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MCEN 4151

Professor Hertzberg

3/21/18

Cloud First Image

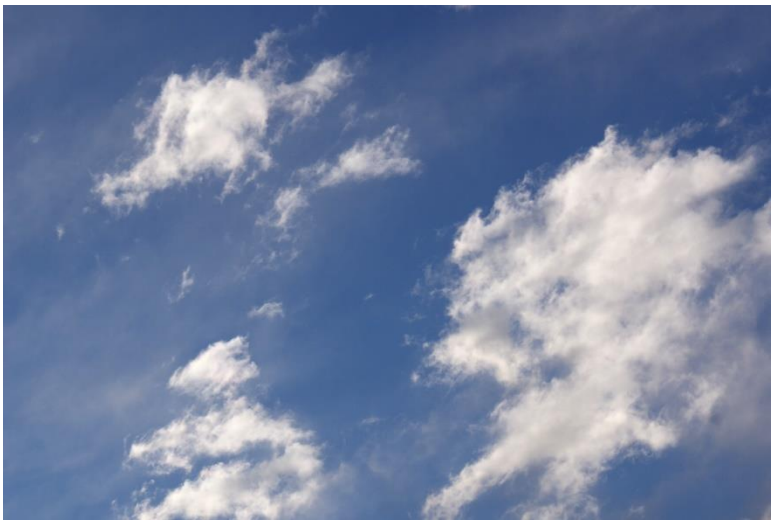

Figure 1: Altocumulus cloud on 3/4/18 at approximately 5:30 pm at the corner of Marine St. and 11th St.

Introduction

The purpose of this picture was to capture atmospheric flow using clouds, and atmospheric data obtained from outside sources. The intent of the image was to create a picture that looked as though it could have been a picture taken from space of the tops of the clouds. This took a few tries to capture a picture that I liked as some pictures that I took had buildings and other man-made objects in the frame that were not easily cropped out. The final image ended up being of a cloud almost directly above me.

Image Circumstances

The image was taken outside of my apartment at the corner of Marine St. and 11th St. The cloud was moving from west to east and coming down from the foothills. When the image was captured directly above me. This image was captured on Sunday, March 4, at approximately 5:30 pm.

Cloud Type

I believe that the cloud in the image is an altocumulus cloud. The rest of the sky had clouds similar in shape and size as the cloud in the image. The wind had started to pick up towards the end of the day, but there was not precipitation or a change in the weather otherwise. The skew-T diagram from that day indicated a CAPE value of zero which means that the atmosphere was stable that day.

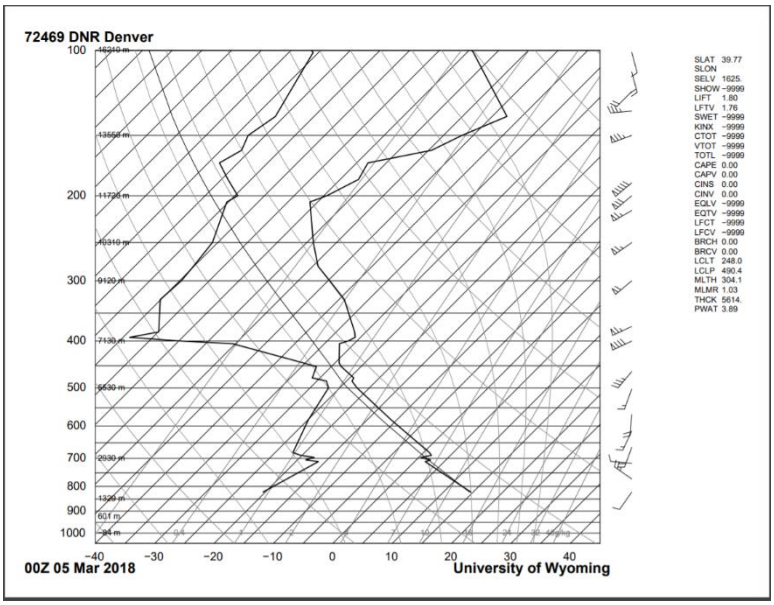

Figure 2: Skew-T diagram from the day the image was taken (3/5 00Z)

Also looking at the ceilometer data collected by CU Boulder that day we see that the cloud ceiling was around 8 km (26246 ft.). These data from the skew-T, and the ceilometer, and the wispy nature of the clouds led me to the conclusion that the cloud in my image was an altocumulus cloud. These are also the clouds that you would expect to see in the sky when looking at the data collected from that day. Due to the stable atmosphere we would expect that if the cloud were to rise for any reason that it would then come back down to its original altitude due to it being cooled.

Photographic Technique

The approximate distance from the cloud to the lens is 8 km, because the cloud was roughly directly above me. For this image the f/13, the exposure time was 1/160 sec, ISO 100. The image was taken using my Sony DSLR-A300. During post-processing I cropped out a darker cloud in the bottom corner that I though took away from the aesthetic that I was going for. Then using Gimp I increased the brightness and then contrast to make the clouds whiter as well as increase the definition between the clouds and then background sky. Below is the original, unedited image.

Figure 3: Original, unedited image

Conclusion

I like this image and the fact that it looks like it could have been taken from space. I think I did a good job of making the photo look as though it was taken from the International Space Station or some other spacecraft for example. The fluid physics are hard to see as the clouds are stationary. Without the help of data from outside sources it would be hard to discern anything from the cloud at all. But with the help of these data we can start to make some assumptions about the cloud and in turn some assumptions about the physics too.