

## Purpose and Intent

The image shown was taken in Boulder, CO by Table Mesa. The purpose of the image is to capture an intriguing cloud formation. The cloud represents a mountain wave cloud taken on a windy day in February. The tree is captured in the image to provide scale for the picture.



Figure 1: Cloud Image

## Camera Specifications

The shot was taken with a Canon PowerShot A1300 and the cloud was in the northeast. Exposure was 1/100 sec, with an aperture of f/2.7. The focal length was 6.2mm and the iso was held at 80. The image was taken on February 22<sup>nd</sup> around 7:30 pm.

The wavy cloud shown is an altocumulus lenticularis and is usually found at an altitude between 15,000 feet and 20,000 feet. Below is a summary of the weather and a graph of temperature fluctuations during the day. At the time of the photograph, the temperature was about 55 degrees Fahrenheit, with winds of 52 miles per hour coming in from the west.

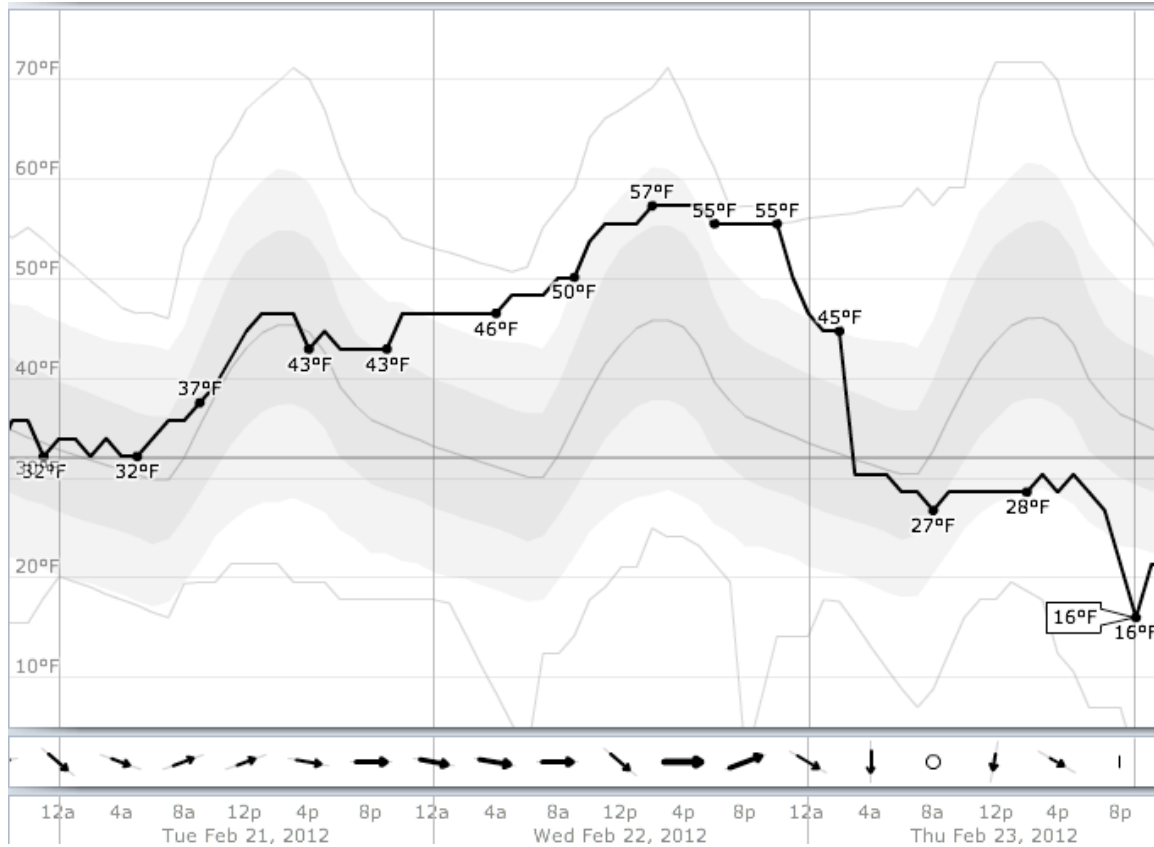
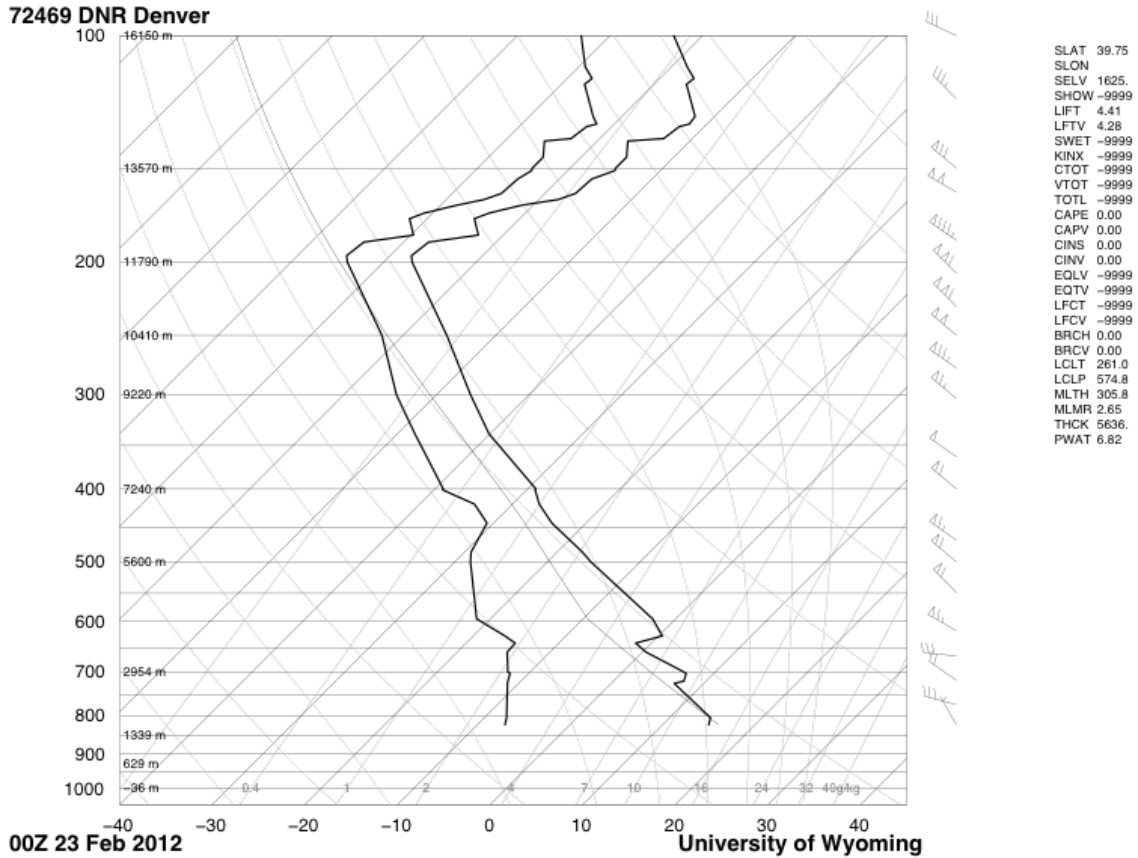


