

## Clouds 2

By Mark Reusser

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### Image Intent:

The purpose of this image is to capture an artistic image of a cloud. Clouds in many ways can show the physics of a fluid flow and some of the physics of weather. The image captured is actually very interesting and beautiful because the setting sun can be seen as well as the ocean break and the clouds. Using atmospheric sounding data and comparing the image to pictures of known clouds the type of cloud can also be determined.

### Cloud Image Location:

This image was taken at Panama City Beach, Florida. The image was captured at 7:15 PM on March 23, 2009. The image was taken facing the West, from the vantage point of about 10 stories above sea level. This vantage point was chosen because the sky could be seen from an elevated position so there was little blocking the image of the clouds. The time of day also provided some very interesting colors that make the image more appealing because the sun was setting. The location for this was chosen because it provides a much wider view of the sunset and the horizon than is available in Colorado when taking photos of the clouds facing the setting sun.

### Photographic Technique:

The photograph was taken using a Samsung S860 digital, 8.1 megapixel, camera. The lens on this camera is a Samsung Lens Zoom 8.3-18.9 mm. The focal length for the lens taking this shot is 6.3 mm. This image was taken using an autofocus camera. The shutter speed was 1/500 of a second and the F Number was set at 8.4. The maximum lens aperture was 2.97. The original image is 3264x2448 pixels (8 megapixels). The lighting was provided by the setting sun which is coming from the west. The image was cropped to a size of 3249x1744 pixels. The image was edited in photo shop using the S-curves function to create a better contrast between the clouds and the sky. This was done by darkening the darker colors and lightening the lighter colors. The clone feature was used to remove a few distracting features on the beach, but the clouds were unaffected by this action.

### Cloud Physics:

The clouds shown in the foreground of the image are altocumulus clouds. Altocumulus clouds are the result of a stable atmosphere. Stable atmospheres occur when the temperature is decreasing slower with increasing altitude than an adiabatic reference. The classification of this cloud formation is made based upon comparison with other known cloud photographs as well as the use of a Skew-T plot. Skew-T plots can be used to determine much useful information for the classification of clouds. Only certain clouds will form depending on the condition of the atmosphere. The imaged altocumulus clouds generally form in a semi-stable atmosphere. A semi-stable atmosphere occurs when the adiabatic temperature changes at a similar rate to the actual air temperature with an increase in altitude. The

Skew-T plot shows both the temperature line (furthest to the right) and the adiabatic reference line (center). Because these two lines have a very similar slope, they represent a semi-stable atmosphere. The actual skew-T plot used for analysis was for Tallahassee, Florida because it is the closest sounding data available. The clouds imaged also show the effect of a sea breeze causing the clouds to break up. The land mass absorbs more heat during the day so it causes the air above the land to be a higher temperature than the air over the sea. This causes a mixing of the cooler and warmer air, affecting the formation of clouds.

#### Future Work:

In general I very much liked this image. I think that it would have been nice to be able to take the image without having to crop out any other parts of the image so that the full 8 megapixels of the camera could have been used to decrease the pixilation of the image. I think that I would also like to have take the image with a wide angle lens, or possibly cropped images together because this image didn't capture all the cloud because there were many other interesting formations occurring at the same time as this one.



References:

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