

# Shareholders' Report 2010

National Weather Service • Weather Forecast Office • Peachtree City, Georgia



### Big News Items of 2010

- Partnerships Fostered (page 5)
- 2° Barrier Broken (page 7)
- Golden Triangle (Aviation) Initiative (page 10)
- Research-to-Operations Efforts (page 12)

*In Fiscal Year 2010, Congress appropriated \$999,845,000 to the NWS which equates to an "investment" of \$3.24 per U.S. resident.*

*This Shareholders' Report provides an accounting of what the NWS office in Peachtree City is doing with its portion of your investment.*

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## Improving, But Still Much to Learn

Lans P. Rothfus  
Meteorologist in Charge

It was a weak thunderstorm with some rotation that looked like every other thunderstorm we were watching on radar that afternoon. In fact, I was hard-pressed to even call it a thunderstorm because it was so short, weak, and had little cloud-to-ground lightning detected. It was just another weakly-rotating rainshower of the afternoon. That little storm on November 30, 2010, however, dropped a brief EF2 tornado on a neighborhood in Buford, GA, with no warning from the NWS. Luckily, there were no injuries (or worse), but my heart stopped later when I saw that the tornado had cut a path between two schools - at 3:30

p.m. on a school day! While the damage was entirely structural, this could have been much worse!

Tornadoes that form in "quasi-linear convective systems" (QLCS) like this event are typical of winter tornadoes in the South. They are also the most frustrating, even for seasoned radar meteorologists, in that their detection is often beyond the capabilities of our science and technology. That motivates us to improve in both areas, as well as in public education and enhanced services.

In this report, you will read about our technological improvements and our research on events like QLCS tornadoes to improve our science (and



Damage from an EF2 tornado in Buford, GA on 30 November 2010.

warnings). We also present examples of successes in forecasting and outreach/education for public safety.

For ten years, we have issued these reports to show how your investment in us has benefited the nation. It also serves as a reminder that continued support is needed to help us adequately predict that next "unexpected" tornado. ☀

## Severe Weather 2010

Robert Beasley & Laura Belanger  
Meteorologists  
Verona Murrell  
Senior Meteorologist

The year 2010 will be remembered as being among the least active severe weather years ever for WFO FFC CWA. There were "only" 210 severe convective events recorded during 2010, easily beating the previous record low value of 253 in 1995, the first full year of existence for the modernized Peachtree City Office. All severe convective weather types were down drastically from the previous five very active years. Ten tornadoes

affecting eleven counties were confirmed in 2010, the lowest number since 2004 and well below the 15-year average of 15. Even more unusual was that only four of the ten tornadoes occurred during the traditionally active spring months, with six of the ten tornadoes falling during the fall months.

Flash flooding events were down drastically from the record number 81 events observed in 2009, as well. In 2010, there were only 18 flash flood events recorded, well below the eight-year average of 52.

Lightning was still active during the summer of 2010 and topped the list with three deaths, ten injuries, and nearly \$10M in property damages.

June proved to be the most active severe weather month of the year, with 61 severe thunderstorm wind and hail events. May, July, and October vied for second place with 30, 29, and 27 severe convective events, respectively. Most other months had 15 or fewer severe convective events, except for February and December during which no severe convective events were

(Continued on page 3)

**Top 25 North and Central Georgia Weather Events for 2010**

	Date	Counties	Cause	Damage	Deaths	Injuries	Cost
<b>1</b>	13-Jul	Cobb	Lightning	Two teenage girls were struck and killed by lightning while standing under a tree adjacent to their home in Mableton, one of the two perishing a week later.	2	0	0
<b>2</b>	23-Jul	Bleckley	Heat	A 90-year old male and an 83-year old female died of heat exhaustion while working outside behind their home near Cochran.	2	0	0
<b>3</b>	29-Jun	Henry	Lightning	A 14-year old male and 15-year old female were struck by lightning just outside their home near McDonough. The male was killed instantly.	1	1	0
<b>4</b>	26-Jul	Twiggs	Heat	A 47-year old female died of heat exhaustion while outside her home near Jeffersonville.	1	0	0
<b>5</b>	15-Jun	Forsyth	Lightning	Three male teenagers, outside riding motorcycles, were struck and injured by lightning just northeast of Cumming. One was hospitalized as a result.	0	3	0
<b>6</b>	5-Jun	Laurens	Tstm Wind	Thunderstorm winds blew the roof off a pole barn 3W of Lovett. A person working inside was injured from flying debris.	0	1	0.07M
<b>7</b>	1-Jun	Coweta	Lightning	A 27-year old female had difficulty breathing after a lightning strike to her home in the Welcome community.	0	1	0
<b>8</b>	2-Jun	Cobb	Lightning	Lightning injured a man hiking at Kennesaw National Battlefield Park.	0	1	0
<b>9</b>	19-Jun	Cobb	Lightning	A 14-year old male was struck and injured by lightning while seeking shelter under a tree adjacent to Lake Acworth.	0	1	0
<b>10</b>	19-Jun	Troup	Lightning	A female teenager was injured by lightning while boating on West Point Lake.	0	1	0
<b>11</b>	21-Jul	Douglas	Lightning	A 15-year old male was injured by a lightning strike while operating an automatic garage door opener.	0	1	0
<b>12</b>	26-Jul	Dawson	Twtm Wind	Two trees fell on a trailer just west of the town of Bright. The trailer was destroyed and a female inside was injured.	0	1	0
<b>13</b>	14-Aug	Bibb	Lightning	Lightning struck a U.S. Postal carrier as he was placing mail in the mailbox at a private residence in Macon.	0	1	0
<b>14</b>	26-Jul	Gwinnett	Tstm Wind	Several power lines and trees were down from Lilburn to just Duluth. A power line fell on a vehicle in Duluth pinning and injuring the male driver.	0	1	0
<b>15</b>	30-Nov	Gwinnett	Tornado	An EF2 tornado caused extensive damage across the east central part of the county approximately five miles northwest of Dacula. The tornado tracked about two miles between Mountain View High School and Twin Rivers Middle School near I-85. Fifty-six homes and one business sustained at least minor damage. Of these, 15 to 20 homes were destroyed.	0	0	5M
<b>16</b>	19-Jun	Cobb	Hail	Golf ball-sized hail fell in the Acworth area.	0	0	2.6M
<b>17</b>	16-Jun	Fulton	Lightning	A large mansion, just southwest of Birmingham, was completely destroyed as a result of a lightning strike.	0	0	2M
<b>18</b>	24-Apr	Chattooga	Tornado	An EF1 tornado, originating in DeKalb county Alabama, tracked 10 miles across far northwest Chattooga county from Cloudland to Welcome. Damaged or destroyed property included an airplane hangar, two airplanes, 12 homes, and several outbuildings or garages. Hundreds of trees were also destroyed.	0	0	1.2M
<b>19</b>	25-Oct	Houston	Hail	Golf ball-sized hail fell across much of central Houston county including Perry, Warner Robins, Kathleen, and Bonaire.	0	0	0.65M
<b>20</b>	3-May	Fulton	Flash Flood	Heavy rain from thunderstorms forced Nancy Creek, Peachtree Creek, and Proctor Creek into moderate flood. At least fifty homes sustained damage.	0	0	0.5M
<b>21</b>	15-Jun	Gwinnett	Lightning	Lightning struck a unit of the Sugarloaf Apartments just east of Duluth. Six of the three-story apartment buildings suffered extensive damage.	0	0	0.5M
<b>22</b>	16-Jun	Lumpkin	Tstm Wind	A thunderstorm downburst blew down more than 200 trees countywide. Several homes, four businesses, and two schools sustained minor to moderate damage.	0	0	0.5M
<b>23</b>	9-Jul	Cobb	Tstm Wind	A thunderstorm downburst caused extensive damage to trees and property from Powder Springs to southeast of Mableton.	0	0	0.5M
<b>24</b>	14-Aug	Emanuel	Lightning	A lightning-related fire destroyed a wing of the 1904-built David Emanuel Academy near Stillmore.	0	0	0.5M
<b>25</b>	19-Jun	Bartow	Hail	Golf ball-sized hail fell in the Emerson area.	0	0	0.44M

## Severe Weather 2010 (cont.)

(Continued from page 1)

recorded. December 2010 was the first December since 2003 without at least one severe convective event.

Of the ten tornadoes that touched down in WFO FFC counties during 2010, only one of these ranked higher than an EF1. On November 30<sup>th</sup>, an EF2 tornado, embedded within a narrow line of showers and weak thunderstorms struck the east-central part of Gwinnett county resulting in moderate to major damage to 56 homes just northwest of Dacula.

