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Over eight challenging and adventurous days on Mount Baker, our group observed the weather and its effects on the Easton glacier supported by our experiences, time-lapse photography, and preliminary experimentation.

We first encountered the minimal effects of weather on our five-mile hike up to our base camp when we were encompassed with gorgeous climate as well as the pestering bugs that were attracted to our salty sweat. Upon arrival we set up our tents and were rewarded with a multi colored sunset in the distance. Our routine for the next week included daily trips to the glacier where we explored a new world of crevasses, snow bridges, icefalls, and dreadlocks! While there we noticed an array of different sized supra glacial streams which changed dramatically depending on the weather. For eighty-eight percent of the week the weather upheld warm and sunny skies, which resulted in flowing streams. We determined that it was a complex combination of the Chinooks (katabatic winds) blowing down the mountain, the beating sun melting the snow and the warm weather in general, that caused more water to enter the streams, thus increasing the amount of water flow early on in our stay. In contrast, as the days ended and cooled noticed that the water volume within the streams decreased significantly. This observation was also apparent during cloud-covered days, where the clouds acted as insulators from the strong sun.

The second morning in camp we discussed the best angle to set up a time-lapse camera, in order to best capture the changes that took place throughout our expedition. We decided that the best possible location for the camera would be set low, looking up at the Black Buttes and the glaciers' icefall. It also included the majority of the Easton glacier and a large portion of the sky in order to better analyze the occurring weather and melting patterns on the glacier. Based on the photos that were taken, as the week progressed, more clouds became apparent. Their types ranged from small and low cumulus clouds to the more threatening stratus clouds that brought the thick fog on the last two days of our stay on the mountain. By reviewing the time-lapse movie, we were

able to see how the weathers' progression throughout our trip displays that as warm weather occurs, streams become apparent; and when colder weather accumulates, water flow decreases. These before (left) and after (right) photos show the dramatic changes in the snow patch, melting a



surprising amount of snow loss in the seven days that the camera was set-up. These pictures reinforce our observation that weather correlates with the amount of water that flows on the glacial streams.

In efforts to test this observation, our team set up a preliminary experiment on the glacier to test the speed of water flow in one particular supra glacial stream. With the basic materials of string, a meter stick, and a buoyant plastic tube, we conducted our trial. Using the string, we measured 10.6 meters down a fairly fast pace flowing glacial stream. Our goal was to get a rough estimate of how much water was coming down the glacier and the velocity at which it was traveling. We began with designating and measuring out a starting and ending point where we would record how long it took for a test tube to travel down the marked boundaries of the stream which was ten centimeters deep, twenty six centimeters wide, and 1006 centimeters long. With a stopwatch we conducted six fair trials. Our data includes 6.68 seconds, 5.78 seconds, 6.06 seconds, 6.50 seconds, 6.00 seconds, and 6.46 seconds, with a total average of 6.25 seconds to travel from point A to point B. This helped us calculate a small-scale velocity in which we can extrapolate more information from on a larger scale to compare to the rest of the glacier. To expand off of this information, we selected an area of the glacier where we noted the amount of small streams and larger streams we came across. In our sample area we calculated that there were 37 small streams and 3 larger sized streams. With this useful information we can derive a broad conclusion of the rate at which snow has melted. Although the information and data obtained in quantitative, we can also make additional conclusions based on what

was carried out and observed. During the time we did this experiment in the morning, there was noticeable and significant water flow all across the glacier. As the day went on we had noticed the weather had shifted from bright and sunny to misty and cloudy. These changes that had taken place had a significant effect on the amount of water-flow. Instead of an abundant amount of water running through the stream, there was a definite change. There were minimal traces of water.

Based on our many methods of approaching and tackling this question, we can conclude that the changing weather patterns that occurred over the duration of time we spent on the glacier did indeed have a direct impact and correlation on glacial melting. When weather temperature increases, the ice and snow is likely to melt thus increasing the amount of water-flow in the streams. And when the temperature of the weather decreases, the amount of water in the streams also decreases. These discoveries pose relevance to the recent climate change our world is facing in our society today. If temperatures continue to increase, we can make an educated guess that glacial melt will also increase, and perhaps the existence of the glacier will be altered and cease to exist due to a rapid melting rate.