



THE *Ithacation*

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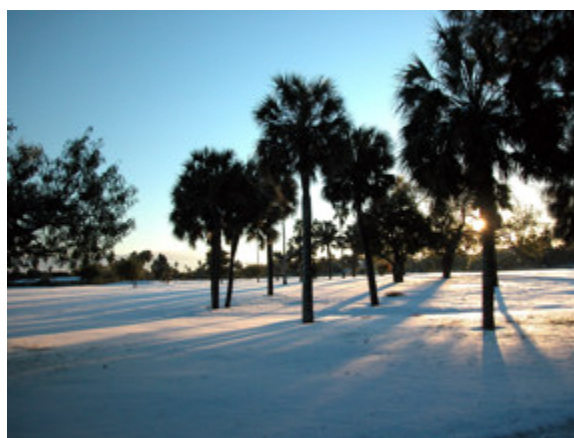
A White Christmas, in South Texas?

When the date on the calendar approaches late December, most kids start to ask, “Are we going to have a white Christmas?” If you live in Ithaca, New York, the answer to that question is probably going to be “yes”. However, if you live in southern Texas, unfortunately the answer to that question is probably going to be “no”. While Ithaca has not had a white Christmas for the past two years, averages based on information from the National Climatic Data Center reveal that the chance of a white Christmas in central New York is significantly greater, (almost a 70% difference), than it is in Brownsville, Texas. This year however, things were far from average, as highs in Ithaca soared to a balmy 50 degrees on Christmas Eve day and a major winter storm dumped as much a foot of snow in parts of southeastern Texas.

To put the south Texas snowfall into a historical perspective, in over 150 years of record keeping at the National Weather Service offices in this area, never had there been a white Christmas recorded. That is right! It had never happened before, and, many forecasters believe that this was the first white Christmas ever experienced by locations in southern Texas and in Northern Mexico. The ingredients for the snowstorm began to come together early in the week, around December 20, 2004. Cold, arctic air pushed south into Texas with the passage of a cold front. The front, which came from over the Rocky Mountains, passed through the Brownsville

area on the 22nd. Another reinforcing shot of cold air came down from the north on the 23rd, and although rain was the only precipitation type reported with it, things were about to change. With the cold air now trapped at the surface, the combination of moisture in the atmosphere and an upper-level low that moved over the area from New Mexico caused snowfall to breakout on Christmas Eve. By the time residents awoke in the morning, the ground was covered in white, with snowfall totals ranging from 1.5 inches in Brownsville to 11 inches in Victoria.

Although the snow was a pleasant surprise for most residents, it did create hazardous conditions for drivers that are very unaccustomed to winter weather conditions. The storm was blamed for at least three traffic deaths along with numerous other automobile accidents. Off the roads however, it was a different story, as many kids enjoyed building their first snowman or having their first snowball fight. While I can't say that everyone got what exactly what they has asked for when they opened their gifts that morning, there was one present waiting outside that almost I think almost everyone wanted. A little bit of white snow on the ground, a childhood dream for many, and a once in a lifetime experience, because chances are, another December snowstorm in Texas is many years away. But then again, weather forecasters can be wrong.



Palm Trees with Snow on the Ground

(National Weather Service, Brownsville, Texas)