An unusual central Pacific El Niño event during the first half of the year, followed by a trend toward a La Niña event during the second half, contributed to the drastically-reduced severe weather totals of 2010. Both the second half of the 2009-2010 and the first half of the 2010-2011 winter season were more notable than recent years. The most significant snow fell on February 12<sup>th</sup>, when nearly all parts of north and central Georgia saw two to four inches of snow.

Very cold temperatures on December 15<sup>th</sup> contributed to a light freezing rain event which created havoc across north Georgia. Over 3,000 traffic accidents occurred from ice-covered roads and highways, especially in the Atlanta metropolitan area.

Overall, 210 severe convective events were recorded during the year, down considerably from 380 events in 2009 and well below the 15-year average of 410. There were 18 flash flood events, below the average of 48 and well below the record number of 81 recorded in 2009. The number of severe convective events was only 49% of the 15-year CWA average of 431. The 2010 seasonal breakdown and 15-year normal convective event values are as follows: January-March (20/67), April-June (99/221), July-September (60/109), October-December (31/26).

### Deaths and Injuries

Six weather-related fatalities were recorded during 2010, the least since 2006. Three of these were heat-related. The

three remaining deaths were all caused by lightning. A total of 13 weather-related injuries were observed during the year, 10 from lightning strikes and three from thunderstorm winds.

### Property Damage

Weather-inflicted property damage (\$31.04M) in 2010 was the lowest amount since 2001. Lightning-related damages topped the list with \$9.77M accounting for 31% of the damages. Despite the paucity of tornadoes in 2010, it ranked second with respect to monetary damage with \$7.52M.

Other notable damages included hail (\$6.89M), thunderstorm wind (\$5.83M), and flash floods (\$1.29M). Only 31 weather-related events in 2010 caused monetary damage in excess of \$250,000, down markedly from 118 in 2009. Twelve of these events were caused by lightning. ☀

2010 Deaths and Injuries		
Event	Deaths	Injuries
Tornado	0	0
T-storm Wind	0	3
Hail	0	0
Lightning	3	10
Flash Flood	0	0
Flood	0	0
High Wind	0	0
Strong Wind	0	0

2010 Weather-Related Damage	
Phenomenon	Losses
Lightning	\$9,767,750
Tornadoes	\$7,520,500
Hail	\$6,885,807
Thunderstorm Wind	\$5,831,500
Flash Floods	\$1,289,000
Heavy Rain	\$305,000
Wild Fires	\$101,570
Strong Winds	\$58,000

### Tornadoes in Peachtree City NWS Forecast Area in 2010

Date	County	Location	Strength	Path		Deaths	Injuries	Damage
				Length (mi)	Width (yds)			
12-Mar	Dooly	2.2SE Snow Springs to 2.7S Unadilla	EF0	1.5	100	0	0	50K
08-Apr	Morgan	1.3W Rehobeth to 1.0 NNE Rehobeth	EF1	1.8	50	0	0	0.22M
25-Apr	Chattooga	2.9NW Cloudland to 1.3W Welcome	EF1	10.1	300	0	0	1.20M
		1.3ENE Browns Crossing to 1.0S Milledgeville						
03-May	Baldwin	Airport	EF0	7.8	75	0	0	75K
27-Sep	Laurens	1.4ESE Chappells Mill to 1.4ESE Chappells Mill	EF0	0.1	50	0	0	15K
25-Oct	Dade	2.0WNW Sulphur Springs to 2.0 ERising Fawn	EF1	4.3	150	0	0	0.25M
25-Oct	Catoosa	1.9NNE Keith to 2.0NNE Keith	EF0	0.2	75	0	0	40K
27-Oct	Cherokee	2.5SSE Univeter to 1.9SSW Hickory	EF0	0.8	75	0	0	0.43M
30-Nov	Gwinnett	1.3WSW Hog Mountain to 1.4N Hog Mountain	EF2	2.1	100	0	0	5M
30-Nov	Butts and Henry	9WNW Shady Dale to 2NW Shady Dale	EF0	0.8	50	0	0	5K

## 2010 General Weather Overview: Hot and Cold Extremes

Paul Denault  
CWSU Meteorologist

*“When combined with December 2009, it was the coldest December - February at the four sites since the winter of 1977-1978.”*

With regard to temperature, 2010 was a year of extremes. January, dominated by two arctic outbreaks, brought Atlanta its coldest January since 1985 and it was the coldest month since December 2000 with an average temperature of 38.5°F, which was 4.2°F below normal. Record rainfall on the 16<sup>th</sup>, 21<sup>st</sup>, and 24<sup>th</sup> contributed to monthly surpluses in Atlanta, Macon, Columbus and Athens. Departures from normal ranged from +0.35" in Atlanta to +1.51" in Athens. Colder-than-average

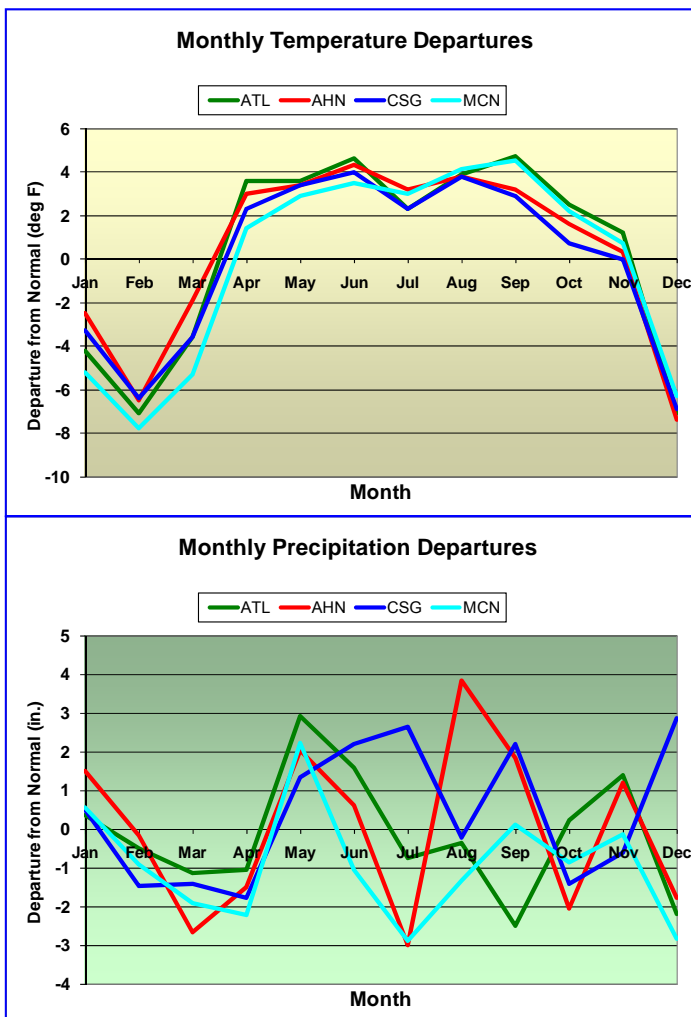
temperatures continued through February with three more arctic blasts. For the second straight month, Atlanta (39.6°F) and Athens (39.5°F) recorded an average temperature below 40°F. This hadn't occurred since December 1981 and January 1982. When combined with December 2009, it was the coldest (Dec-Feb) at the four sites since the winter of 1977-1978. Precipitation was also below normal in the four cities. Temperatures moderated some in March, but remained well below average in all four locations, with Columbus' -5.3°F departure tying their 4<sup>th</sup> coldest March on record. Again, precipitation was below normal with deficits ranging from 1.14" in Atlanta to 2.66" in Athens.

Athens (4.55"), and Macon (5.73") were well on the plus side. The summer (Jun-Aug) was extremely warm. Atlanta and Columbus experienced their 2<sup>nd</sup> and 4<sup>th</sup> warmest June, respectively. Again, July followed with well above normal departures ranging from 2.3°F in Atlanta and Macon to 3.2°F in Athens. In August, the departures increased to 3.8°F in Athens and Macon, 3.9°F in Atlanta and 4.1°F in Columbus. This was the 3<sup>rd</sup> warmest August in Atlanta and Athens, the 5<sup>th</sup> warmest in Macon, and the warmest ever in Columbus. During these two months, only Macon in July and Athens in August posted above average rainfall.

