

LARGER LOSSES IN GLACIER AREA AND WATER AVAILABILITY, SATLUJ BASIN, HIMALAYA

Snow and ice melt contribute more than 50% of the annual flow in this river. The surface temperature in the northwest Himalaya has increased by around 0.65 degrees Celsius in the last 25 years. This has increased the rate of glacial melt and reduced the amount of snowfall. In a recent paper published in the journal Current Science, the impact of climate change on the hydrology of Satluj basin

The river Satluj, which is a major tributary of Indus river, originates in the Tibetan plateau and passes through India and reaches the Arabian sea. The Bhakra reservoir in India receives more than 70% of the water from Satluj. This river is vital for both irrigation and power generation in North India. Hence the impact of climate change on the annual water flow in Satluj is of great concern.

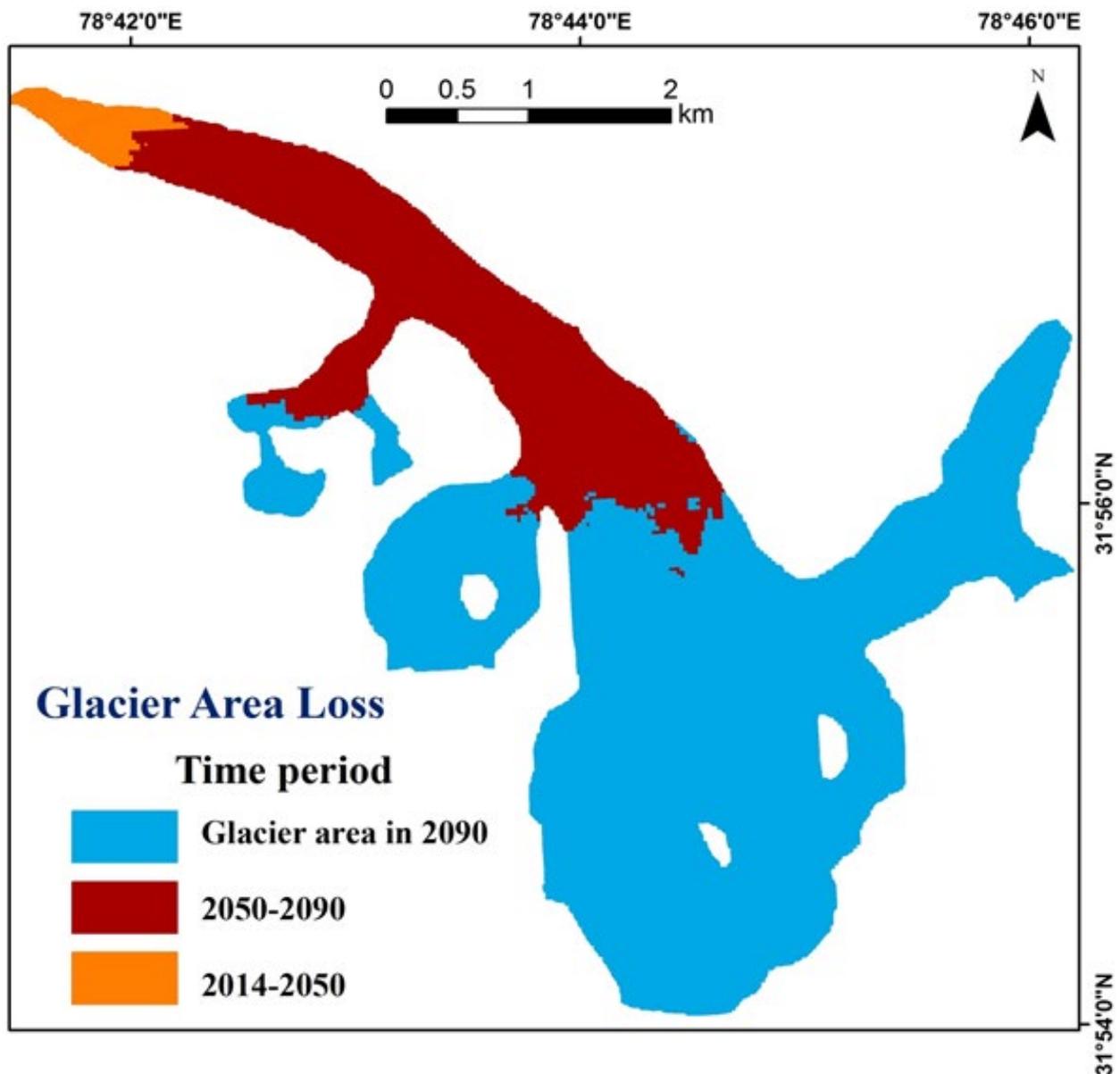


Figure 3: An example of area changes predicted under the RCP 8.5 scenario from 2014-2090 for one of the glaciers in Spiti basin, based on GFDL-CM3 output. The glacier will lose 5 square kilometers of area and fragment into four parts by 2090.

has been studied in great detail.

