During Girls on Ice 2009, the team tried to define the different relationships between the glacier and the volcanic rocks it produced. In preparation to hike to the summit, the Glacier Team was first given the opportunity to explore the Honeymoon Spot, the location of the Demming Glacier and the old conduit of the Black Buttes. During our adventure we witnessed the after affects of the cooling lava on glacial ice and the different compositions of rocks this hydro-thermally altered process could produce.

On the day of the summit, the Glacier Team of Annie, Angelica, Kaia, and Sune visited the site of Sherman Crater to perform tests with Melissa, the female scientist who was trying to calculate the different ways the glacier on top of Sherman Crater affected the active volcano on Mt. Baker. The volcano was fuming, and the pungent smell of sulfur was almost suffocating after our last uphill climb. From the top of the crater we could see a smoky cave in the ice where the hot ash had melted seasons of snow away from the glacier. Unfortunately for science, Melissa had forgot the surveying instrument needed to measure the position of her snow stakes, and we continued up the mountain instead.

After the brutal ascent to the summit, we hustled down the mountain to meet Melissa to go inside the crater and explore the Dragon Hole femoral, but Melissa had left us a message in the snow: “NO GO,” dug out in ash covered fern snow. Before we made our descent, our group walked along the edges of crater and saw the greens, blues, and yellows where different eruptions had left their mark on the snow and hydro-thermally altered bedrock surrounding the crater.

Back at camp, the Rock Stars, our injured companions, conducted their own scientific study of lava rock, by collecting, measuring, and observing the differences of

five rocks found around our permanent campsite. Marie and Heidi found distinct looking rocks, chosen for their different appearances and shapes to test volume, mass, area, aesthetic differences, and ultimately their respective densities. Because all volcanic eruptions have a different chemistry, each eruption may produce different colors, shapes, and sizes of rocks. Slightly all rocks on Mt. Baker are a different version of basaltic, andesite, pumice, or obsidian rock. The difference between basaltic and andesite rock is the chemical composition and color which is affected by the amount of silica in the lava. Basaltic features more silica and is a darker color, while andesite has less silica and multiple colors. Pumice is a very porous rock produced from volcanic ash, where gases don't have an opportunity to escape, so the gas gets trapped inside the rock. This is why the Rock Stars believe that the water bubbled when they measured the volume of each pumice rock.

To measure the volume of each rock, they used Erin's meal bowl as a makeshift graduated cylinder to find the density. Though the girls tried to be as precise as possible, they worried that the results may have been skewed by the equipment that was available to them. Some of the densities seemed much higher than expected, but the results did not change the observations and scientific processes they learned by measuring the different rocks.

One unique rock that we found all over the mountain was identified as "Shermanite" by Melissa, named after the ash rock produced from Sherman Crater. Shot out in ash bombs, these gray pumice rocks featured yellow crystals of sulfur in its purest form. Using a lighter, Melissa lit the small rock on fire to demonstrate its reputation as "mountain fireworks" and the chemical reaction between oxygen and sulfur.

Through Girls on Ice we learned the ways different rocks are produced, from the episodic events of volcanic eruptions, to the slow, steady crumble of a disintegrating mountain. From Melissa, we learned about the competition between eruptions and erosion, and of Baker's fate as a dying mountain, which may one day erode away into several landslides. By studying glaciers and their affects on active volcanoes we can greater understand the relationships between glaciers and global climate change.

Results

Rock Number	Mass	Diameter	Volume	Density	Description
1	89	11	21.59	4	Different colors, soft and bumpy, orange, black, red, brown, gray
2	77	.2	17.27	4.6	Basaltic, holes, black, bumpy, brown, bubbled when put in water
3	54	.4	34.54	1.6	Very bumpy, lots of colors, has holes, bubble in water, leaves marks on other rocks
4	49	.1	8.64	5.67	Red, small, soft, bumpy, has two holes
5	56	.2	17.27	3.24	Long, skinny, bumpy, bubbled in water, moss present, gray, green, brown, white