

Cloud Image #2: Ocean Moonrise

Jon Severns
MCEN 4151
April 16, 2013

1 Introduction

This image was taken for the second cloud photography assignment of the Flow Visualization course. For this assignment, students were tasked with photographing an image of clouds that was both visually appealing, and informative about the atmospheric and weather conditions that created the clouds. In order to achieve this, I wanted capture interesting cloud formations during the night, using very long exposure times. After several nights of attempting different methods and adjusting various settings, I was able to get a really interesting nighttime photo. The background and methods for my photograph are detailed below.

2 Photograph Information

This picture was taken from the eastern shore of Hilton Head island in South Carolina. It was taken from the 10th floor balcony of my hotel, at approximately 10:30pm on March 30th, 2013. The camera was pointed in an eastern/southeastern direction, and aimed parallel with the surface of the ocean.

3 Cloud Analysis

There are two types of clouds in this photo. Near the top left corner of the picture are cirrostratus clouds. These clouds are very high up, over 6000 meters, and are formed from small ice crystals. At the time of this photo, the clouds were moving quickly out towards the ocean, further exaggerating the streaky look they already had due to the long camera exposure. The clouds near the bottom of the ocean, adjacent to the moon, are cumulus clouds. These clouds form at altitudes of less than 2000 meters, and in this photo I believe they go all the way down to touch

the ocean. If someone had been on a boat that far out, they would be enveloped in the fog created by this cloud.

Unfortunately there was no atmospheric data available for this location on the day the image was taken. Contrary to the look of the image, it was actually extremely dark at the time, with the moon providing little light to see the clouds. The weather at the time was cold and windy, and it looked like there may have been a large storm off to the left side of the picture. The clouds were also blowing quickly out towards the sea, so winds in the upper atmosphere must have been very fast. For those reasons, I am assuming the atmosphere was not stable.

The weather on the day before and the day after the photo were somewhat cold and windy, but there were no storms. This suggests there was no cold front was coming in.

4 Photographic Technique

This image was captured using a Canon digital Rebel EOS, with a 18-55mm lens that was fully zoomed in. The image was shot with an aperture of $f/4$, shutter speed of 30 seconds, and an ISO of 200. I estimate that the field of view in this image is 1 mile, and the distance from the lens to the clouds is approximately 10 miles. The original and edited images can be seen in Figures 2 and 3 below.



Figure 2: Original Image (3072x2048) Figure 3: Edited (3072x2048)



There was a fair amount of editing done to this photo,

although the overall content was not changed much. The first thing I did was adjust the levels of the image to brighten the moon and sky, and bring out the clouds and stars. Next, I used the clone stamp tool to remove some guy-wires that were attached to the side of the hotel, and disrupted the image. Finally, I edited out a couple lights on the horizon caused by boats that were anchored out on the sea. I chose not to crop the image because I did not want to remove anything in the image, and I had already adjusted the frame while taking photos.

I am very happy with the way this photo turned out. I had made several attempts to take interesting nighttime photographs, and it took a lot of trial-and-error to get to this point. I really like how the photo appears to be a sunrise at first glance, before you notice the stars in the sky. I think it is a very surreal effect, and has some very introspective artistic qualities. I was more than able to meet my goals with this photo, and capture the way clouds look under moonlight. If I were to expand upon this idea, I would really like to create a time-lapse of the moon rising over the ocean.