NORTHEASTERN STORM BUSTER
Emergency Manager & Storm Spotter Magazine

Summer, 2010 *- VOL. 15, NO. 3*
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IN THIS ISSUE

FEATURES

1 NOAA's 2010 Hurricane Outlook
Find out what we're expecting THIS season.
/By Kevin S. Lipton

3 SPECIAL FEATURE: "Countytop" Weather Adventures (A StormBuster Miniseries)
PART 1: Scaling the Taconics
/By Brian J. Frugis

4 Spring 2010: One of the Warmest
5th warmest on record.
/By Evan L. Heller

5 What Apps Do Meteorologists Use?
See what we see in order to work on forecasts and warnings.
/By Brian Montgomery

7 "Tweet" Us Your Weather Reports
…Sweet!
/By Vasil Koleci

8 Summary of Winter Arctic Sea Ice Extent
A follow-up.
/By George Maglaras

DEPARTMENTS

8 WCM Words

9 From the Editor's Desk

NOAA'S 2010 HURRICANE OUTLOOK

Kevin S. Lipton
Meteorologist, NWS Albany

On May 27, 2010, the NOAA National Weather Service Climate Prediction Center issued the 2010 hurricane outlook for the Atlantic Basin, including the Caribbean Sea and Gulf of Mexico, and they expect an "above to well above normal" season. A "normal" hurricane season in the Atlantic Basin spawns 11 named storms (tropical storm strength or stronger), 6 developing into hurricanes, with 2 attaining "major" status (those reaching category 3 or higher on the Saffir-Simpson Scale, a measure of hurricane intensity). The Climate Prediction Center's forecast indicates the number of named storms will range from 14 to 23 for 2010, with the expectation for 8 to 14 of them to reach hurricane status, of which 3 to 7 will be major. For reference, 2009 witnessed a below normal Atlantic hurricane season, with 9 named storms, 3 of which became hurricanes, 2 reaching major status.

	2010 Forecast	Season Normal
Tropical Storms	14-23	11
Hurricanes	8-14	6
Major Hurricanes	3-7	2

The premise for this year's forecast is heavily weighted on three main theories. The first involves the presence of abnormally warm sea surface temperatures, which were present in the mid to late spring across the eastern tropical Atlantic Ocean off the west coast of Africa, as shown in **Figure 1**, where the 'seedlings' to eventual tropical cyclones traverse during the season. Tropical cyclones need warm ocean water temperatures to gather strength – normally above 80 degrees Fahrenheit. The initial atmospheric disturbances that can eventually transform into tropical cyclones pass across this region of the tropical Atlantic Ocean on their long journey toward the western Atlantic Ocean. If water temperatures remain warmer than normal – above 80 degrees F, these initial disturbances can organize and develop a circulation, potentially reaching tropical storm, or even hurricane, strength. The unusually warm sea surface temperatures in this region developed from abnormally light surface winds blowing from east to west along the northwest coast of Africa. When these easterly winds strengthen, they force the water currents to move away from the African coast, allowing cooler water from well below the ocean surface to move upward – a process known as upwelling. However, lighter winds in this region prevent the cooler waters from reaching the surface. Two features that may have contributed to the development of these unusually warm waters are lighter trade winds across the tropical Atlantic Ocean associated with the El Niño, and the persistence of an unusual atmospheric wind pattern across the North Atlantic Ocean – with high pressure further north than normal – both resulting in unusually light easterly winds across this region, thus reducing the more typical upwelling and cooling effects of the sea surface.

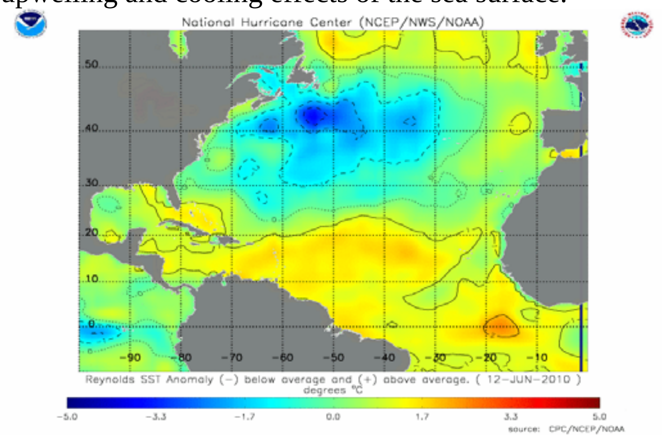


Figure 1. Anomalies of sea surface temperatures in the Atlantic Ocean, as depicted on June 12, 2010. The red and yellow colors denote warmer sea surface temperatures compared to normal, which would potentially enhance tropical cyclone development within the tropical Atlantic Ocean. Image from NOAA's Climate Prediction Center/National Hurricane Center.