September brought little relief from the hot, dry pattern. Again, the four cities recorded well above average monthly temperatures. Thirteen record highs were set on ten separate days in Atlanta, Macon, and Columbus. Monthly rainfall was still below normal in Atlanta by 2.49", but Athens, Columbus, and Macon replenished with surpluses of 1.82", 0.10", and 2.19", respectively. After a short reprieve from the heat in late September and early October, record highs returned in mid and late October. On the 11<sup>th</sup>, 26<sup>th</sup>, and 27<sup>th</sup> six records were set. Noteworthy were two on the 27<sup>th</sup>, when Columbus and Macon tied their records of 89°F set in 1984 and 88°F set in 1940, respectively. November average monthly temperatures were close to their 30 year normal. However, December temperatures dipped to another extreme. With monthly averages of 38.3°F in Atlanta, 37.2°F in Athens, 42.8°F in Columbus, and 40.9°F in Macon, it was their coldest December since 2000. ☼

In April, La Niña evolved and strengthened in the equatorial Pacific. Characteristically, temperatures rebounded to well above average. This shift to much warmer than normal monthly averages was quite persistent. Every month from May through September was at least 2.3°F or more above average in all four cities. For the 3<sup>rd</sup> consecutive month, drier than normal conditions continued, as rainfall deficits ranged from -1.06" in Atlanta to -2.23" in Columbus. Substantial precipitation returned in May, as a potent system brought record rainfall on the 3<sup>rd</sup>. Amounts ranged from a two-inch soaking in Macon to a 4.77" deluge in Columbus. This contributed to well above average monthly rainfall, ranging from 4.31" (+1.33") in Macon to 6.87" (+2.92") in Atlanta.

Rainfall remained abundant in June at all locations except Columbus, where only 2.45" fell. However, Atlanta (5.21"),



Charts showing the departures from normal for temperatures (top) and rainfall (bottom) in 2010.



## New Ways to Communicate

Vaughn Smith  
Meteorologist

Communicating our forecast and warning information to the public in new and effective ways has always been a challenge for the NWS, but in 2010, we revamped one of our most important communicating tools. Prior to major weather events, we conduct live Webinar briefings with local and state emergency management officials and other key decision-makers. Our previous format

took forecasters 2-3 hours to create a presentation and 20-30 min to present it. In 2010, we implemented new software (Snagit, Camtasia, PowerPoint, and FX-Net) to speed the process which allows us to put forth a better and more useful product. This new method takes an hour to put it together and 10-15 minutes to present the information.

Another innovation is our capability of completing a live recording of the Webinar and

then hosting it on our website for review after the Webinar has ended. We also post to our website all the images that were used in the webinar. This gives our customers the resources they need to brief their own constituents on an impending weather event. These files can be accessed on smart phones and PDAs, as well. As always, WFO FFC is looking for the best way to get the messages conveyed. ☀



*Kent Frantz, Senior Service Hydrologist, conducting a "webinar" for emergency managers and other local officials.*

## Special Feature: Fostering Partner Relationships

Shirley Lamback & Dan Darbe  
Senior Forecasters

The NWS in Peachtree City (FFC) continued fostering its excellent relations with media and emergency manager partners in 2010 through Media Workshops and the Adopt-a-County outreach program.

The FFC outreach team organized two highly-successful Media Workshops in 2010. The goals were to enhance NWS and media relations, discuss new radar and warning techniques and exchange fresh ideas. The first workshop was held on April 29 at the NBC 11Alive (WXIA) studios in Atlanta, and was attended by the major Atlanta network meteorologists from NBC 11, FOX 5, CBS 46 and WSB. Although the workshop targeted the Atlanta media, TV meteorologists from Chattanooga and Augusta were also invited. The main topics of discussion included the effects of El Niño on the upcoming hurricane season, storm statistics for North and Central

Georgia, new radar practices and future radar technologies.

The second workshop was held on October 19 at the Fox 24/ABC (WGXA) television station in Macon and was also attended by Macon ABC 16 and CBS 13 meteorologists. The Columbus area stations were also invited. This was the first time a NWS-sponsored media workshop was held in Macon. The major topics were flood and flash flood characteristics for Central Georgia, the need for CoCoRaHs observers, a review of the severe weather and hurricane seasons, and the Winter/Spring outlook based on impacts from La Niña. Each workshop concluded with an open forum that allowed TV and NWS meteorologists to openly discuss issues related to their respective missions.

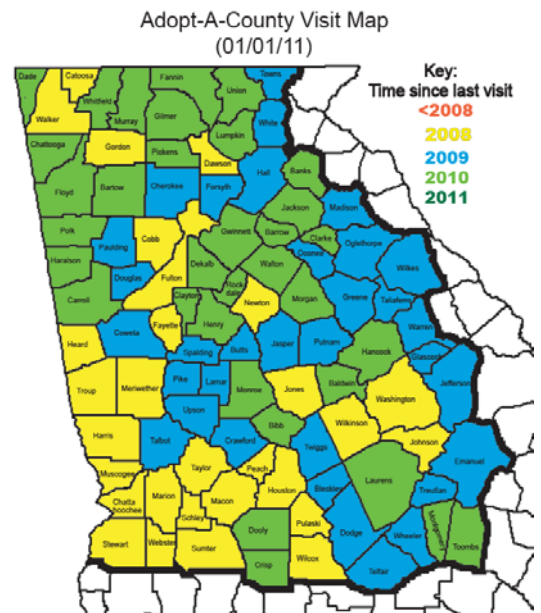
NWS relations with Georgia Emergency Managers (EMs) continue to grow through the FFC "Adopt-a-County" program. The program's goal is to give FFC meteorologists the opportunity to visit at least one-third of the 96 county EMs annually. These meetings are

effective ways to update partners on new forecast and warning practices and to address concerns within a county.

In 2010, 35 county EMs were visited, making 2010 the most successful visit year on record. Also for the first time, all 96 counties have been visited within a three year period. This program has vastly improved relations with our EM partners and provided staff meteorologist the valuable opportunity of learning more about their forecast area, the EMs, and the capabilities of each county. The continued support for this program will ensure our EM partners are visited regularly for years to come. ☀



*Steve Nelson, Science Officer, discusses latest radar warning techniques at media workshop in Macon.*



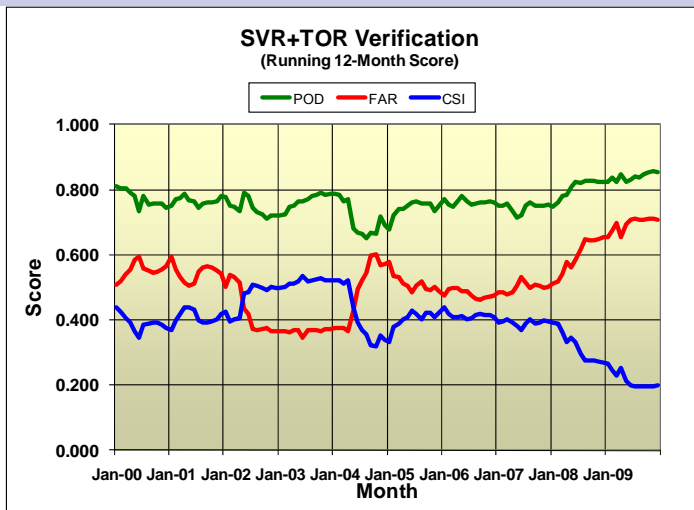
*Adopt-a-County visitation map showing all 96 counties visited over the past three years.*

## Severe Weather Performance for 2010

Laura Belanger  
Meteorologist

*“There were 210 total convective events in 2010, in contrast to 384 in 2009. It is also noteworthy that 2009 had 44 tornado events, while 2010 only had 12, the fewest events in the last five years.”*

Several enhancements and changes were integrated into severe weather operations in 2010. In an effort to be consistent with products, NWS renamed the “Severe Weather Alert” to “Severe Weather Advisory”. Additionally, severe hail criterion was increased to quarter-sized (1”) from penny-sized (3/4”). Locally, NWS Peachtree City overhauled the severe weather operations area to include several additional Situational Awareness Displays and new workstations for warning coordination and verification during severe weather events. During times of active weather, these changes help staff to identify and more consistently convey potential weather risks through our outlooks, forecasts, and briefings. Our new operations layout paid



Performance statistics for severe weather warnings using a rolling, 12-month methodology. Low FAR, high POD and high CSI are desired.

dividends in 2010 and will continue to do so for years.

