

# The Sacred Source

## A Portrait of the Ganges 2007



# Is Gangotri Glacier Melting?

## Seeing for myself!

May/June 2007

For more than 2 years I've been reading how "Global Warming" is melting the Gangotri Glacier faster than any glaciers in the world! So I wanted to make the climb to see for myself. But in addition I wanted to actually take an accurate GPS reading from somewhere along the face of this glacier in order to provide a precise marker that shows where this glacier was in early June of 2007.

### RETREAT OF THE GANGOTRI GLACIER

Credit: NASA image by Jesse Allen, Earth Observatory; based on data provided by the ASTER Science Team. Glacier retreat boundaries courtesy the Land Processes Distributed Active Archive Center.

Many scientists regard receding glaciers as a symptom of global climate change. While certain types of glaciers—such as surge glaciers and tidewater glaciers—are actually expanding, there are many areas where scientists report glaciers are wasting away and that climate change is the culprit. For instance, 150 years ago there were 147 glaciers in Glacier National Park. Today, only 37 glaciers remain, and scientists say they will likely completely melt by the year 2030. Similarly, glaciers all across the Alps are retreating and disappearing every year.

What causes any given glacier to grow or shrink over time? Scientists at the United States Geological Survey (USGS), in concert with NASA and the National Snow and Ice Data Center (NSIDC), are developing a global inventory of all the world's glaciers to help researchers track each glacier's history. The inventory combines current information on size and movement with historical data, maps, and photos of each glacier. The purpose is to better enable scientists to correlate changes in each glacier with any shifts in local climate, such as temperature or precipitation changes. But it is not feasible to visit and measure every major glacier on Earth.

There are almost 160,000 glaciers in Earth's polar regions and high mountain environments. Therefore, researchers are increasingly using satellite remote sensors to routinely survey our world's glaciers in a fraction of the time and cost it would otherwise take.

The false-color image above shows the Gangotri Glacier, situated in the Uttarkashi District of Garhwal Himalaya. Currently 30.2 km long and between 0.5 and 2.5 km wide, Gangotri glacier is



one of the largest in the Himalaya. Gangotri has been receding since 1780, although studies show its retreat quickened after 1971. (Please note that the blue contour lines drawn here to show the recession of the glacier's terminus over time are approximate.) Over the last 25 years, Gangotri glacier has retreated more than 850 meters, with a recession of 76 meters from 1996 to 1999 alone.

The Artists for Conservation "Flag Expedition #2" ~ David Rankin's Watercolor Expedition into the Ganges Himalayas



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### Following an artistic tradition

**June 2007** Artists have been making important contributions to the overall exploration of the Himalayas since the early 1800's. And all I am doing is following in the footsteps of these earlier artists.

I am not a scientist. Nor do I profess to be a trained naturalist, geologist, or expert on glaciers. However, I am an accomplished and professionally trained artist with a highly developed skill-set of observation skills. And the very first landscape images the world had of these remarkable regions, in the early 1800's, were from the talents of artists, mostly watercolor painters like me.

In addition, because of my own personal spiritual heritage I have a profound interest in trying to help preserve and protect these amazing parts of the Himalayas in any ways I can.

So when planning out this expedition one of my main goals was to try and make our way up here to the Gangotri

**David Rankin's Artists for Conservation  
Flag Expedition Team  
at Gangotri Glacier, June 8th, 2007**

**David Rankin / USA, Kelly Dodge / Canada,  
Ashleigh DeVito / USA, Deanna Rankin /  
USA, Nepali Sherpas in back row.**

Glacier, at Goumukh, 18 km upstream from the Gangotri temple town. My goal is to create a collection of watercolors that depicts the extreme natural beauty of this region. And I wanted to establish an accurate GPS marker on the face of Gangotri in hopes that in future years it might be helpful in determining a more accurate rate at which this glacier is actually melting.