The second main factor considered in this year's forecast, which should increase the chance for an abnormally active hurricane season, is the presence of cooler than normal sea surface temperatures across the eastern and central tropical Pacific Ocean. What do Pacific Ocean water temperatures have to do with hurricanes in the Atlantic Ocean? Well, typical conditions across the tropical Pacific Ocean involve warmer water across the far western Pacific Ocean, along with associated thunderstorm development, while the waters in the eastern tropical Pacific normally remain relatively cool, with limited thunderstorm activity. The opposite is true when an El Niño is present – the warmer waters and associated thunderstorm development then shift much further eastward in the Pacific Ocean. When this occurs, winds within the upper levels of the atmosphere strengthen across the eastern Pacific Ocean, and even stretch across the tropical Atlantic Ocean. These strong winds tend to rip apart thunderstorms across the Atlantic Ocean, limiting the potential for these to organize into tropical cyclones. Therefore, when an El Niño is present, as occurred in 2009, tropical cyclone activity is usually less than normal in the Atlantic Basin. However, this year, not only is the El Niño gone, but conditions may shift to the opposite extreme during the heart of the hurricane season – to a La Niña. When a La Niña is present, thunderstorms across the eastern Pacific Ocean are even more below normal. This allows upper-level winds to become weaker than normal from the tropical Pacific Ocean into the Atlantic Ocean, reducing the potential for thunderstorms to become ripped apart, and creating conditions more favorable for thunderstorms to organize into tropical cyclones. Should the La Niña develop, as is currently anticipated, the upper atmospheric conditions should become quite favorable for tropical cyclone development in the Atlantic Basin this year.

There is one additional factor included in the forecast that also favors tropical cyclone development in the Atlantic Basin – an active African monsoon season, a trend which has been present since 1995. This enhanced African monsoon activity is believed to be part of a longer- term active cycle – and has been associated with more active Atlantic hurricane seasons. Therefore – considering these three main factors – the outlook is for an active to potentially very active season, overall.

It should be noted that in May 2009, NOAA's Climate Prediction Center had forecast an above normal season for the Atlantic Basin, with a prediction of 9-14 named storms, 4-7 reaching hurricane strength, with 1-3 attaining "major" status. The actual result was 9 named storms, 3 becoming hurricanes, with 2 reaching major status – within or slightly less than the forecast ranges.

So – the official forecast for the 2010 Atlantic hurricane season issued by NOAA's Climate Prediction Center favors an "active to very active" season based on these three main factors. Of course, any changes to these factors could easily alter this year's outcome. The Climate Prediction Center will issue an updated forecast in August 2010, taking into account these and other factors.

"COUNTYTOP" WEATHER ADVENTURES

A STORM BUSTER MINISERIES

Brian J. Frugis
Meteorologist, NWS Albany

PART 1: SCALING THE TACONICS

Although most of us live in valley locations, there is a great deal of terrain across eastern New York and western New England. The Adirondacks, Catskills, Taconics, Greens, and Berkshires are all within a two hour drive of Albany and the Greater Capital Region. Within these areas of higher terrain, the weather can be significantly different than in valley locations, with colder, wetter and windier conditions possible at any time of year.

The mountain peaks between these various ranges number in the hundreds, making this area perfect for hikers with an interest in weather. With miles and miles of trails maintained by both state and local volunteer groups, I've personally grown an interest in the activity known as 'peak bagging'. Peak bagging, also known to some as 'high pointing', is the activity of attempting to summit a collection of peaks in a particular area. You may have heard about the Adirondack 46ers, people who have reached the summit of the traditional 46 High Peaks of the Adirondacks. Many peak baggers also attempt to tackle the peaks on lists that are based on political boundaries, e.g., the highest peak of each state or county. I've created a list based on my own goal…to reach the highest point of each county within the Albany County Warning Area that is reachable on public land with maintained trails.