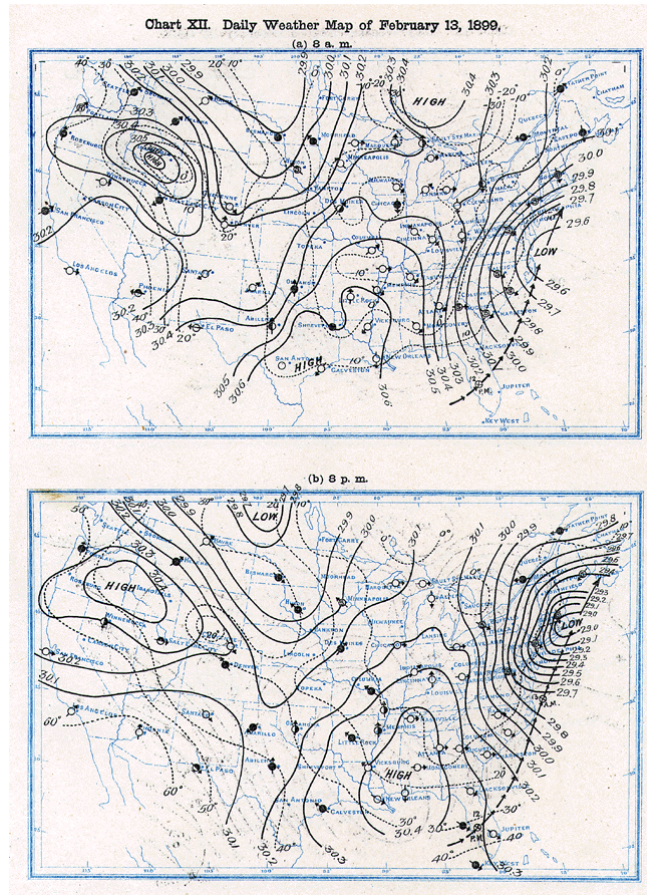
Storm of the Month - February

When students arrived back on the Cornell campus after winter break, typical Ithaca winter weather conditions, which include snow and bitter cold temperatures, had also returned. After a relatively dry and mild first semester, the second academic term started with snowflakes flying and temperatures struggling to break 20 degrees for daytime highs. Although the snow melted as temperatures moderated during the first week of February, it appears that winter is back and Ithaca still has a few weeks to go until spring finally arrives. The lowest temperature recorded since classes resumed was a bitter 10 below zero on the 28th and 29th of January. While the thought of these temperatures alone brings chills, they would actually have been warm compared to the cold outbreak experienced 106 years ago during the 2nd week of February. Between the February 11 and February 14, 1899, the entire United States experienced an extreme outbreak of bitter cold weather. Also during this time, a major blizzard affected the east coast of the country. This cold snap and major winter storm will be the focus of our storm of the month.

The historic cold snap of 1899 began around February 11, 1899 as cold air began surging southward from the U.S-Canadian border towards the southeastern United States. A large arctic high-pressure center developed over Montana and slowly moved southeast across the country. Low temperatures dipped to near zero from portions of Texas to the Great Lakes to the coast of Maine. The next day, the cold air became even more entrenched over the nation, with daytime temperatures only reaching 30 in locations as far south as the Florida panhandle. A low temperature in Nebraska was recorded at -47 degrees below zero. And we thought that -10 was bad! The only places in the nation to escape the cold were extreme south Florida and the west coast of California. By February 13, 1899, a coastal low began to form along the eastern

seaboard and rapidly intensified into a major blizzard, dumping almost three feet of snow in Washington D.C., Philadelphia, and New York City. On February 14, 1899, the low was pulling away from the coast and the high-pressure center that had brought the cold air was centered close to the Carolina coast. By that time, temperatures were starting to moderate in the west where the cold air originated from. According to weather service records, the temperatures were actually warmer in Montana than in the Carolinas.

Because of the extremely cold temperatures, there was a tremendous amount of loss of property, livestock, crops, and even human life. While occasional outbreaks of bitter cold air affect the United States each year, there has not been one with the magnitude of the one experienced in 1899 since that time. The records for coldest day set in 1899 for Ohio, Louisiana, Nebraska, Florida, and Washington D.C. remain in the books today. Although it is impossible to predict if another extreme cold outbreak will occur in the future, improvements in forecasting technology will certainly limit the damage compared to the cold wave of 1899. With better forecasting techniques and equipment, meteorologists will be able predict such an outbreak much further in advance than what occurred over 100 years ago, allowing citizens in the country to prepare for the extreme weather.