The authors have estimated the depth of ice in the glaciers from satellite data. They have used volume-area scaling to estimate the present volume of ice in the glaciers. They estimated the annual change in mass balance by using the accumulation area ratio method. They used two general circulation models to estimate the future climate change in the Satluj basin. They have shown that one of glaciers in the Spiti basin will fragment

into four parts by 2090 (see figure3). They estimate that the melt run-off will be highest in 2050 and decline thereafter.

Reference: Larger losses in glacier area and water availability by the end of twenty-first century under high emission scenario, Satluj basin, Himalaya. Veena Prasad, Anil V. Kulkarni, S. Pradeep, S. Pratibha, Sayli A. Tawde, Tejal Shirsat, A. R. Arya, Andrew Orr, Daniel Bannister. Current Science Vol. 116, No. 10, 25th May 2019.

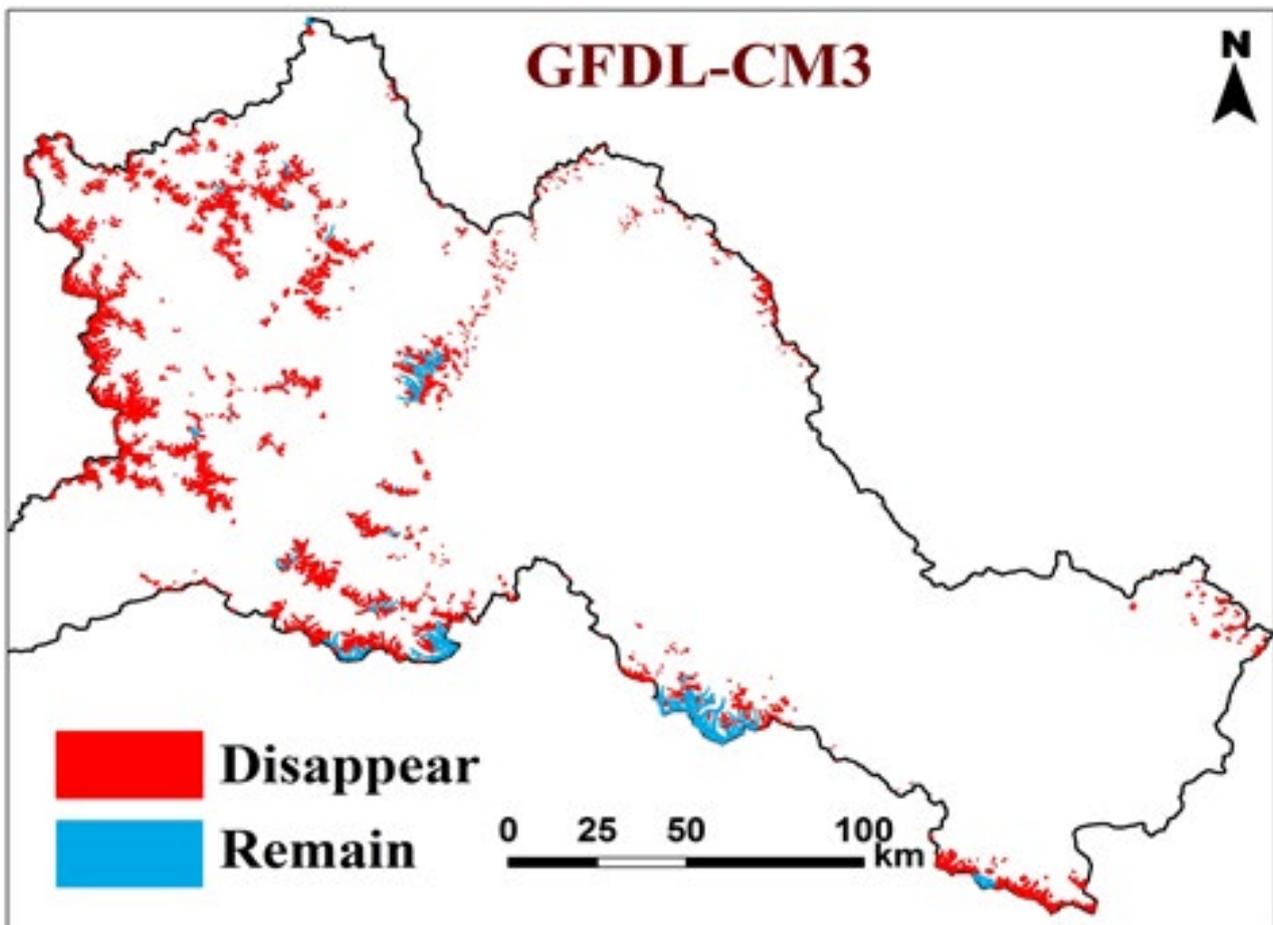


Figure 4: Projected changes in glaciers under RCP 8.5 scenario for 2090, based on output from the GFDL-CM3 model. By the end of the century, 97% of the glaciers will disappear.