It's amazing how much of a different world some of these places can be from the nearby valleys. A good example is 2,818-foot Berlin Mountain, the tallest mountain in Rensselaer County. Berlin Mountain, a short 40-minute drive east of Troy, has the distinction of being the highest point in New York outside of the Catskills and Adirondacks. Berlin Mountain sits in the north to south running Taconic Range, so the prevailing westerly wind will commonly upslope the range to squeeze out clouds and precipitation. The easiest way to reach Berlin Mountain is to park at the Petersburg Pass Trailhead off New York State Route 2, and hike about 3 miles south on the Taconic Crest Trail to reach the grassy summit. Views from the top of Berlin include towering Mount Greylock to the west, which is the highest point in Massachusetts, and the expansive Hudson Valley to the east, including the Capital Region on a clear day. Portions of the southern Green Mountains are also visible to the north. Be prepared for a change in temperature, however. In a dry atmosphere, the temperature drops up to 5.5 degrees F with each 1,000 feet gained in elevation. So, while it may be 70 degrees in Troy, the summit of Berlin Mountain may be in only the upper 50s!

Other popular hikes I've completed in the Taconics include Alander Mountain. The actual true summit is in Berkshire County, Massachusetts, but the western shoulder of the mountain reaches into Columbia County, New York, where it is the County's highest point. While the 2,239-foot summit isn't very high compared to peaks in the Catskills and Adirondacks, the views from the wide open ridge-like summit are breathtaking. Expansive views to the west include many of the eastern Catskill Mountains, while open views to the east feature many of the prominent Berkshire Hills, such as Mount Ashley and Mount Everett. A common approach to Alander Mountain is to begin to the west of the mountain in southwestern Berkshire County, and hike up the more gradual eastern slope for a 6-mile round trip. Despite the relatively low elevation of the summit, the trees and shrubs are small and hardy, a testament to the strong winds that commonly blow across the entire ridge during the winter months. These short trees allow for fantastic 360-degree views. A hike during October 2009 even featured some patches of snow, a sign that winter is certainly the longer of the seasons at these harsh locations, beginning earlier than the nearby valleys.

The harsh reality of winter in these areas really kicked in when I hiked up both Brace Mountain, the 2,311-foot highest point of Dutchess County, and Mount Frissell, whose 2,454-foot summit is in Massachusetts, but whose southern slope is the highest point in both Litchfield County and the entire state of Connecticut. These peaks are located right where the states of New York, Massachusetts and Connecticut all come together. Although my mid-March hike began in 50+ degree weather with bare ground in the Hudson Valley, there was still up to 3 feet of snow on the hiking trails, along with a stiff wind, and temperatures only in the low 40s. I ambitiously had planned to hike a 7-mile loop featuring both Brace Mountain and Mount Frissell, as well as

Connecticut peaks Round Mountain and Bear Mountain, but the deep snow cut my hike short to just 5.5 miles and only 3 out of the 4 mountains, as I failed to reach 2,326-foot Bear Mountain. Although I do own snowshoes, the steep terrain required a shorter length snowshoe than my recreational version, so I was forced to walk through the deep, waterlogged snow in just my hiking boots. Still, the leafless trees allowed for great views of Riga Lake and the rolling Litchfield Hills in northwestern Connecticut as seen from near the summit of Mt. Frissell. After passing Mt. Frissell, I reached a concrete marker showing the location of where New York, Massachusetts and Connecticut all meet, allowing for me to stand in all three states at one time. After being on the red-marked Mount Frissell trail for two miles, I reached the junction of the South Taconic Trail, which runs the length of the southern Taconic ridgeline. A short half-mile hike south took me to the windy summit of Brace Mountain, where a large rock cairn marked the mountain peak, along with a flagpole. Although this was a great place to rest, the constant wind made it a bit unpleasant, so I began my trek through the snow back to the car parked in far northern Connecticut. It was a slow and wet hike back to the car, but it made for a memorable day. While many of us enjoy snow-free late winter and early spring days, visits to the mountains are a reminder that winter is still going strong at locations a lot closer than we realize.

A view approaching 2,311' Brace Mountain from the South Taconic Trail. Brace Mountain is the highest point in Dutchess County, and is the southernmost prominent peak of the Taconic Mountains.

Future articles will detail my experiences from hiking various other county high peaks, including Hunter Mountain, whose 4,040-foot summit looms second-highest in both the Catskills and the entire Albany County Warning Area, and Washington County's Black Mountain, whose breathtaking views of Lake George rival anything you would see on a postcard. Hopefully, you can get out and enjoy our many peaks, but always be prepared for higher winds, more precipitation and the unexpected, as these mountains can be quite a change from the typical.

