



## Learning About Weather First Hand by Sabrina Carlson

On September 22, 2016, 38 students from the 6th grade MIGHTY Team at Sinagua Middle School made a visit to Aspen Corner to hike the Arizona Trail San Francisco Peaks Passage (Passage 34) and learn about the impact of landforms on weather and cloud formation.

Having learned how much less fun

the weather lesson is once everyone is already soaking wet from the outing two days earlier, we started our day learning about how landforms impact weather and cloud formation. We first reviewed the difference between weather and climate and observed that the weather today was indeed very rainy. Next we performed the "Dance of the Molecules" in which we acted out the actions of water molecules as they heat and cool to form ice, liquid, and vapor.



Discussing how landforms impact weather.

After our review of the states of matter, we pondered the questions "Where do we tend to see the most clouds in Flagstaff?" and "Why do we see them where we do?" Everyone agreed that over the mountain was the most likely place to see them. Then we split into groups to ponder a "concept cartoon." Concept cartoons are a popular formative assessment strategy that get the students thinking and talking, while helping the teacher identify possible misconceptions the students might have. The cartoons contained three possible explanations for the tendency of clouds to form over mountains more than other places. It was interesting to hear some students admit that they answer they selected from the cartoon was the one that "sounded smarter" or "more scientific." This gave us a chance to discuss how someone making themselves sounds like an expert, doesn't mean they actually ARE an expert. Good science and good marketing are two different things.



Hiking in the mist along the AZT.

After sharing their thoughts on what they thought might be happening, we acted out what happens to gasses in the air as wind pushes warm, moist air masses up a mountainside. The students played the part of gasses, while balloons served as water molecules. The "gasses" students were charged with

keeping the balloons in the air by hitting the balloons to other students. Each time I called out a cue they had to take three steps further away from each other causing them to lose heat and the ability to keep the water suspended. Anytime a balloon hit the ground, other students (the droplet nuclei) collected the molecules to form a rain drop. It was a raucous game and everyone left with a better understanding of why mountains create rain clouds.

After our activity we headed north along the Arizona Trail for about 2 miles. We took note of the diversity of trees at this elevation and noticed how hard it was to see the peak with all the clouds. We nestled under some trees for lunch, taking shelter from the rain. Despite our desire to continue, the rain continued to fall harder and colder. We eventually had to ask to bus to return for us a little early, and hike back sooner than we wanted to. By the time we made it to the bus, we were heavily soaked and describing the day as “character building.”

Despite the rain and chill however, the students were remarkably cheerful and positive and enjoyed the day immensely.



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