Figure 2: Summary of Weather Patterns

The Skew-T plot below summarizes the weather elements at every layer in the atmosphere and is part of the data that goes into producing synoptic weather models. The Skew-T plot for this particular day shows a stable atmosphere with a CAPE of 0. The solid curve on the left shows the dewpoint curve whereas the one on the right in the temperature curve – both show how these measurements change with an increase of elevation. Cloud layers are anticipated where the temperature lines and dewpoint lines are close. With this plot, the Skew-T verifies that altocumulus clouds exist, as shown in the plot around 5800 meters, the dewpoint and temperature lines are close together.



### Summary of Cloud Formation

This cloud is a mid-level cloud and classified as an altocumulus lenticularis. These clouds are normally aligned perpendicularly to wind direction. Due to their shape, they are often confused for UFO's. These clouds are formed when moist air flows over a mountain range, large-scale standing waves often form downwind. When the peak of the cloud has a temperature below the dew point, moisture in the air may condense to form lenticular clouds. Moist air in the trough of the wave often evaporates, leaving a formation called a wave cloud. These clouds typically are not captured in flat countryside, as they form over mountain peaks and are prevalent in the Rockies.

### References

- [http://www.atmos.millersville.edu/~lead/SkewT\\_HowTo.html](http://www.atmos.millersville.edu/~lead/SkewT_HowTo.html)
- <http://weather.uwyo.edu/upperair/indices.html#CAPE>
- <http://weatherspark.com/#!graphs:a=USA/CO/Boulder>
- <http://weather.uwyo.edu/upperair/sounding.html>

"Cloud Physics." *Nature* 181.4619 (1958): 1298. Print.

Takle, E. S., and John Brown. "Alto cumulus Lenticularis Clouds over Flat Terrain." *Weatherwise* 35.3 (1982): 131-33. Print.