SPRING 2010: ONE OF THE WARMEST

Evan. L. Heller
Climatologist, NWS Albany

2010 ended up being the 5^{th} warmest spring on record at Albany (Table 3d). The mean temperature for the three-month period from March through May was 51.6°…a full 5 degrees above normal (Table 1). The average high was 62.8°, 5.6° above normal, and the average low was 40.4°, 4.5° above. All three months were contributors to spring 2010's standing, each month being more than 3 degrees above normal, and there were temperature records established each month. First off, March cracked the Top 10 of all the highest monthly average temperature records lists: Maximum; minimum and mean (Table 3a), and April repeated with the maximum and mean (table 3b). Two record daily high temperature records were also broken in April, on the 2^{nd} and 7^{th}, and a daily high mean was broken on the 3^{rd}. May broke only daily records, one each for high minimum and high mean (on the 2^{nd}) (Table 3c). But May also had a brief cold stretch, with a record low tied on the 11^{th}, and a record low mean tied on the 12^{th}. The last freeze of the season occurred just one day later. Towards the end of the month, on the 26^{th}, a high temperature of 94° established the first 90+ degree day of the season.

Rainfall for the season was well below normal, with each month recording below normal totals (table 1). April was the driest month, with a 1.25" total that was exactly 2.00" below normal. It was during this month in which was established the only precipitation record. April 2010 is now in a 4-way tie for 192^{nd} driest month (any month) on record in Albany. Despite the dryness of the season (5.82" rainfall (4.27" below normal)), no monthly records for dryness were broken, and measureable precipitation occurred on just over a third of the days (Table 2). Other season notables…May 9^{th} was the windiest day, with an average wind speed of

18.7 mph (Table 4c). April 1st was the day with the least wind, averaging just 1.0 mph, and Albany had 5 thunderstorm days, all in May, the first occurring on the 4th, which happened to produce the peak wind of the season…53 mph from the west-northwest. March had just over 50% cloudy days, while April and May were significantly less cloudy and nearly identical in number distribution (Tables 4a-c).

STATS

	MAR	APR	MAY	SEASON
Avg. High/Dep. From Norm.	50.6°/+6.1°	64.3°/+7.0°	73.6°/+3.8°	62.8°/+5.6°
Avg. Low/Dep. From Norm.	32.9°/+7.5°	39.5°/+3.6°	48.8°/+2.3°	40.4°/+4.5°
Mean/ Dep. From Norm.	41.7°/+6.7°	51.9°/+5.3°	61.2°/+3.1°	51.6°/+5.0°
High Daily Mean/date	52.5°/20th	66.5°/8th	78.0°/26th	
Low Daily Mean/date	30.0°/27th	42.0°/27th	41.5°/9th	
Highest reading/date	70°/20th	87°/7th	94°/26th	
Lowest reading/date	20°/27th	30°/14th	29°/11th	
Lowest Max reading/date	40°/4th, 26th & 27th	49°/17th & 27th	47°/9th	
Highest Min reading/date	41°/29th & 31st	50°/3rd, 8th & 25th	63°/2nd	
Ttl. Precip./Dep. Fm. Norm.	2.69"/-0.48"	1.25"/-2.00"	1.88"/-1.79"	5.82"/-4.27"
Ttl. Snowfall/Dep. Fm.Norm.	0.2"/-10.7"	T/-2.9"	0"/-0.1"	0.2"/-13.7"
Maximum Precip./date	0.72"/22nd	0.45"/9th	0.58"/8th	
Maximum Snowfall/date	0.2"/26th	T/10th	0"/-	

Table 1

NORMALS, OBSERVED DAYS & DATES

	MAR	APR	MAY	SEASON
NORMALS				
High	44.5°	57.3°	69.8°	57.2°
Low	25.4°	35.9°	46.5°	35.9°
Mean	35.0°	46.6°	58.1°	46.6°
Precip	3.17"	3.25"	3.67"	10.09"
Snow	10.9"	2.9"	0.1"	13.9"
OBS. TEMP. DAYS				
High 90º or above	1	0	0	1/92
Low 70º or above	0	0	0	0/92
High 32º or below	0	0	0	0/92
Low 32º or below	13	2	3	18/92
Low 0º or below	0	0	0	0/92
OBS. PRECIP. DAYS				
Days T+	14	12	11	37/92/40%
Days 0.01+	10	10	11	31/92/34%
Days 0.10+	6	5	7	18/92/20%
Days 0.25+	3	1	2	6/92/7%
Days 0.50+	3	0	1	3/92/4%
Days 1"+	0	0	0	4/92/0%
PRECIP. & SNOW DATES				
1.00"+ value/date	-	-	-	

