

Atlanta AMS/NWA Chapter Meeting January 20, 2011

Kent Frantz, chapter President, had each of the 24 attendees introduce themselves. He also mentioned that we will soon be looking for nominations for the chapter awards including two college scholarships and the C. L. Chandler Award. Kent also discussed that the annual banquet will be held in April and the tentative date for that is April 14th.

Sean Miller gave the treasurer's report. We have a total of \$1856.07 (\$1751.06 in the bank account and \$105.01 in the Amazon account). We have 35 full members, which includes 24 full members and 11 student members.

Kent Frantz introduced the speaker for the evening, Laura Belanger, a meteorologist with the National Weather Service in Peachtree City, GA. Laura discussed *Extreme Rainfall Frequency in the Atlanta Metro Area: An Analysis of September 2009*. Although talks earlier in the chapter year focused on the 2009 north Georgia floods, Laura focused more on the rainfall rather than other issues.

Event Background: Leading up to the major flood event on September 21, 2009, 7 day rainfall totals were more than twelve inches across the western metro Atlanta area with some areas receiving approximately 24 inches of rain! In addition, the area was faced with a wet August and September. During the event SW flow helped to enhance the rainfall and PW values were just above 2 inches – this falls above the 99th percentile! Upper level flow was parallel to the topography while the low level flow was perpendicular to the topography – this helped to increase rainfall from a topography standpoint. Models were forecasting 1-2.5” of rainfall but models were coarse. HPC showed less than 2” of rainfall. The WRF-NMM did the best with rainfall amounts, showing 7”, but this was across many areas.

Impacts: During this event, 20,000 dwellings were impacted, causing over \$500 million in damage. 300 roads were destroyed and 7 state highway bridges were closed. Ten deaths were reported in Georgia.

Study Background: This study was motivated by the service assessment performed by the National Weather Service Headquarters, media partners and the emergency management community. There were two objectives to the study: calculate the return period of rainfall amounts and determine the 24 hour rainfall amounts associated with each major return period.

Data: Thirty three sites across Georgia were used in the study. All data was retrieved from NCDC archives and in order for the site to be included, it must have had at least 50 years worth of data. The data was based on 7am to 7am daily totals so in order to get a 24 hour total from midnight to midnight, an adjustment factor of 1.13 was applied to the data. Literature has shown that the highest 24-hour rainfall amounts do not occur in the 7am to 7am daily observation period. Applying the adjustment factor converts the data set to the 24-hour totals.

Results: The theoretical rainfall amount of 13.8 inches turned out to be a 10,000 year rainfall event while the observed 21.03 inches during the 2009 September floods is a 600,000 year

rainfall event. The important take-home message is that this event was in fact greater than a 10,000-year event. For Atlanta, the following was calculated for return periods in regards to rainfall: 100-year: 7.7 inches, 500-year: 9.6 inches, 1,000-year: 10.5 inches, 10,000-year: 13.8 inches. From this research, a situational awareness tool was able to be updated with values pertinent to the Atlanta area.

Kent thanked Laura for her presentation and presented her with an AMS mug. The next meeting will be Thursday, February 17, 2011 at 7pm. The meeting will be held at Delta. Please sign up ahead of time if you plan to attend.