

Cloud Wave Video

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Flow Visualization F23 Section 001

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Context and Purpose

For the last several months, I have been taking pictures and videos of clouds of all shapes and sizes. Observing and paying more attention to myriad cloud formations taught me more about weather patterns and the variations that water vapor can take on based on pressure, temperature, and wind. I am often at higher altitudes to hike, and have particularly enjoyed watching the varying cloud formations at altitude compared to what we see in Boulder. The day that I hiked Quandary peak was incredibly windy and cold, and as we passed the tree line we were hit with gusts of icy clouds. As we continued up, we passed that layer of cloud formation and observed it from above, noting that we seemed to have passed through a river of clouds. There was a secondary layer of clouds above us slightly that was moving quickly with the wind, so I began to take various videos and played around with the different video speeds. Finally, I captured this moment in a ten second video where as a cloud blows over it seems to shape into a wave and then dissipate. I chose to use this video for my Clouds First assignment, despite its low resolution, because I thought it was such a unique instance of cloud flow and believed it to be very different from what my classmates captured.

Flow Description

For this assignment, I took a video which visualizes the flow of ice crystals at 14,000 ft near Breckenridge, CO, atop Quandary Peak. The wind that day was coming from the southeast and was close to 30 mph at the time of the video was taken. Humidity was 57% and the ambient temperature was 45 deg. F. The barometer read 30.33 “Hg, and all these measurements were recorded by the Copper Mountain – Red Cliff Pass weather station.

After analyzing the clouds, they are in the cirrus family which is completely composed of ice crystals. They signal an incoming warm front and create a wispy layer that the wind from that day was blowing straight through (National Weather Service). This explains why, when we were within the cloud, it felt like we were being blown with little pieces of sharp ice.

Visualization Technique

The video was taken with an iPhone 8 phone camera, so while the quality may not be excellent, I really liked the way the flow appeared. I took a video at real-time speed of a quickly moving cloud above us as we hiked. I experimented beforehand with taking time lapses of other clouds around, but they were already moving fast enough to view the intended effect so I decided to film in real time.

Photo Technique

The biggest challenge in taking this video was that the wind was blowing so hard that it was difficult to keep my hand steady. I got around this by crouching low with a rock protecting me from the wind behind, but the video still is a bit shaky. I also had to focus the screen lighting to optimize the video. The frame rate of the video is 30.007 and the resolution is 568×320 .

References

Cloud classifications and characteristics - National Weather Service. (n.d.).
<https://www.weather.gov/media/lmk/soo/cloudchart.pdf>

Past weather in Quandary Peak, Colorado, USA - October 2023. Weather in October 2023 in Quandary Peak, Colorado, USA. (n.d.).
<https://www.timeanddate.com/weather/@5435551/historic?month=10&year=2023>