Table 2

RECORDS

ELEMENT	MARCH	
Top 10 Highest Monthly Max. Avg. Temp. Value/Rank|Remarks	50.6°/#8	-
Top 10 Highest Monthly Min. Avg. Temp. Value/Rank|Remarks	32.9°/#4	tie
Top 10 Highest Monthly Mean. Avg. Temp. Value/Rank\Remarks	41.7°/#10	-

Table 3a

ELEMENT	APRIL	
Max Temperature/Date|Previous Record/Year	77°/2nd	69°/1967
High Mean Temperature/Date|Previous Record/Year	63.5°/3rd	63.0°/1892
Max Temperature/Date|Previous Record/Year	87°/7th	87°/1991
Top 10 Highest Monthly Max. Avg. Temp. Value/Rank|Remarks	64.3°/#3	-
Top 10 Highest Monthly Mean. Avg. Temp. Value/Rank|Remarks	51.9°/#9	-
Top 200 All-Time Driest Months Value/Rank|Remarks	1.25"/#192	4-way tie

Table 3b

ELEMENT	MAY	
High Min Temperature/Date|Previous Record/Year	63°/2nd	62°/1949
High Mean Temperature/Date|Previous Record/Year	75.0°/2nd	74.0°/1899
Minimum Temperature/Date|Previous Record/Year	29°/11th	29°/1966
Low Mean Temperature/Date|Previous Record/Year	42.5°/12th	42.5°/1996
90°+ Value|Date	94°	26th
Last Freeze Date	13th	

Table 3c

ELEMENT	SEASON	
Top 10 Warmest Springs Value/Rank|Remarks	51.6°/#5	-

Table 3d

MISCELLANEOUS

MARCH

Avg. wind speed/Dep. Fm. Norm.	8.3 mph/-1.6 mph
Peak wind/direction/date	43 mph/NW/24th
Windiest day avg. value/date	16.7 mph/30th
Calmest day avg. value/date	2.1 mph/10th
# Clear days	7
# Partly Cloudy days	8
# Cloudy days	16
Dense fog dates (code 2)	-
Thunder dates (code 3)	-
Sleet dates (code 4)	-
Hail dates (code 5)	-
Freezing rain dates (code 6)	-

Table 4a

APRIL

Avg. wind speed/Dep. Fm Norm.	7.6 mph/-1.8 mph
Peak wind/direction/date	49 mph/WNW/20th
Windiest day avg. value/date	15.7 mph/29th
Calmest day avg. value/date	1.0 mph/1st
# Clear days	4
# Partly Cloudy days	21
# Cloudy days	5
Dense fog dates (code 2)	6th & 7th
Thunder dates (code 3)	-
Sleet dates (code 4)	-
Hail dates (code 5)	-
Freezing rain dates (code 6)	-

Table 4b

MAY

Avg. wind speed/Dep. Fm Norm.	6.4 mph/-1.8 mph
Peak wind/direction/date	53 mph/WNW/4th
Windiest day avg. value/date	18.7 mph/9th
Calmest day avg. value/date	1.9 mph/28th
# Clear days	4
# Partly Cloudy days	21
# Cloudy days	6
Dense fog dates (code 2)	12th, 13th & 20th
Thunder dates (code 3)	4th, 6th, 8th, 26th & 31st
Sleet dates (code 4)	-
Hail dates (code 5)	-
Freezing rain dates (code 6)	-

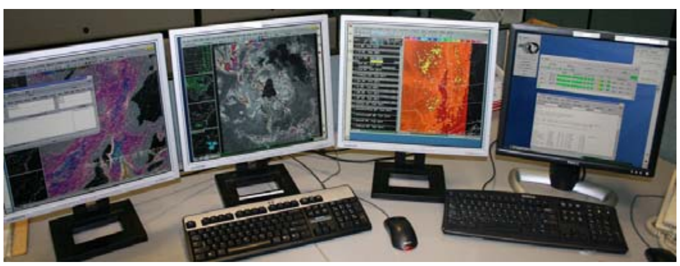
Table 4c

WHAT APPS DO METEOROLOGISTS USE?