Severe weather was very quiet for north and central Georgia in 2010, with our office issuing 394 severe convective polygon warnings, affecting 915 counties. This is in contrast to 2009 with 1750 counties warned by 599 polygon warnings. The 2010 warning numbers are just slightly above the 15-year average of 886 counties warned. More than 70% of all warnings issued occurred in May, June, July and October, with 59, 114, 57, and 50 polygon warnings, respectively.

The Probability of Detection (POD), which measures the ability to issue warnings before damage occurs, took a tumble in 2010 to 66.2% after a steady improvement over the last few years. Likewise, the False Alarm Rate (FAR), which is the percentage of unverified warnings compared to the total counties warned, increased from 70.8% in 2009 to 77.9% in 2010. The optimum FAR is 0%. The decline in the POD and

increase in FAR both can be attributed to the lack of severe weather events throughout the year. There were 210 total convective events in 2010, in contrast to 384 in 2009. It is also noteworthy that 2009 had 44 tornado events, while 2010 only had 12, the fewest events in the last five years. The limited (and generally weak) severe weather events yielded fewer chances to deliver scores slightly above the 15-year average of 886 counties warned. Overall, a severe weather event was reported in 46.7% of all convective polygon warnings.

The estimated average lead time, or the time between warning issuance and the first report of damage, decreased sharply from 17.8 minutes in 2009 to 9.0 minutes in 2010. Again, this can be attributed to a limited number of warning performances during the year and the weak nature of the storms.

A total of 22 flash flood warnings were issued in 2010, alerting 154 counties, with 18

(Continued on page 7)

	Exclusive Verification Method*			Inclusive Verification Method**
	Svr Tstm	Tornado	Flash Floods	Svr Tstm & Tornado
<b>Warnings Issued</b>	835	80	40	915
<b>Warned Events</b>	134	5	17	139
<b>Unverified Warnings</b>	656	57	22	713
<b>Unwarned events</b>	64	7	1	71
<b>Total Events</b>	198	12	18	210
<b>POD</b>	0.677	0.417	0.944	0.662
<b>FAR</b>	0.786	0.713	0.550	0.779
<b>CSI</b>	0.194	0.205	0.438	0.198
<b>Lead Time (min.)</b>	9.3	3.7	39.4	9.0

**POD** = Probability of Detection, our ability to issue warnings before damage occurs. Optimum POD is 1.00.  
**FAR** = False Alarm Rate, the percentage of warnings not verified. Optimum FAR is 0.00.  
**CSI** = Critical Success Index, a combination of the POD and FAR. Optimum CSI is 1.00.  
**Lead Time** = The time between warning issuance and first damage.  
 \*Severe Thunderstorm warnings only verified by large hail or damaging winds. Tornado warnings verified by tornadoes only. Flooding only verified by flash floods.  
 \*\* Tornado warnings verified with tornadoes, large hail, or damaging winds. Tornadoes also verify severe thunderstorm warnings.

## Severe Weather Performance (Cont.)

(Continued from page 6)

reported events. These totals are in sharp contrast to 2009 and the epic Atlanta metro floods in September when 57 warnings were issued, affecting 81 counties. Lead time for

flash flooding was also down, with an average of 39.4 minutes between warning issuance and first damage. Skill scores and other key statistics developed for WFO Peachtree City are depicted on the table on page 6. ☀

## Temperature Forecasts Break 2° Barrier

Trisha Palmer  
Meteorologist

It was another banner year for WFO Peachtree City forecasters as they once again significantly outperformed the computer models! Back in 2002, the errors on our temperature forecast were, on average, just over three degrees. This year is the first year that our forecast errors have dropped below two degrees - almost a 14% improvement over 2009!

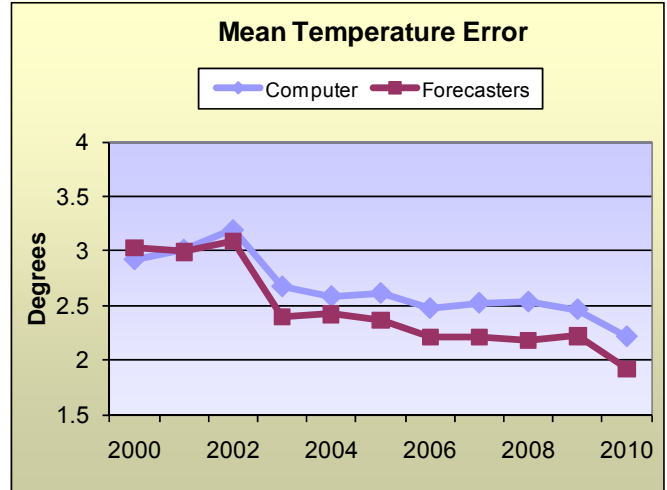
One of our three long-running computer models was retired in March of 2009, so this was the first full year without that extra guidance available. Of the two remaining models, one underwent additional modifications this year, on top of the adjustments made in 2009. As a result, this particular model's skill has improved over the past year; however, we continue to add value even to these significant model improvements. The Mean Temperature Error chart (top right) clearly shows our continued improvement upon both previous years and model guidance.

Precipitation this year was near to below normal, compared to 2009 which was one of the wettest years on record. In general over the past several years, the wetter the year, the

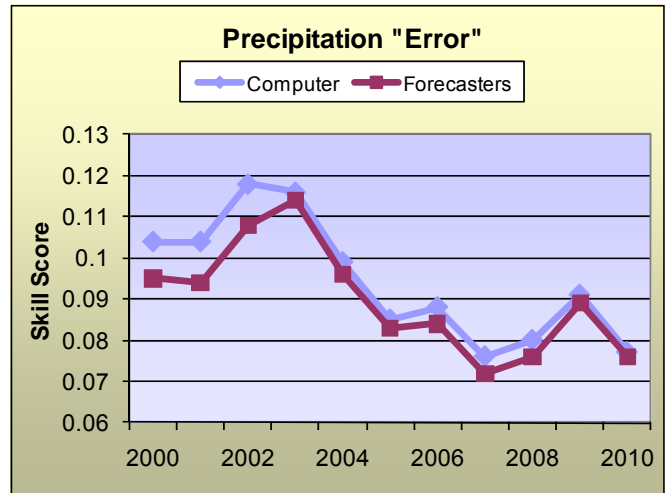
worse our precipitation scores have been. However, in 2010 we posted our second best precipitation error, second only to 2007 when we were in the middle of a significant drought. Our precipitation error in 2010, as can be seen in the middle chart at right, was a substantial improvement over 2009.

We also compare our forecasts to observed (actual) temperatures. Our goal is to forecast high and low temperatures within three degrees of the measured high and low temperatures. The bottom-right chart shows we achieved this goal almost 85% of the time for the first period of each forecast for Atlanta, Athens, Macon, Columbus, and Rome. Our temperature forecasts were "perfect" almost 19% of the time. We "busted" the temperature forecast (that is, our forecast was 10 degrees or more off of the actual temperature) only 0.2% of the time for these five locations - that's only 8 times out of more than 3,600 total forecasts!

Clearly the forecasts issued by WFO Peachtree City add significant value to what the models alone could provide. We are very proud of this and will continue to study model biases and trends in order to continue improving upon model forecasts. ☀



Comparison of WFO Peachtree City forecasters' temperature forecasting skill versus that of the computer models they use. Lower scores are better.



Comparison of WFO Peachtree City forecasters' precipitation forecasting skill versus that of the computer models they use. Lower scores are better.

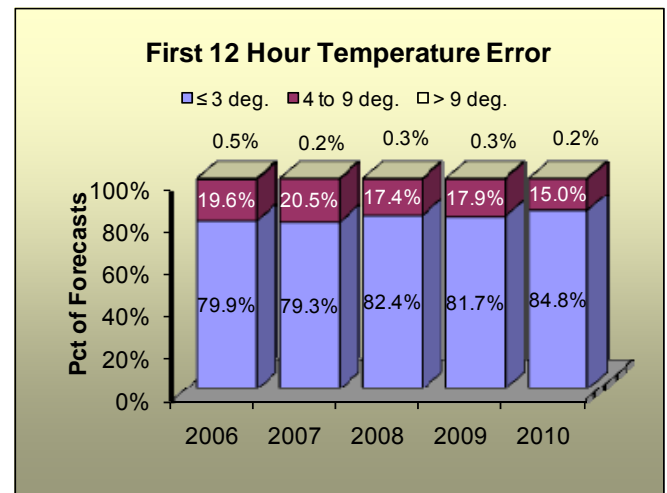


Chart showing distribution of first period (first 12 hours) forecast temperature errors for Atlanta Hartsfield-Jackson Airport.

