

Impacts of Climate Change on Number of Snowy Days and Snow Season Lengths in Turkey

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Abstract : As a result of global warming and climate change, air temperature has increased and will continue to increase in the future. Increases in air temperatures have effects on a large number of variables in meteorology. One of the most important effects is the changes in the types of precipitation, especially in mid-latitudes. Because of increasing air temperatures, less snowfall was observed in the eastern parts of Turkey. Snowfall provides most of the water supply in spring and summer months, especially in mountainous regions of Turkey. When the temperature begins to increase in spring season, this snow starts to melt and plays an important role in agricultural purposes, drinking water supply and energy production. On the other hand, defining the snow season is very crucial especially in mountainous areas which have winter tourism opportunities. A reduction in the length of the snow season (LSS) in these regions will result in serious consequences in the long run. In the study, snow season was examined for 10 meteorological stations that are located above the altitude of 1000m. These stations have decreasing trends in the ratio of number of snowy days to total precipitation days considering earlier studies. Daily precipitation records with the observation period of 1971-2011 were used in the study. Then, the observation period was separated into 4 non-overlapping parts in order to identify decadal variations. Changes in the length of the snow season with increasing temperatures were obtained for these stations. The results of LSS were evaluated with the number of snowy days for each station. All stations have decreasing trend in number of snowy days for 1971-2011 period. In addition, seven of the results are statistically significant. Besides, decrease is observed regarding the length of snow season for studied stations. The decrease varies between 6.6 and 47.6 days according to decadal snow season averages of the stations.

Keywords : climate change, global warming, precipitation, snowfall, Turkey

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