Surface Maps from February 13, 1899

(National Climatic Data Center)

Winter Externship Program

Gretchen Goldman

Over winter break, I participated in a Cornell Externship at the Federal Highway Administration (FHWA) in Washington, D.C... While at the FHWA, I had the opportunity to shadow a Cornell alumnus for one week. My sponsor was the Air Quality Team Leader and he graduated from Cornell with a master's degree in City and Regional Planning.

Although his tasks included a decent amount of administrative work, one of his main projects was working with the Congestion Mitigation and Air Quality (CMAQ) Improvement Program. This program gives the FHWA an annual sum of \$1 billion, (which comes from the federal gas tax revenue), which they then allocate towards state transportation projects that will both mitigate traffic congestion and improve air quality. The projects are designated in areas of the country that do not currently meet Environmental Protection Agency (EPA) emissions standards for criteria pollutants. These are pollutants for which the EPA has national standards established and include CO, O₃, NO_x, SO₂, particulate matter and lead. Another area my sponsor was involved in was research on non-criteria pollutants, namely Mobile Source Air Toxics, which have been suggested to be harmful, but a national emissions standard has yet to be issued. The Air Quality Team also is beginning to look into global climate change, focusing mainly on its potential impacts on transportation.

I wanted to do this externship to find out what opportunities there were in this branch of the government for someone with a technical background. While my sponsor had a planning degree, I met several people in the office that were in management positions with primarily technical backgrounds. There were a good number with engineering degrees and I did meet one meteorologist turned transportation planner! Based on my week, I found the field of transportation to be interesting and generally untapped by people from a science background, despite the need and desire for it in the field. Although the field did include a lot of government-related work (e.g. preparing briefings for congressmen, adhering to new policies and acts, dealing with opposing interest groups and law suits, etc.), there was plenty of current science-based research and decision-making to be involved with. I would certainly recommend the

externship to anyone who is considering a government job or who wants going into air pollution policy.

Summer 2004 Activities of Meteorology Majors

***Editors Note:** While these articles are from the first semester, they are valuable resources for those students looking for internships for this coming summer.

Faye Barthold

I spent this past summer working twice a week at the Hydrometeorological Prediction Center (HPC) in Camp Springs, Maryland. Over the eleven weeks I was there, I had the opportunity to complete a short research project and sit in at many of the forecasting desks. My project was to create a climatology of heavy snowfall events across the United States. The HPC plans to begin issuing forecasts that include the probability that a particular storm will bring heavy snowfall to any area. Before they can do this, they need to determine if there are any general surface or 500mb patterns that tend to lead to heavy snowfall in each area of the country. For the purpose of my work, the country was divided into five regions, the Northeast, the Southeast, the Northern Plains, the Southern Plains, and the West. Heavy snow was defined as 6 inches of snow in 12 hours, or 12 inches of snow in 24 hours, with slightly lower amounts for the Southeast and the Southern Plains. After I identified all of the events that occurred this past winter, I went back and looked at the surface maps to determine the position of the associated surface lows and the 500mb maps to determine the overall flow pattern. These observed conditions were then made

into composite maps that showed the average patterns over all of the identified events for each region. Since I was only able to look into this past winter, there were not very many heavy snow events in some areas, so the results I got do not conclusively show any dominant patterns. As I was analyzing the data, I also looked at 850mb warm or cold air advection, the strength of any 850mb warm air advection, 700mb vertical velocities, 300mb divergence, and the positions of critical temperatures for dendrite formation at 850mb, 700mb, 600mb, and 500mb. Although these were not factored into any of the final information I came up with, they will probably be looked at in the future.

While I was at the HPC, I also had the opportunity to observe the forecasters. Among the forecasts the HPC issues are the short and medium range QPF forecasts, excessive rainfall forecasts, and the general surface analysis. When I was not working on my project, I was able to sit in with a forecaster at each of these desks and watch them work. Since they issue forecasts for the entire country instead of just a local forecast area, all of the forecasters there are very experienced in the specific area they work in. The HPC also serves as the backup site of the National Hurricane Center, so they receive a daily phone call to coordinate forecasts with them. I was able to listen in to one of these phone calls dealing with Tropical Storm Bonnie and the depression that would later become Hurricane Charley. My work at the HPC was a great experience, and I hope to do something similar this summer.