## Aviation Program Improvements Made

Patricia Atwell  
Aviation Services Meteorologist

The WFO Peachtree City Aviation program continued to improve services in 2010. An Aviation Services Meteorologist position was added to the staff to help improve services to the ever-growing aviation sector. One immediate improvement occurred in July when the WFO increased the frequency of its airport (TAF) forecasts for Hartsfield-Jackson Atlanta International Airport (ATL). In addition to the normally scheduled 00Z, 06Z, 12Z and 18Z TAFs, our forecasters now issue mandatory amendments at 02Z, 04Z, 08Z, 10Z, 14Z, 16Z, 20Z and 22Z. These amendments are utilized by the Federal Aviation Administration

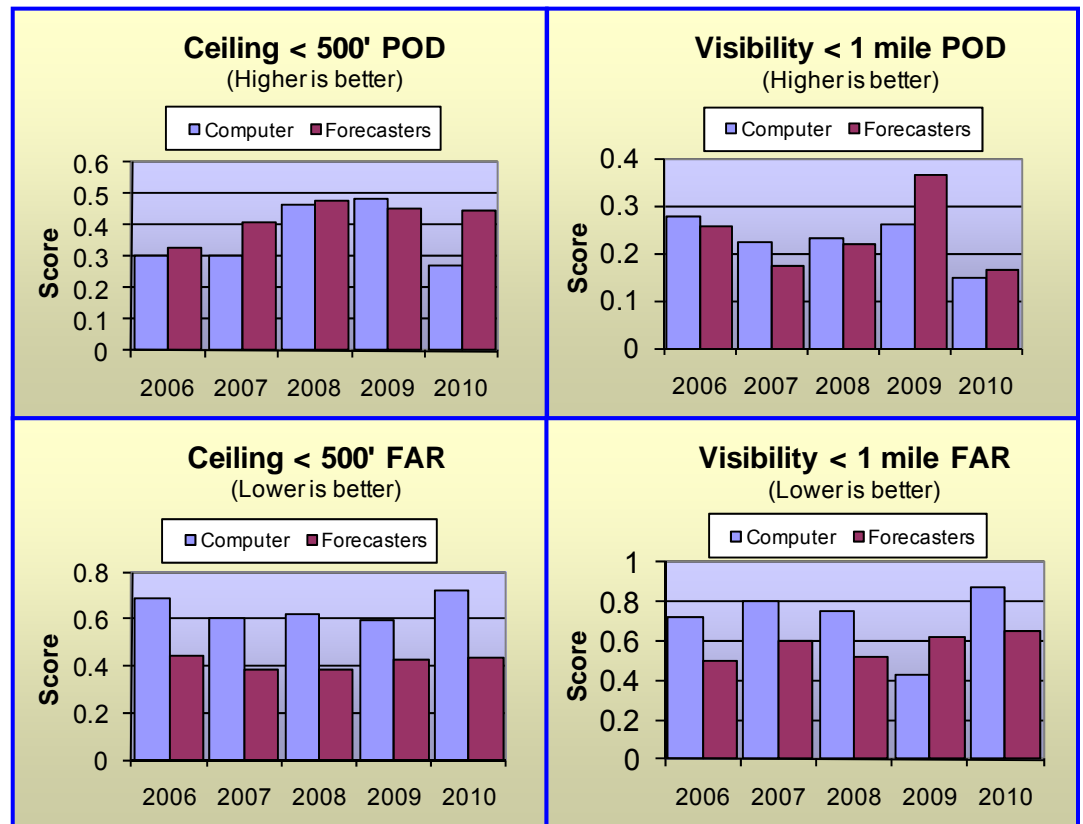
(FAA) – particularly the Traffic Management Unit (TMU) – in their decision-making process concerning flight arrival and departure rates for ATL. This practice also benefits the other six TAF sites for our office, namely Athens Benn Epps Airport (AHN), Columbus Metropolitan Airport (CSG), Middle Georgia Regional Airport (MCN), Fulton County Airport (FTY), McCollum Field (RYY) and DeKalb Peachtree Airport (PDK) - as those TAFs are updated at the same time based on current trends.

For 2010, the WFO showed a 24.1% improvement over model data when cloud ceilings were anticipated below 1000 feet and/or visibilities were expected to be 3 miles or less. Similar successes against the

models were seen in the Low Instrument Flight Rules (LIFR) categories (see charts below).

Other improvements to the aviation program include the addition of an aviation Area Forecast Discussion for each of the 00Z, 06Z 12Z, and 18Z TAF issuances. This new section includes a description of a forecaster's confidence in the forecast for ATL. The WFO has also improved communication between WFO and Center Weather Service Unit (CWSU) meteorologists by utilizing Instant Messaging technology to provide continuous contact between the two offices. This fosters more frequent discussions of rapidly changing conditions and their impact on aviation interests. ☀

*“...the WFO showed a 24.1% improvement over model data when cloud ceilings were anticipated below 1000 feet and/or visibilities were expected to be 3 miles or less.”*



Low Instrument Flight Rules (LIFR) forecast stats for the seven airports in the WFO area of responsibility. For Probability of Detection (POD), higher scores are better. For False Alarm Rate (FAR), lower scores are better.



## Decision Support Shows Its Stuff

Matt Sena  
Meteorologist

We launched our Decision Support web page in 2010 as a “one-stop shopping” page for our Emergency Management (EM) partners. On this site, our EM partners can request and view forecast support and dispersion model output as well as online training on how to use the features available on the page.

Training continued during 2010. Our entire forecast staff

went through an all-day training session where they were able to set up our remote equipment and practice providing on-site decision support. We also participated in major disaster drills in Walton and Paulding Counties.

In September, we were able to provide on-site support for EM during a large public event in Gilmer County. We encourage any of our partners planning a disaster drill to contact us if you would like NWS participation. Of course, we also encourage

our EM partners and other local officials to contact us for support during any actual emergencies and large scale public events.

Outreach activities continued in 2010 with Dan Darbe speaking at the Georgia Fire Chiefs Conference on St. Simons Island in April. In August, Matt Sena staffed a booth at a joint conference of the Georgia State Firefighters Association and Georgia Association of Fire Chiefs. ☀



Kent Frantz, Dan Darbe and Barry Gooden and Walton County disaster drill.

## Mixing Fire (Weather) & Oil

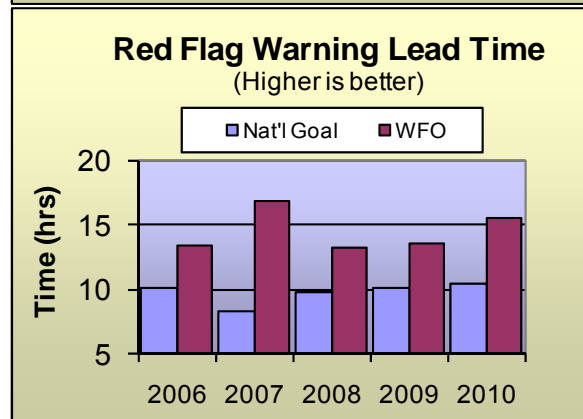
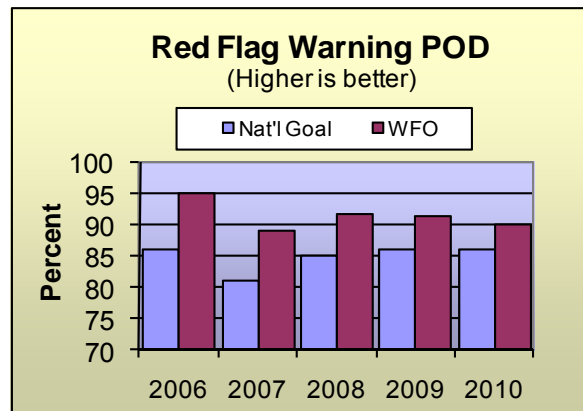
Brian D. Lynn  
Incident Meteorologist

There were 3,005 Red Flag Warnings (RFWs) issued on 41 days in 2010. This was an average of 73 of 97 fire zones per Red Flag event. Red Flag events were missed on five days for a total of 182 fire zones and an average of 36 fire zones per missed event. The busiest months were February through April and October and November. These five months contained 86% of the total number of warnings. April was the busiest month in the spring (542 RFWs) and October was the busiest month of the year (861 RFWs).

Our verification scores for RFWs once again exceeded national goals for Probability of Detection (POD) and Lead Time (86% and 10.4 hours, respectively). Our POD for 2010 was 90.2%, with an average lead time of 15.6 hours (see charts at right) which improved on the national goal by 50 percent.

