
From a Glaciers Perspective

Glacier Change in a world of Climate Change

APRIL 29, 2010 BY MSPERTO

Paradise Glacier Ice Caves Lost

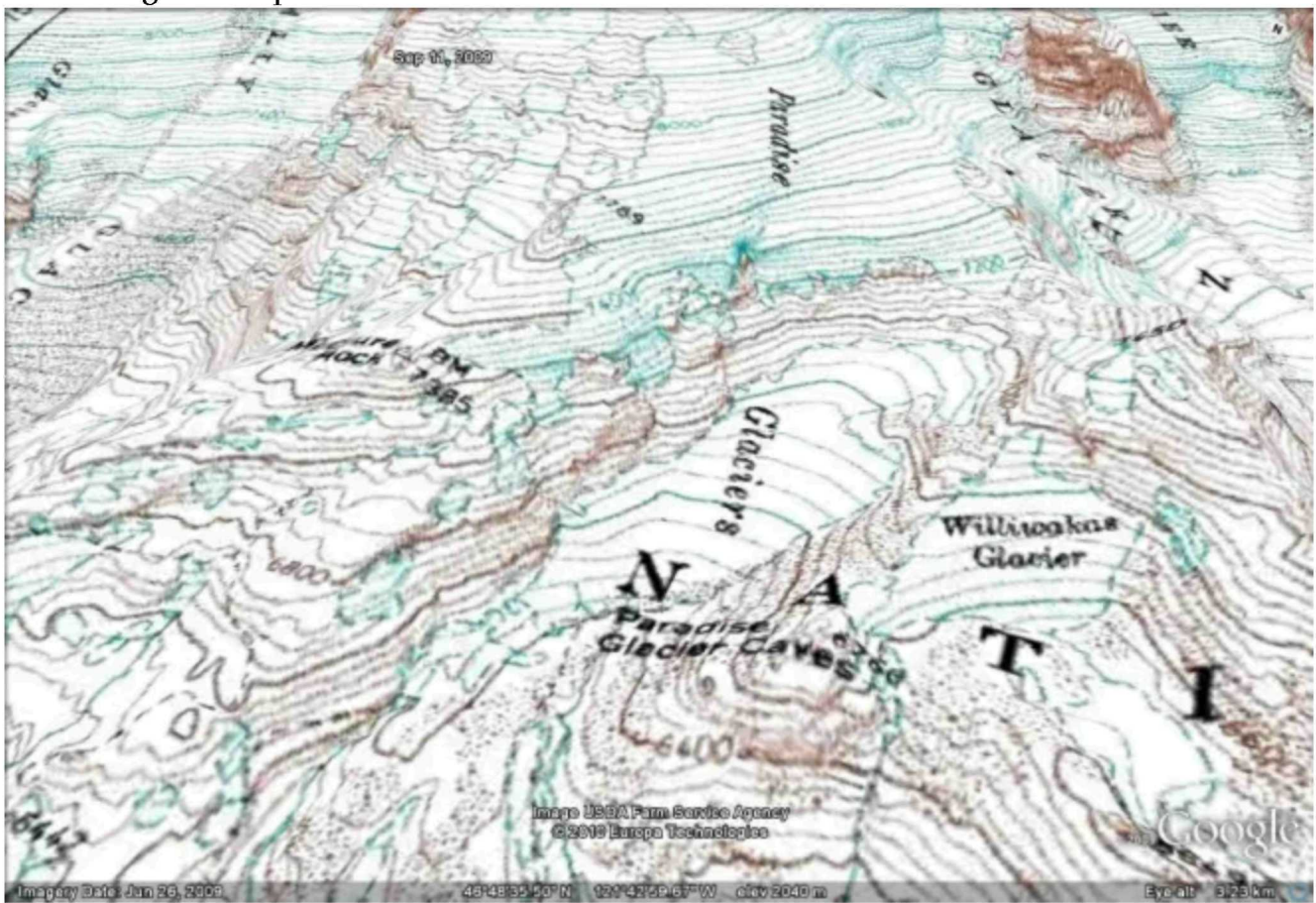
From the 1930's through the early 1980's Paradise Glacier's ice caves were world famous. Today they are gone. In 1906 Paradise Glacier was a single glacier that extended down to an elevation of 6000-6200 feet. The image below is from the book *The Mountain that was God*.



(https://glacierchange.files.wordpress.com/2010/04/_paradise-1906.jpg) In the 1930's the glacier separated into an upper and a lower part. The caves were in the lower part, that filled a relatively flat valley at an elevation of 6500 feet. Ice caves cannot form beneath a glacier that is moving substantially, as the movement would close up the cavities. Ice caves form under stagnant, melting sections of the glacier.



