



Cloud Report 2

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The image is of a small cloud mid-day that formed into wispy lines in the sky. The focus of the image is on the linear shapes that are made up from the non-linear natural shape of clouds. The wispy clouds somehow makeup particular boundaries that form these interesting shapes. Clouds exist only because of the conditions that allow it to, and the intent of this photo is to reveal this idea of interdependence and then to analyze what those conditions were that formed this cloud on this day in Parker, Colorado.

To further understand the atmosphere on this day, the skew-t diagram of a weather balloon going up in the atmosphere can be utilized.

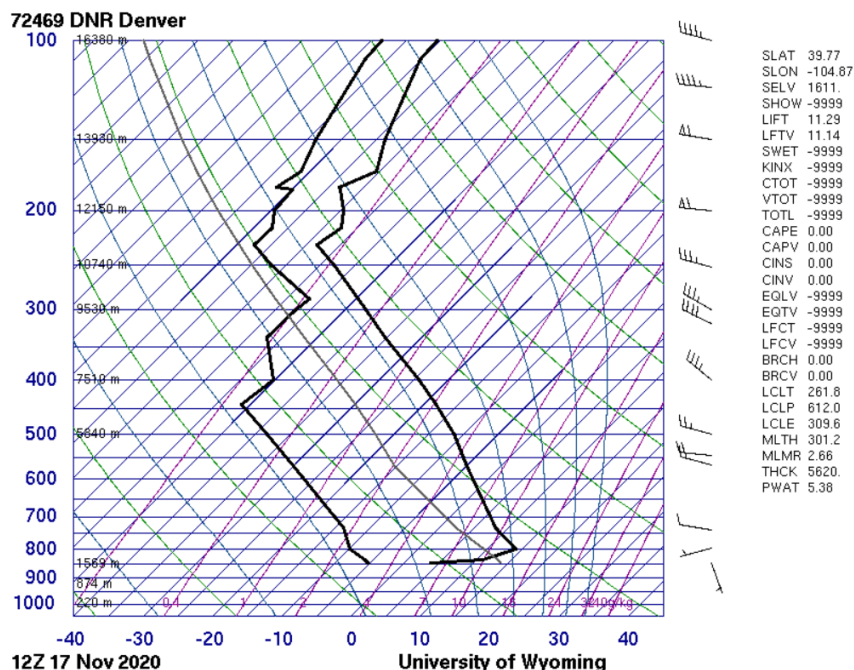


Figure 1, Skew-t

As seen in Figure 1, the CAPE on this day was zero, pointing to a conclusion that there was stability in the atmosphere on this day. Where the dewpoint temperature and true temperature pinch closer to on another, there is an indication of condensation and cloud formation. Here, there is a pinch at about 9530 m. This gives an idea of the clouds we can see in the photo's height. By the height given and observation of the cloud's structure I am making a conclusion that the cloud is a Cirrostratus.

The formation of these clouds is due to what is known as gravity waves. Gravity waves are a feature of mountain weather that are found in a stable atmosphere (Lynch). There are many factors that can lead to the formation of gravity waves.

“In a stable atmosphere, an air parcel that is displaced vertically will experience a buoyancy force that accelerates the air parcel back toward its original position. This buoyancy force is the

restoring force for internal gravity waves (Lynch 210).” So essentially buoyant forces keep the gravity waves in their form. It can be helpful to visualize the flow over mountains to understand the shape of these waves.

FLOW OVER MOUNTAINS

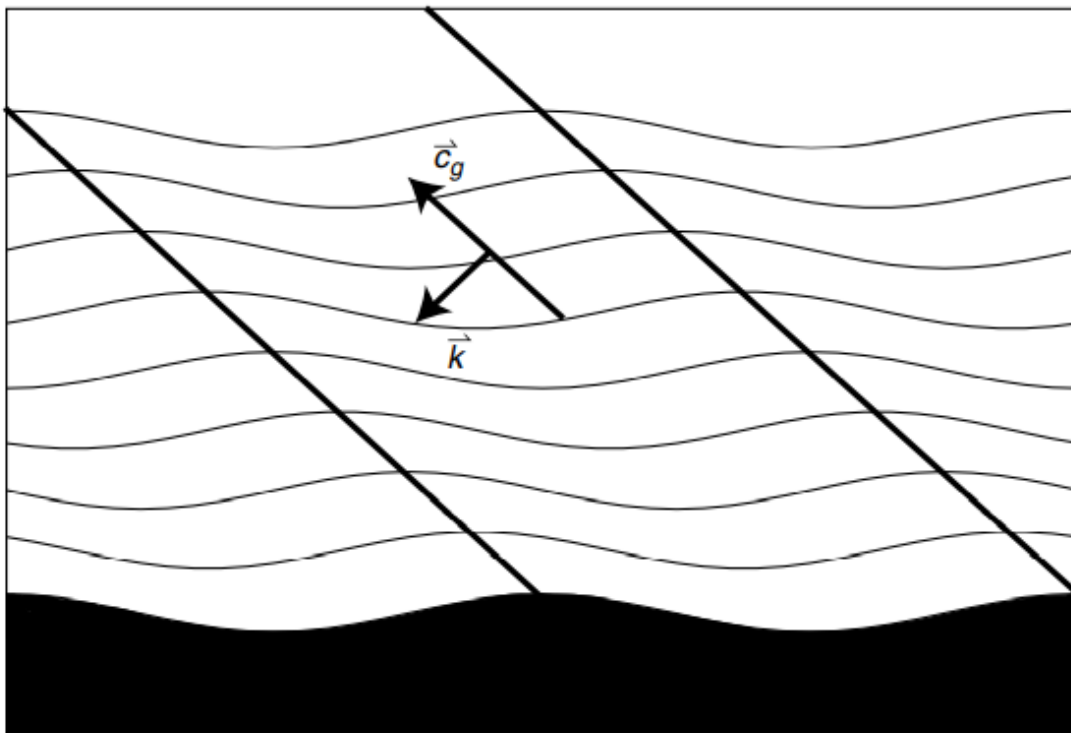


Figure 2, Lynch, Gravity wave formation over mountains

As seen in figure 2, the air over mountains bounces and creates upward motion in a wave-like structure. Clouds form with lifting air, so when the air is lifting at a certain point over the mountains, clouds will form.

The camera was estimated to be around 9000m from the photo. The focal length of the lens used is 26mm. So, the subject was very far from the focal length. The iPhone 11 wide angle camera that this photo was taken with allows for a maximum resolution of 2436 x 1125 pixels. In Photoshop, the image was edited through making the transfer curve steeper in the bottom left, adding contrast.

The image reveals an artistic balance of pattern constructed in nature while revealing physics in the atmosphere that result in this pattern. The image fulfilled my intent and displayed the physics I wanted to go into. In the future, the image could further investigate clouds by accompanying images of the sky throughout the day. More context of what came before and after would add to the level of analysis possible.

Works Cited

Atmospheric Soundings, weather.uwyo.edu/upperair/sounding.html.

Lynch, Amanda H., and John J. Cassano. *Applied Atmospheric Dynamics*. Wiley, 2006.