Our Incident Meteorologist (IMET) support extended beyond forest fires this year. For 18 days in August, Brian Lynn was dispatched to Venice, LA to support the Coast Guard clean-up operations for the Deepwater Horizon oil spill in the Gulf.

As always, we are working closely with our U.S. Forestry and Georgia Forestry Commission partners. One result of that work will take place on 1 February 2011 when the criteria for RFWs will change. The criteria will become “Relative humidities of 25% or less AND sustained surface winds of 15 mph or greater (and/or Frequent Gusts of 25 mph or greater); in conjunction with 10-hour fuel moistures of 6% or less.” In addition, Fire Danger Statements will be issued to heighten awareness for when low relative humidities OR stronger winds occur with dry fuels. While there will be fewer RFWs after this change, they will more accurately indicate the true fire weather conditions. ☀



Verification scores for Red Flag Warnings in the Peachtree City WFO area of responsibility.

## Aviation: The Golden Triangle Initiative

Dr. Chip West  
MIC, CWSU Atlanta



*The "Golden Triangle" in which any kind of adverse weather impacts the entire National Air Space.*

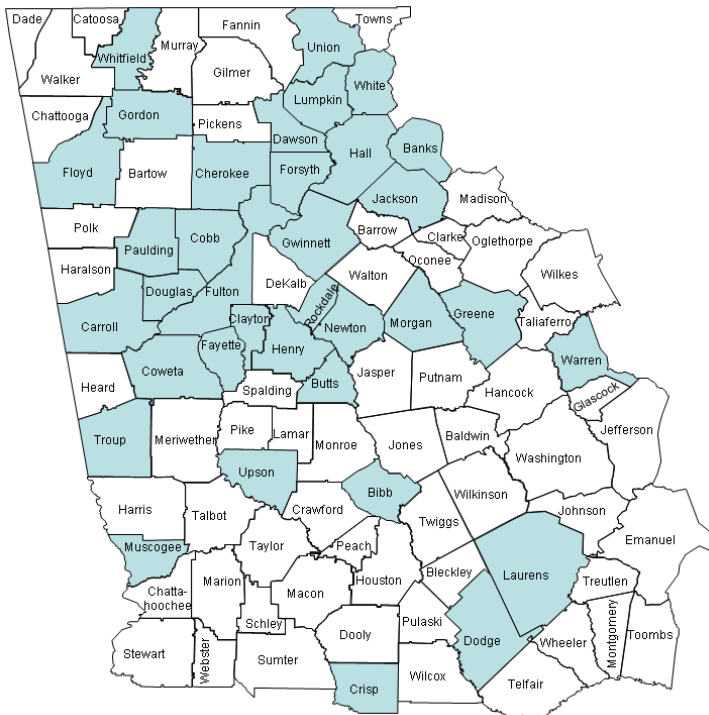
Starting in late 2009, NWS Center Weather Service Units (CWSUs) in New York, Atlanta and Chicago, began a process of focused product and procedure sharing to enhance customer support to the Federal Aviation Administration (FAA) en route and terminal facilities. Named after the heaviest-traveled and most weather-sensitive airspace in the country between Atlanta, New York and Chicago, the "Golden Triangle Initiative" was created to ensure the most creative approaches to aviation weather support were rapidly brought to bear on this crucial airspace.

Concentrating our collective efforts on the Golden Triangle area has an even wider impact, however, since weather affecting any one of these major airport terminals can result in significant delays throughout the National Air Space system.

The Golden Triangle Initiative was a natural extension of earlier, well-received product developments at the Atlanta CWSU which led to an experiment focused strictly on the New York area (and then eventually to Chicago). The initiative increased both the number of available aviation products and the area covered, demonstrated improvements in

forecast timing and communication, and validated effectiveness of forecaster contributions to air traffic decision-making at the tactical level.

The Atlanta WFO, in conjunction with the CWSU, hired the first and only Aviation Services Meteorologist (ASM) in the NWS as part of the improved services in the Atlanta leg of the Golden Triangle Initiative. The ASM and the CWSU MIC will continue to develop new and improved aviation weather services and products to the FAA and the flying public here in Atlanta throughout the coming years.



*StormReady Counties in the Peachtree City County Warning Area.*

## StormReady® News

Lans P. Rothfusz  
Meteorologist In Charge

StormReady has grown slowly in the past several years, but new communities are coming to recognize the importance of being well-prepared for severe weather. Rockdale County was one of those communities and joined the Georgia StormReady family for the first time in 2010. In addition, Troup County was approved for a second StormReady term, meaning they have participated in the StormReady program for six years. Interim renewals were

also bestowed on Dawson, Greene, Forsyth, Fayette, Cherokee, Upson, and Gwinnett Counties. With these additions and renewals, there are now 33 StormReady counties in the Peachtree City CWA. These counties join over 1700 StormReady communities in the nation.

For information on becoming StormReady, please contact Barry Gooden, Warning Coordination Meteorologist, at (770) 486-1133 ext. 223.

**Are you StormReady?** ☀



**Coming in 2011:  
The Ten Year Anniversary of  
StormReady in Georgia**

## Hydrology: Back to (and Below) Normal

Kent Frantz  
Senior Service Hydrologist

Rainfall amounts decreased in 2010, with a generally drier than normal year across most of Georgia. This was due to a neutral weather pattern in the beginning of the year evolving into a moderately strong La Niña pattern by the end of the year. Most of Georgia received 50% to 100% of its normal annual rainfall, with a few spots in central Georgia receiving from 100% to 125%. As a consequence, a severe drought developed mainly over south Georgia with

abnormally dry conditions elsewhere. Selected locations with annual rainfall (and departure) amounts include:

- Atlanta: 48.15" (-2.05")
- Athens: 47.66" (-0.17")
- Columbus: 37.26" (-11.31")
- Macon: 43.99" (-1.01")

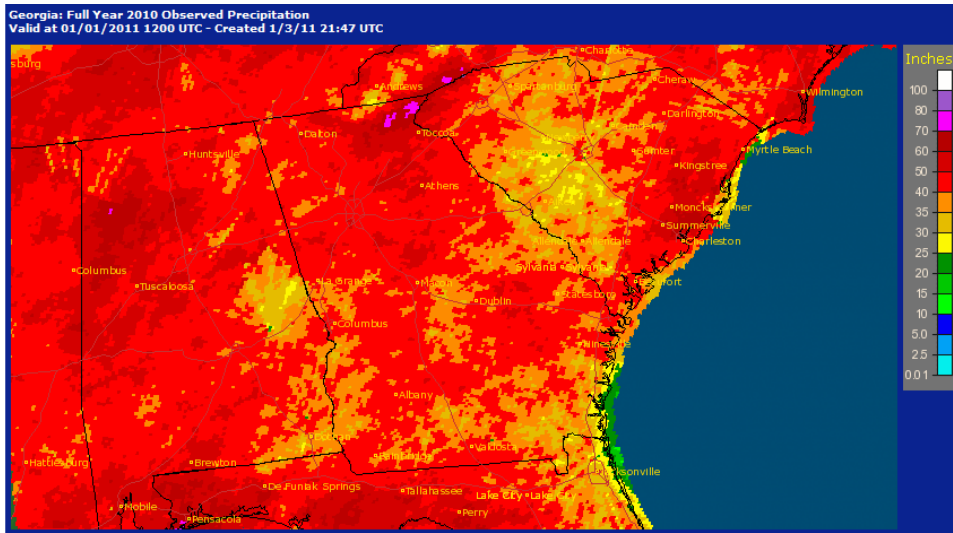
This rainfall deficient over most of Georgia caused numerous streams to remain at or below base flows. However, the greatest annual rainfall of 70" to 80" across the state occurred on the Tennessee Valley Divide ridge line near Helen. This allowed Lake

Lanier to remain near full pool all year.

