



An Analysis of the shifts and extremes in regional climate and an assessment of their impact on different facets of life in India

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Shifts and extremes in regional climate are serious challenges to the securities in food, water and energy in India. They also affect public health and national economy. India is one among the countries highly vulnerable to the effects of climate change. Changes in rainfall intensity and seasonality and increase in temperature result in the shifting of regional climate to a drier or wetter category in different parts. Drylands of India are potentially threatened by desertification. Impact of climate change is already evident in different sectors in many parts of India. Loss of forest biodiversity and shift in forest type affects the livelihood of tribal poor. Forest fires have become common due to the long dry season and loss of soil moisture. Water availability in certain states has been falling sharply, affecting food production and power generation. Abnormal melting of the Himalayan glaciers adds to the severity of hydrological extremes in the entire north India. Changes in the frequency and intensity of severe weather systems and the possible sea level rise are of serious concern in the thickly populated coastal zones. Decreasing trend in fish catch in the southern coasts may be linked to the changes in sea temperature, coastal circulation and upwelling patterns. Cold waves and heat waves are becoming severe and casualties are reported in places where it never occurred before. Children and the aged suffer more from respiratory problems associated with high humidity. New viruses and vectors spread fatal deceases. However, procedure for the implementation of the strategies to mitigate the climate change impact and of the policy for the adaptation to climate change is slow. This paper analyses the shift in regional climate and the extremes in hydrological and meteorological conditions and their impacts of different sectors in India. Shifts in regional climate (Thornthwaite's classification) during the last 100 years and trends have been analysed and their relationship with global anomalies have been examined. Changes in rainfall characteristics, occurrences of extreme weather and proneness to droughts and floods have been studied. Possible shifts in climate under a predicted change in rainfall and temperature have also been examined. A critical review of current policies and strategies for adaptation and impact mitigation has been made.