Snows Of Kilimanjaro shrinking rapidly, and likely to be lost

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This is one of a growing number of isolated remnants of ice spires that were once full glaciers in the crater of Mount Kilimanjaro in Africa. Credit: Photo by Lonnie Thompson, Ohio State University.

The remaining ice fields atop famed Mount Kilimanjaro in Tanzania could be gone within two decades and perhaps even sooner, based on the latest survey of the ice fields remaining on the mountain .

The findings indicate a major cause of this ice loss is very likely to be the rise in global temperatures. Although changes in cloudiness and precipitation may also play a role, they appear less important, particularly in recent decades.

The first calculation of ice volume loss indicates that from 2000 to 2007, the loss by thinning is now roughly equal to that by shrinking.

These predictions, published in the journal Proceedings of the National Academy of Sciences, are among the latest dramatic physical evidence of global climate change.

Paleoclimatologist Lonnie Thompson, professor of earth sciences at Ohio State University, and his colleagues amassed a trail of data showing the rapid loss of ice atop Africa's highest mountain:

85 percent of the ice that covered the mountain in 1912 had been lost by 2007, and 26 percent of the ice there in 2000 is now gone;

The ice fields atop Africa's Mount Kilimanjaro glow golden as the last of the afternoon sun hits these soon-to-be lost relics. Credit: Photo by Lonnie Thompson, Ohio State University.

A radioactive signal marking the 1951-52 "Ivy" atomic tests that was detected in 2000 1.6 meters (5.25 feet) below the surface of the Kilimanjaro ice is now lost, with an estimated 2.5 meters (8.2 feet) missing from the top of the current ice fields;

The presence of elongated bubbles trapped in the frozen ice at the top of one of the cores shows that surface ice has melted and refrozen. There is

no evidence of sustained melting anywhere in the rest of the core that dates back 11,700 years;

Even 4,200 years ago, a drought in that part of Africa that lasted about 300 years and left a thick (about 1-inch) dust layer, was not accompanied by any evidence of melting. These observations confirm that the current climate conditions over Mount Kilimanjaro are unique over the last 11 millennia.

"This is the first time researchers have calculated the volume of ice lost from the mountain's ice fields," said Thompson, a research scientist with Ohio State's Byrd Polar Research Center. "If you look at the percentage of volume lost since 2000 versus the percentage of area lost as the ice fields shrink, the numbers are very close."

While the loss of mountain glaciers is most apparent from the retreat of their margins, Thompson said an equally troubling effect is the thinning of the ice fields from the surface.

The summits of both the Northern and Southern Ice Fields atop Kilimanjaro have thinned by 1.9 meters (6.2 feet) and 5.1 meters (16.7 feet) respectively. The smaller Furtwangler Glacier, which was melting and water-saturated in 2000 when it was drilled, has thinned as much as 50 percent between 2000 and 2009.

"It has lost half of its thickness," Thompson explained. "In the future, there will be a year when Furtwängler is present and by the next year, it will have disappeared . The whole thing will be gone!"

Along with retreat of Kilimanjaro's glaciers at their margins, the surface of these massive ice fields have begun eroding as temperatures rise. Credit: Photo by Lonnie Thompson, Ohio State University.

Thompson's team drilled six cores through Kilimanjaro's ice fields in 2000 and published their findings in the journal Science two years later. That work established a detailed baseline against which more recent data can be compared.

Thompson said the changes occurring on Mount Kilimanjaro mirror those on Mount Kenya and the Rwenzori Mountains in Africa, as well as tropical glaciers high in the South American Andes and in the Himalayas.

"The fact that so many glaciers throughout the tropics and subtropics are showing similar responses suggests an underlying common cause. The increase of Earth's near surface temperatures, coupled with even greater increases in the mid- to upper-tropical troposphere, as documented in

recent decades, would at least partially explain the observed widespread similarity in glacier behavior," he said.

Source: The Ohio State University (news : web)