is concerned, area of winter snow cover is found above normal and below normal monsoon rainfall is observed, while for La Nina, the areas of winter snow cover and spring snow cover are found below normal resulting into above normal rainfall in monsoon. Two snow cover data sets are obtained from two different sources for verifying the correlation. Spring snowmelt area has been calculated as a difference between snow cover of February and that of May.