Scientists find extensive glacial retreat in Mount Everest region

May 14 2013, by Sudeep Thakuri

A new study finds a decline in snow and ice on Mount Everest (second peak from left) and the national park surrounding it. Credit: Pavel Novak

(Phys.org) —Researchers taking a new look at the snow and ice covering Mount Everest and the national park that surrounds it are finding abundant evidence that the world's tallest peak is shedding its frozen cloak. The scientists have also been studying temperature and precipitation trends in the area and found that the Everest region has

been warming while snowfall has been declining since the early 1990s.

Members of the team conducting these studies will present their findings on May 14 at the Meeting of the Americas in Cancun, Mexico – a scientific conference organized and co-sponsored by the American Geophysical Union.

Glaciers in the Mount Everest region have shrunk by 13 percent in the last 50 years and the snowline has shifted upward by 180 meters (590 feet), according to Sudeep Thakuri, who is leading the research as part of his PhD graduate studies at the University of Milan in Italy.

Glaciers smaller than one square kilometer are disappearing the fastest and have experienced a 43 percent decrease in surface area since the 1960s. Because the glaciers are melting faster than they are replenished by ice and snow, they are revealing rocks and debris that were previously hidden deep under the ice. These debris-covered sections of the glaciers have increased by about 17 percent since the 1960s, according to Thakuri. The ends of the glaciers have also retreated by an average of 400 meters since 1962, his team found.

The researchers suspect that the decline of snow and ice in the Everest region is from human-generated greenhouse gases altering global climate . However, they have not yet established a firm connection between the mountains' changes and climate change, Thakuri said.

He and his team determined the extent of glacial change on Everest and the surrounding 1,148 square kilometer (713 square mile) Sagarmatha National Park by compiling satellite imagery and topographic maps and reconstructing the glacial history. Their statistical analysis shows that the majority of the glaciers in the national park are retreating at an increasing rate, Thakuri said.

To evaluate the temperature and precipitation patterns in the area, Thakuri and his colleagues have been analyzing hydro-meteorological data from the Nepal Climate Observatory stations and Nepal's Department of Hydrology and Meteorology. The researchers found that the Everest region has undergone a 0.6 degree Celsius (1.08 degrees Fahrenheit) increase in temperature and 100 millimeter (3.9 inches) decrease in precipitation during the pre-monsoon and winter months since 1992.

In subsequent research, Thakuri plans on exploring the climate-glacier relationship further with the aim of integrating the glaciological, hydrological and climatic data to understand the behavior of the hydrological cycle and future water availability.

"The Himalayan glaciers and ice caps are considered a water tower for Asia since they store and supply water downstream during the dry season," said Thakuri. "Downstream populations are dependent on the melt water for agriculture, drinking, and power production."

More information: The researchers on this study of the Mount Everest region will present a poster about their work on Tuesday morning, 14 May 2013, at the Meeting of the Americas. The meeting is taking place from 14-17 May at the Cancún Center, located at Blvd. Kukulkan Km 9, Zona Hotelera, in Cancún, Mexico.

Provided by American Geophysical Union