Kim Cuozzo

This past summer, I was a meteorology intern at News 12 Westchester, a local cable television station located in Yonkers, New York. I worked with Dave Curren, who is the morning meteorologist. One of my tasks while working this summer was writing the three-day weather

forecast that appears in the news bar at the bottom of the television screen. I also chose which weather icon best described the current conditions outside and this icon was then placed on the news bar. I learned how to create weather maps and graphics using a computer with WSI Weather Producer. These maps and graphics were then used in the on-air forecast. By the end of the summer, Dave let me create my own elements for the on-air show, which included making the surface map of the United States with the fronts and highs/lows and picking which order they would go in. Once I finished my work, he went on-air to broadcast the show that I had created, which was exciting. I was able to see how Dave forecasts each day, which models he uses, and what his methods are. In addition, Dave taught me many valuable forecasting skills and techniques. At the end of the summer, I made a demo tape of myself broadcasting the weather. My only complaint about the internship was that I had to wake up early and be in the station by 6:30 AM each morning! Overall, it was a great experience, and anyone even slightly interested in broadcast meteorology should definitely try to get an internship at a television station. Although I am not interested in broadcast meteorology as a future career, I still enjoyed trying it and learned a great deal about forecasting and broadcasting.

Dan Zarrow

Last summer, I was accepted for an internship at NBC-10 (WCAU-TV) in Philadelphia. I worked directly under Chief Meteorologist Glenn "Hurricane" Schwartz, in addition to NBC-10 meteorologists Dave Warren, Doug Kammerer, Amy Freeze, and Bill Henley. My focus over the summer was threefold. My first project involved re-organizing Glenn's online "Bookmarks" - a collection of approximately 300 weather web site links on the NBC-10 web site. I updated all the dead links, re-categorized the remaining sites, and added approximately 100 more. In

addition to the bookmarks, I worked extensively with Glenn's verification project, working to prove the NBC 6 to 10 day outlook is better than all the other stations in the market, in addition to the National Weather Service (NWS), Accuweather, and The Weather Channel. Finally, I worked on becoming a better broadcast meteorologist. I taped several shows in front of the weather wall, improving my overall delivery techniques. Above anything else, I think this internship taught me the essentials of the business of broadcast meteorology, the essence of competition, and the realization that the public really takes interest in weather-related stories. (Hence NBC-10 spent a load of money designing and building a new weather set that is bigger than the news set!) Overall, it was an unbelievable experience to work with Glenn, who has been well known in the industry for over twenty years, and who passed a great amount of his wisdom and experience on to me.

I also took time in June to attend the American Meteorological Society Broadcast Meteorology Conference in New Orleans. Through my connections from last year's annual meeting, I arranged to work as a student assistant, so I got to personally meet and greet such meteorology legends as Jim Cantore and Dave Schwartz (The Weather Channel), Alan Sealls '85 (Mobile, Alabama - see BF1104 for picture), John Toohey-Morales '84 (Miami; 2004 AMS Broadcast Meteorologist of the Year), and . I also networked with other potential broadcast meteorologists from Texas A&M, Florida State, and California University of Pennsylvania. Honestly, I didn't learn much about advances in the field of meteorology, but I realized this conference is all about creating and re-building relationships with other broadcast meteorologists from around the world (hence the choice of location). I cannot wait to attend the 2005 conference in Washington DC!

New CCAMS Website

The Cornell Chapter of the American Meteorological Society (CCAMS) has a brand new website. Located at <http://ccams.eas.cornell.edu>, the site includes club information, archived Ithacations, class and event photos, department information, and an alumni weekend page. In addition, CCAMS forecasts are now available on the site.

Ithacation – February 2005

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