Brian Montgomery
Senior Meteorologist, NWS Albany

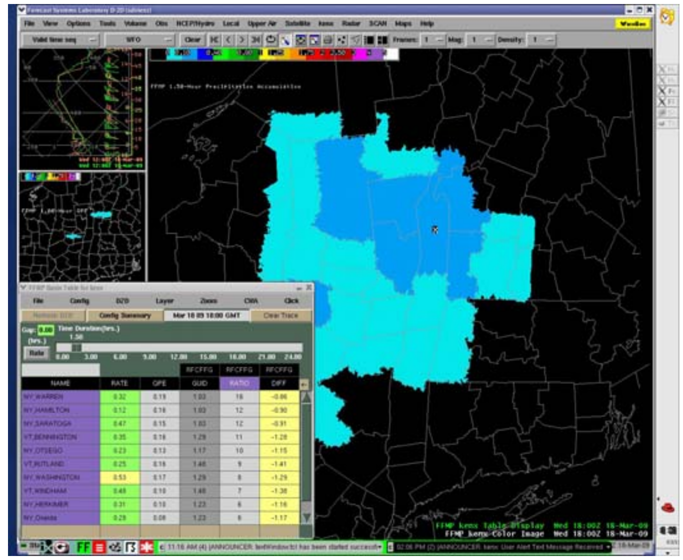
"There is an app for that", and apps within apps, and those apps in research and development for your National Weather Service. Computer technology advancements continue to amaze many of us, including those ever-popular smart wireless devices, with weather apps available on the go. However, what apps do National Weather Service meteorologists use every day to prepare forecasts, issue those life saving warnings, and assist with analyzing the atmosphere?

AWIPS, Advanced Weather Interactive Processing System, is the system used by National Oceanic and Atmospheric Administration/National Weather Service (NOAA/NWS) meteorologists to analyze and disseminate operational weather data, including time-sensitive, high-impact warnings that include tornadoes and winter storms. This was the first time a system integrated surface observations, numerical models, satellite imagery, radar displays and hydrological information into one cohesive application. In fact, this network is the backbone of our 24/7 operations and communications. A major upgrade is currently underway with the implementation of the AWIPS Software Product Improvement Plan. This ambitious project and the services-oriented software re-architecture will form the basis of the next-generation system known as AWIPS II. We will have more insight for you once this state-of-the-art system is available (before 2012).



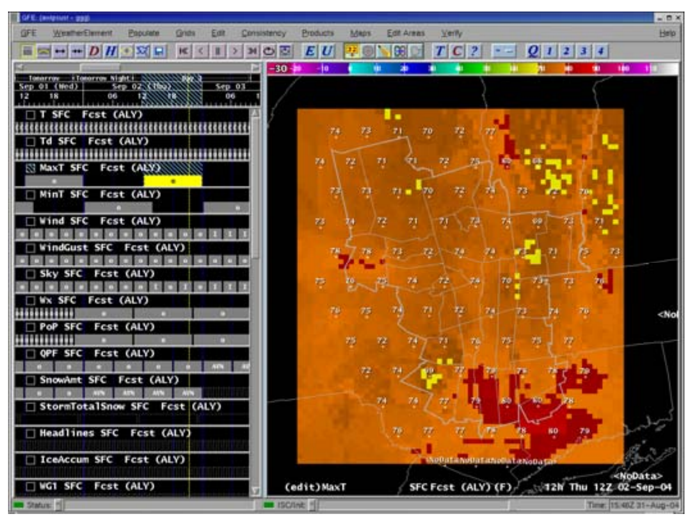
AWIPS display monitors, 3 for graphics, one for text.

FFMP, Flash Flood Monitoring and Prediction, is another app NWS meteorologists are utilizing, to assist with flash flood forecasting. This software system is an integrated suite of multi-sensor applications that detects, analyzes, and monitors precipitation, and generates short-term warning guidance for flash flooding automatically within AWIPS. FFMP provides forecasters with accurate, timely and consistent guidance, and supplements forecaster event-monitoring with multi-sensor, automated event-monitoring. You can monitor river forecasts from our Advanced Hydrologic Prediction Service (AHPS) at:
http://water.weather.gov/ahps2/index.php?wfo=aly.