(https://glacierchange.files.wordpress.com/2010/04/_paradseic.jpg) The 1971 USGS map, see below, indicated the lower Paradise Glacier was 1.1 km long and had an area of .14 square kilometers. By 1981 the glacier had retreated to the upper half of the valley that had been filled with ice caves, second image below. In the 1981 image, from Jim Kuresman (http://www.kuresman.com/Favorite_Trips/Paradise_Ice_Caves/Paradise_Ice_Caves.html), note the mountain peak in the center that is in the 1906 image as well. There is no remaining snowcover either on the lower glacier, a glacier cannot survive (<http://www.nichols.edu/departments/Glacier/glacier%20survival.html>), without an accumulation zone that has significant persistent snowcover even at summers end.



(https://glacierchange.files.wordpress.com/2010/04/_paradise-map.jpg)



(https://glacierchange.files.wordpress.com/2010/04/_paradise-1981.jpg) In 1985 I visited the ice caves, and they were still impressive, although much reduced in size, number and length.



(https://glacierchange.files.wordpress.com/2010/04/_paradiseicecaves.jpg) I returned to the ice caves in 1993 and found no ice caves remaining and no glacier either. The Paradise Ice Caves valley in 2005 (Greg Louie (http://www.mountaineers.org/nwmj/07/071_Glaciers.html)) and 2007 (David Head image) is beginning to sprout some vegetation where hikers tread through ice caves a generation before. The glacier fits the regional pattern (http://www.mountaineers.org/nwmj/07/071_Glaciers.html) of glacier retreat and loss.



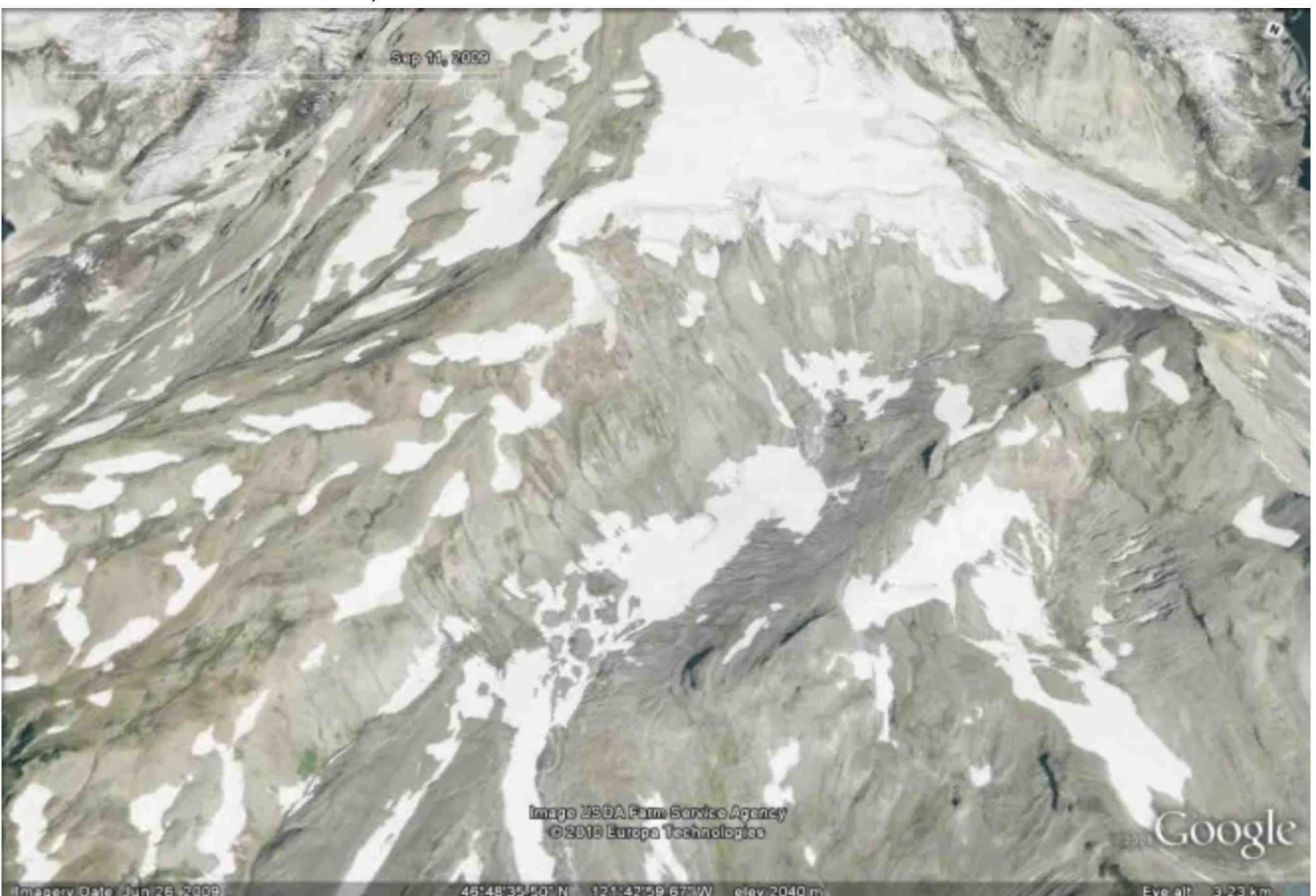
(https://glacierchange.files.wordpress.com/2010/04/_paradise-2004.jpg)