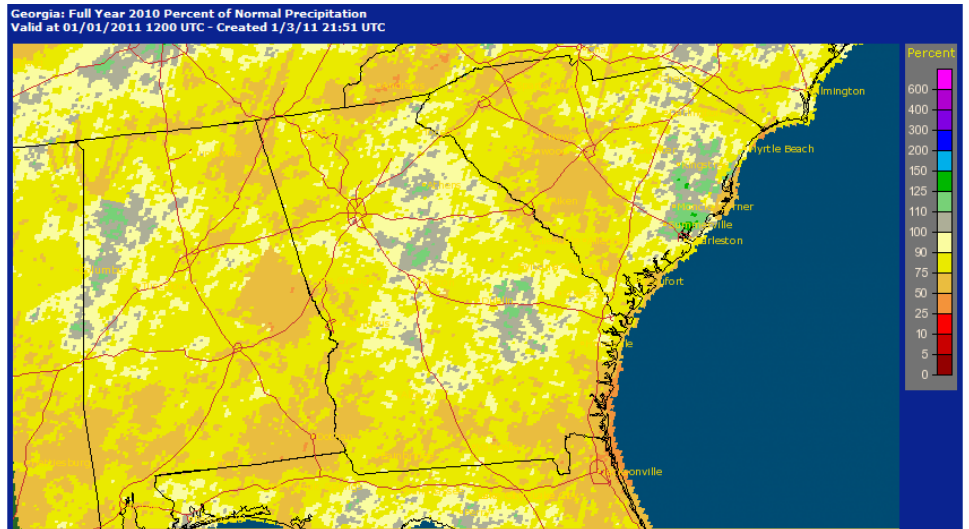
The most hydrologic-active month was January when heavy rain associated with gulf moisture produced widespread minor flooding on the 24<sup>th</sup> through 28<sup>th</sup>. This occurred in portions of the Coosa, Chattooga, Tallapoosa, Chattahoochee, Flint, Ocmulgee, Oconee and Savannah River basins. No significant damage was reported. Georgia was not affected by any tropical storms this year. ☀

### Hydro Tally for 2010

- 39 Flood watches
- 22 Flash flood warnings
- 38 Flash flood statements
- 121 River flood warnings
- 433 Flood statements,
- 18 Flood potential outlooks.



2010 observed precipitation total in inches (above).



2010 observed precipitation percent of normal (below).

*“To see the latest local research and publications of our office staff, visit [weather.gov/Atlanta/?n=research](http://weather.gov/Atlanta/?n=research).”*

## R20: Bringing New Science to the Warning Desk

Steven Nelson  
Science and Operations Officer

To forecast a weather event, one must first understand its dynamics. Without this understanding, forecasters become more reactive than proactive in issuing warnings. One of our office's priorities is to maintain and improve the understanding of hazardous weather events. Often, local

research must be conducted to do this when published research offers few answers. This Research to Operations (or R20) was quite active in our office again in 2010.

Monica O'Connor, a graduate student at Georgia Tech, showed that specific weather patterns tend to lead to very large temperature forecast biases. This research will help improve temperature forecast accuracy.

Garrett Combs, a NOAA Hollings Scholar from Lyndon State College, spent his internship studying tornadoes forming from Quasi-Linear Convective Systems (QLCS). About one-third of all tornadoes, such as the Buford tornado on November 30, form from QLCS. These tornadoes form more rapidly and at a lower altitude than those from supercells. He found that the advance notice of warnings of QLCS-based tornadoes averages only about

4 minutes, nearly 75% less than warnings from supercell tornadoes. Also, of the tornadoes that had no warning, 8 out of 10 were from QLCS. The results of this research were presented at three major conferences across the country.

Over the next two years, our office will be collaborating with other NWS Offices and leading scientists at North Carolina State University to better understand tornadoes that form in QLCS environments. To see the latest local research and publications of our office staff, visit [weather.gov/Atlanta/?n=research](http://weather.gov/Atlanta/?n=research).

As the office implements research into operations, we will continue to see an improvement in services that we offer to agencies, businesses, and residents of north and central Georgia, especially during high-impact weather events. ☀

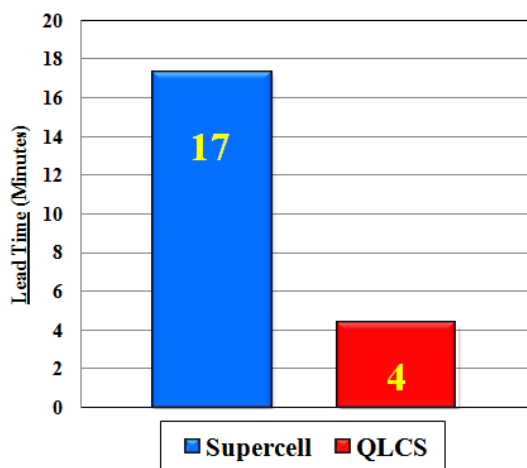


Chart showing the dramatic difference in warning lead times (and the inherent warning challenges) for supercell-spawned tornadoes vs. tornadoes spawned in quasi-linear convective systems (QLCS).

## More Improvements to Our Web Pages

Jessica Fioux  
Meteorologist

The NWS Peachtree City website continued to evolve during 2010. Four icons were removed from the front page to simplify the look and get ready for more significant changes in 2011. (Don't worry though. Links from the deleted icons can still be found in the left hand menu.)

Another change to our website was the addition of climate summaries for north and central Georgia. These are typically written every one to

two weeks and focus on temperature and precipitation values across the area. Watch for new climate summaries on the webpage in the headlines area or view archived summaries by clicking on *more* under *climate* on the left hand side and clicking on *Climate Summary* near the top of the page. Then, use the date picker at the bottom of the page to select the desired climate summary.

In addition, steps were taken to add additional information to our website and to give some of our pages a facelift. The biggest change made was to our

tornado page that now includes new pictures, safety information and a right hand sidebar that is consistent with the severe weather statistics page. A winter weather page was also added to the website and is a resource for winter weather health hazards, safety information and NWS products that can be issued for winter weather hazards.

Feedback on our webpage can be submitted to [sr-ffc.webmaster@noaa.gov](mailto:sr-ffc.webmaster@noaa.gov). We hope to hear your exciting ideas for our page! ☀



## The Importance of Upper Air Measurements

Nate Mayes  
Hydrometeorological Technician

The Peachtree City WFO launches weather balloons with radiosondes attached at least twice daily. There are other circumstances where additional releases are needed. In case of an approaching hurricane, for example, the National Hurricane Center might request a special launch, as can the Storm Prediction

Center if severe weather is approaching Georgia.

In 2010, we launched a total of 742 radiosondes from WFO Peachtree City. The data collected from these units are used to understand and accurately predict changes in the atmosphere. In fact, radiosonde observations are a primary source of upper-air data and will remain so into the foreseeable future.

Application of radiosonde observations include:

- Input for computer-based weather prediction models;
- Local severe storm, aviation, and marine forecasts;
- Weather and climate change research;
- Input for air pollution models;
- Ground truth for satellite data. ☀



Balloon, parachute and radiosonde in flight.

## NOAA All-Hazards Radio: Current and Future Communications

Robert Garcia  
Meteorologist Intern

Georgia's NOAA Weather Radio (NWR) program saw a busy year in 2010. A new transmitter, antenna, and cabling were installed at the transmitter site on Fort Mountain near Chatsworth, GA. These upgrades will provide clearer, more reliable service to the Chatsworth listening area.

We also rejuvenated our Operator Proficiency Program to

give staff practice with different functions of the NWR. On occasion, the voices of NWS staff may be heard on-air as they complete practice sessions. These drills allow us to be ready for continued broadcasts on the rare occasion of computer system failures.

Following the September 2009 floods, the staff was provided with clearer, more concise, and illustrated instructions on how to do "manual alerts" on NWR. The ability to issue manual alerts, from the same computer

that generates warnings and forecasts, gives meteorologists the flexibility to ensure that crucial information reaches as many listeners as possible.

Looking to the future, the Weather Radio Improvement Program is on the horizon! While you will not need to change your existing weather radio, we will be upgrading our computers to create even more reliable broadcasts with a focus on each transmitter's specific coverage area. ☀

*"...A new transmitter, antenna, and cabling were installed at the transmitter site on Fort Mountain near Chatsworth, GA. These upgrades will provide clearer, more reliable service..."*

## Innovations of 2010: 911Tap and EAR Monitor

Clark Safford  
Information Technology Officer

This year, we worked with our Emergency Management (EM) partners to develop 911Tap, a method to ingest storm reports from 911 call centers and display them in our operations area in a timely fashion - often while the event is still unfolding. In the past, we had to call 911 centers and interrupt their valuable activities to get a weather or damage report. With 911Tap, participating 911 centers send

us these invaluable reports automatically during the normal course of their operations.