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**David Rankin's GPS Marker  
on face of Gangotri Glacier - June 8, 2007**  
N 30° 55.6' / E 79° 04.9'  
Altitude: 13,197 feet



**June 8, 2007** So on June 8th, our team made the very rugged climb up over the huge boulder field, moraine, that covers the Gangotri Glacier. Then Ashleigh DeVito and I got to within 10' of the upper left exposed ice face of the glacier and took the GPS reading you see here – **N 30° 55.6 / E 79° 04.9**

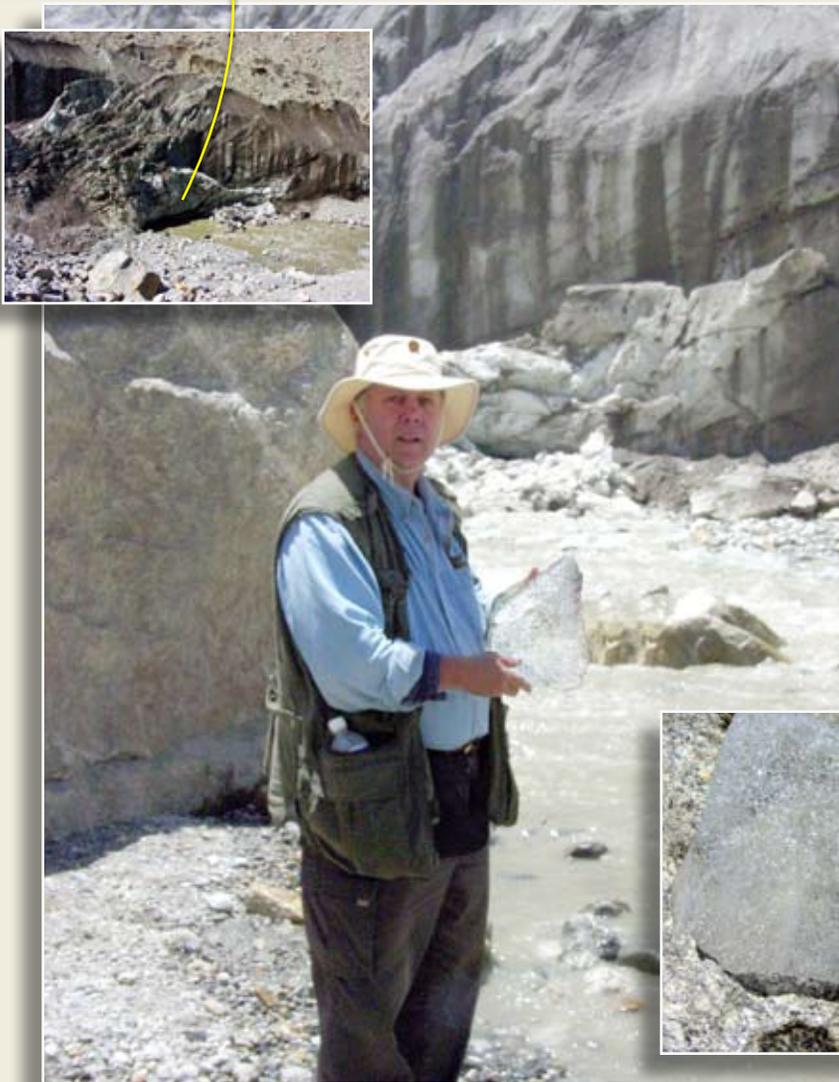


**Where will this glacier be in 5 years?** I don't know if others have contributed accurate GPS markers like this on Gangotri's face. But if they haven't I hope our efforts will be followed by others. As you can see from this photo above, the forward face of the glacier is frequently "calving" off huge chunks of ice into the stream. And if others in the coming years also take GPS readings it will help scientists and politicians get a more accurate understanding of whatever climactic forces are effecting the Himalayas.



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### As if on cue...

After taking the GPS reading on the upper left face of the glacier, Deanna and I made our way back down in front of the face, while Ashleigh and Kelly continued on up over the top of the glacier towards Tapovan.

And as if right on cue, no sooner had Deanna and I gotten back down in front of the glacier when we heard a huge explosion-like sound. It wasn't a cracking sound like one might expect, but rather a sharp loud explosion. It startled us as we looked up to see this huge 30 foot chunk of ice crash into the stream with a thunderous vibration.

You can see this large section still in place in this small photo to the left, taken about 2 minutes before it crashed.

And then you can see these huge chunks of clear bluish ice churning their way past us in the rapids. Deanna reached in and grabbed this small chunk of the glacier that I am holding.

This was a remarkable occurrence in that we had just finished taking a GPS reading to help identify this glacier's rate of retreat upstream. And I know that this happens frequently. But the sound of it snapping in a loud boom surprised us.

And the very clear ice that floated past us was also interesting in that the glacier is mostly covered by a thick rugged blanket, moraine, of rocks & sand at this altitude. But in fact it is a huge clear mantle of ice underneath this covering.