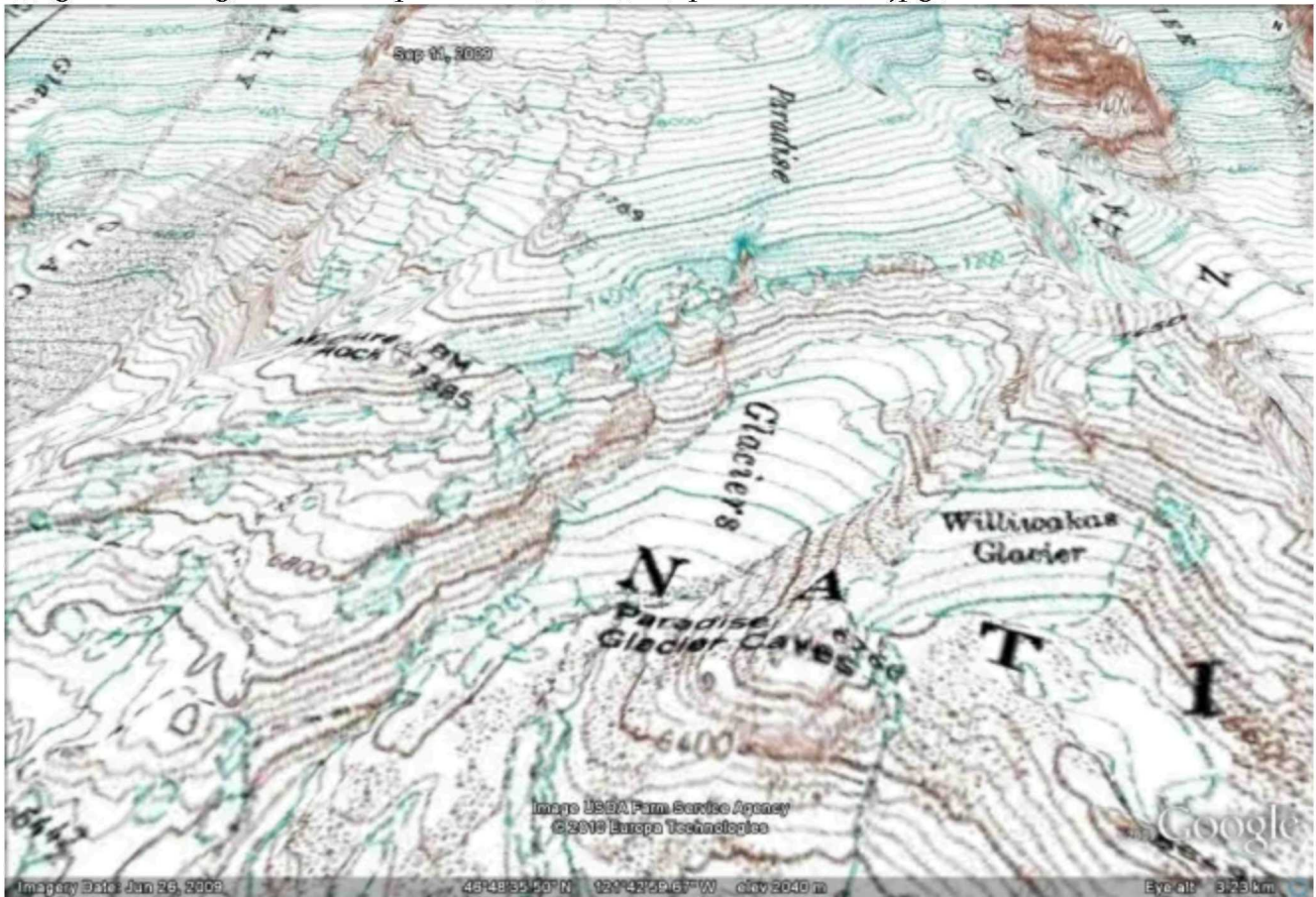
(https://glacierchange.files.wordpress.com/2010/04/_paradise-2007.jpg)



You can observe in the upper left of the 2005 and 2007 images that the upper Paradise Glacier still exists, though it is retreating, the last picture is the terminus of the upper Paradise Glacier. In 2009 the upper Paradise Glacier lost all of its snowcover, not a good sign for its long term survival. Below is the Google Earth view of the area from 2009 imagery. A comparison with the map indicates that not only has the lower Paradise Glacier been lost, but so has the Williwakas Glacier.



https://glacierchange.files.wordpress.com/2010/04/_paradise-2009.jpg



https://glacierchange.files.wordpress.com/2010/04/_paradise-map.jpg

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