Another project we have been working on will help us monitor our NOAA Weather Radio (NWR) transmitters by utilizing a special Emergency Alert Radio (EAR) Monitor available from Multi-Technical Services, Inc. These devices reside in local EM offices and send an e-mail to us when alerts or tests are (or are not) properly received via NWR. In the past, we obviously knew when an alert was

sent to our transmitters, but we had no way to confirm that the alerts were being received by our customers. Many things can affect the NWR transmission (e.g., equipment calibration, noisy lines, antenna problems, etc). Being unable to monitor all 17 transmitters from our office has been a source of frustration for years. With the EAR Monitor fully implemented in 2011, we hope to improve the overall performance of our entire NWR network. ☀

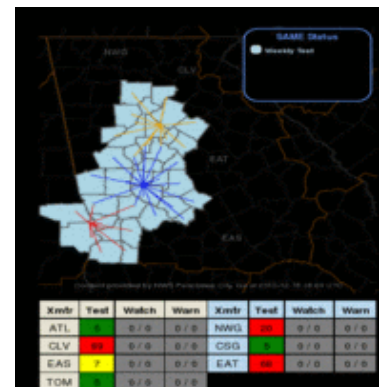


Image showing the successful reception of test signals from NWR transmitters across the area.

## Cooperative Observations Improved and Observers Recognized

Frank Taylor  
Observations Program Leader

We focused on improving the siting at many of our Cooperative Weather sites in 2010. Siting is one of the most critical factors



An extreme example of improper sensor siting due to construction at an observation site (left), and the improved siting made by our staff on a grassy, open area (right).



National Weather Service representatives Frank Taylor (Observations Program Leader) and Laura Belanger (Meteorologist) present Ms. Grace Owens, Coop Observer from Curryville (center), with her 20-year Length of Service Award.

### WFO Staffing at Year's End

- 1 Meteorologist in Charge
- 1 Administrative Support Assistant
- 1 Warning Coord. Meteorologist
- 1 Science and Operations Officer
- 5 Senior Meteorologists
- 7 General Meteorologists
- 1 Senior Service Hydrologist
- 1 Aviation Services Meteorologist
- 1 Information Tech Officer
- 1 Observations Program Leader
- 2 Hydrometeorological Technicians
- 2 Meteorologist Interns
- 1 Electronics Systems Analyst
- 4 Electronics Technicians

affecting accurate temperature and rainfall readings. Over the years factors such as urban sprawl, sensor modifications, vegetation growth, and the expense of automating equipment can degrade the quality of a site. In the past year, we have re-sited half a dozen sensor units to improve the observation quality.

Also during the year we continued our deployment of the new data logger hourly rain gages. We currently have eleven in the field and hope to complete the entire network by 2012.

The following Length of Service Awards were presented in 2010:

- 10 years  
Jack & Martha Beech (Monroe)
- 15 years  
Freya Browning (Blairsville)
- 20 years  
Grace Owens (Curryville)  
Dean Dyer (Cleveland)
- 25 years  
Albert Wheeler (Warrenton)
- 30 years  
Mamie Dunston (Americus)
- 45 years  
William & Miriam Sellars (Gainesville) ☀

## Admin & Staffing

Deborah Connell  
Administrative Support Assistant  
Lans P. Rothfusz  
Meteorologist in Charge

Although the year was rather quiet in the administrative arena, we had quite a few staffing changes.

In support of a new emphasis on aviation weather, Ms. Patricia Atwell (from our office) was selected as the NWS's first-ever Aviation Services Meteorologist. Another General Meteorologist (Terry Murphy) retired at the end of 2009 after 32 years of service. Ms. Laura Belanger and Ms. Jessica Fioux were selected from on-station to fill vacated General Meteorologist positions. To fill their vacated intern positions, Mr. Robert Garcia (from Florida State Univ.) and Mr. Alexander Gibbs (Univ. of Nebraska) were

selected. Mr. Rob Handel, Senior Forecaster, accepted a position as a Senior Duty Meteorologist at the Hydrologic Prediction Center of the National Centers for Environmental Prediction. Mr. Jason Deese from WFO Jacksonville filled the vacated Senior Forecaster position in January 2011.

Finally, although he was stationed at our office but assigned to our Regional Headquarters, we allowed Barry Brodnax, Regional Maintenance Specialist, to retire after 40 years of Federal service. We say "allowed" because he takes with him a wealth of experience and knowledge on weather radios operations (and other things). As always, we wish the best for our retirees and newly-promoted staff! ☀

## Hardware and Software Hums Along

Richard Black  
Electronics Systems Analyst

Over the past year we have made steady improvements in our Information Technology infrastructure. Most of our major systems have gone through some sort of replacement or upgrade. This constant turnover of hardware and software allows us to keep pace with ever-changing weather and technology

**AWIPS:** This computer system continues to evolve through upgrades and enhancements to become more effective in its role as our primary forecasting tool. In 2010, AWIPS received

upgrades to hardware (e.g., main processors and data servers) and software to better equip our meteorologists with tools to produce timely and accurate forecasts and warnings.

**WSR-88D Radar:** The Doppler radar received a few software upgrades this year. Our radar still maintains an impressive availability rate of 98%.

**SADS:** This year we completely revamped our operational area with the addition of several Situational Awareness Displays (SADS) to provide staff with additional tools to monitor weather and emergency activi-

ties in our area. Most of these displays are web driven and incorporate some locally-developed applications.

**ASOS:** This year, the Automated Surface Observation System received a few hardware upgrades. ☀



*New AWIPS servers at the Peachtree City Weather Forecast Office*

## Outreach Efforts Touch Many

Laura Griffith  
Meteorologist

As usual, the Peachtree City WFO participated in numerous outreach events. The 3<sup>rd</sup> annual ReadyFest was our largest outreach event, held this year in Gainesville with the help of the Hall County Emergency Management. In support of the Dept. of Homeland Security's National Preparedness Month, this event featured Ken Cook as the emcee, and included speakers from the NWS, GEMA, GA Health Department, Hall County EMA, State Insurance Commission, Citizen Corps, and others. Approximately 100 attendees received valuable emergency preparedness information, and a few lucky winners took ready kits home with them!

The NWS also supported the American Meteorological Society meeting in Atlanta in January by participating in the

January by participating in the interactive WeatherFest; an event which reached hundreds of students interested in earth and atmospheric sciences.

Other outreach events included staffing our NWS booth at events for the Atlanta Home and Garden Show, the Georgia Agricultural Association, and the Georgia Science Teachers Association. NWS staff also participated in several scout events, including Cub Scout Summer Camp. (See page 11 for even more of our busy outreach year.)

Storm Spotter classes continued to attract the public in 2010, with 340 participants at more than a dozen meetings. In office, we reached over 350 individuals through 37 office tours. Over 225 interviews were given to the local and national media, including BBC World Service, CNN, Associated Press and National Public Radio. ☀



*Trisha Palmer (standing, right) and other NWS staff helping kids of all ages issue warnings on WFO Peachtree City's HotSeat Simulator at the American Meteorological Society's interactive "WeatherFest" in Atlanta.*



*The NWS booth at the 3rd annual ReadyFest in Gainesville, GA.*





*National Weather Service • Weather  
Forecast Office • Peachtree City, Georgia*

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Phone: 770-486-1133

Fax: 770-486-9333

Email: [lans.rothfusz@noaa.gov](mailto:lans.rothfusz@noaa.gov)

**Mission Statement**

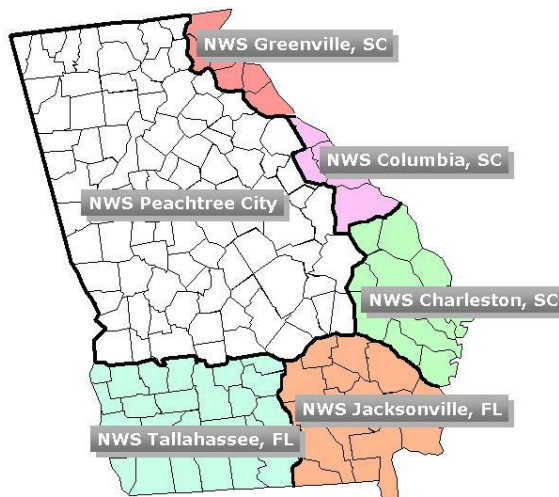
**We deliver science-based, decision-  
support services to minimize hazardous  
weather's impact on life, property and  
commerce in North and Central Georgia.**

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[www.weather.gov/atlanta](http://www.weather.gov/atlanta)

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The Weather Forecast Office in Peachtree City is a field office of the National Weather Service, an agency of the National Oceanic and Atmospheric Administration, which is part of the U.S. Department of Commerce. The office is responsible for weather and water forecast and warning services for 96 counties in north and central Georgia (see map below).



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4 Falcon Drive  
Peachtree City, GA 30215