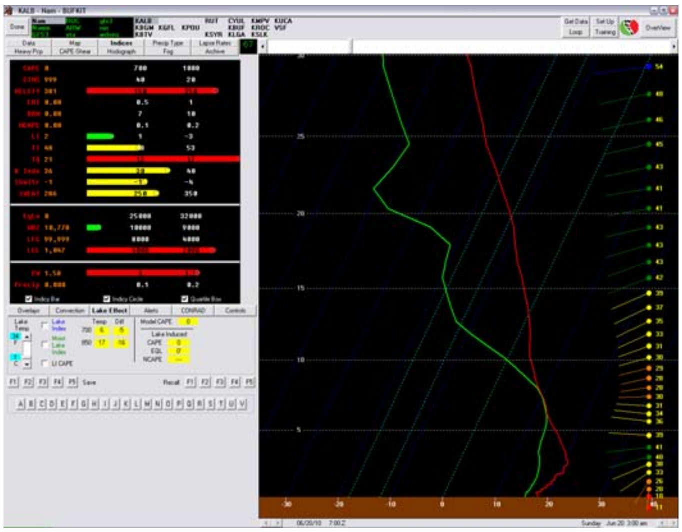
Typical FFMP display for NWS Albany's Hydrological Warning Area

GFE, Graphical Forecast Editor, is the actual graphical on-screen editor that allows meteorologists to create detailed graphical depictions of upcoming weather, while at the same time creating a numerical database of weather information ("grids") representing the same forecast. This technology also frees the forecaster from typing several text messages that describe the same weather for different clients. Furthermore, this digital approach ensures consistency among all forecasts supporting different services for the same area and time. All forecasts from GFE are available from the National Digital Forecast Database (NDFD), which can be examine at:
http://www.weather.gov/forecasts/wfo/sectors/aly.php.



GFE display for use at the NWS ALY office

BUFKIT is a forecast profile visualization and analysis tool kit that offers a unique insight at a forecast point like Albany, for example. This PC-based application takes hi-resolution hourly forecast profiles from a numerical model, and displays the output in a graphical vertical profile of the atmosphere. The initial intent of this tool was to assist forecasters with lake-effect snow, but has since been expanded to include severe weather parameters, fire weather indices, and aviation predictions.



BUFKIT display showing forecast sounding and data table for ALB.

So, plenty of apps (even more not listed here) are available to your National Weather Service meteorologists to assist them with forecast preparation and the issuance of those life-saving watches, warnings and advisories. So what app can you buy for your best protection against hazardous weather? NOAA Weather Radio All Hazards! This device should be as common as CO/smoke detectors in everyone's home. More information is available at: http://www.erh.noaa.gov/aly/WxRadio.htm.

"TWEET" US YOUR WEATHER REPORTS

Vasil Koleci
Information Technology Officer, NWS Albany

The National Weather Service Forecast Office in Albany has an experimental program that will allow you to send us weather reports via Twitter. Now is your chance to "tweet" your significant weather reports to the National Weather Service.

One of the main advantages of Twitter is its program's ability to "geotag" reports. Geotagging allows us to determine where the significant weather report is from. Twitter will help enhance and increase timely and accurate online weather reporting and communication between the public and the National Weather Service.

Anyone with a Twitter account can participate. However, if you are a trained SKYWARN™ spotter, you should continue to use the pre-established method that was taught during your training session.

To send us a weather report, you will need to enter #wxreport in the main portion of your tweet. The hash tag (#) and wxreport combination allows the National Weather Service to sort through reports. Here is an example on how to report trees down:

#wxreport trees down across Albany, NY at 6PM

Now if you want to geocode your message, you could add any geographical descriptor that will describe where the weather report occurred. This could be latitude/longitude, street, city or even a zip code. To add a geocode, you need to surround the geographical entry by WW. Here are a few examples:

#wxreport WW 12203 WW several trees down at 6PM due to thunderstorms.

#wxreport WW Albany, NY WW several trees down at 6PM due to thunderstorms.

Some GPS mobile phones will automatically geocode your report. Please check the documentation on your mobile equipment for further details.

In addition to Twitter, the National Weather Service at Albany continues to use the online Severe Weather Reporting Form: (http://cstar.cestm.albany.edu:7775/Severe_WX/svrwx.asp), where spotters can enter in their reports. This form will allow you to enter precipitation, snowfall, wind damage, hail, hydrology concerns and other weather phenomena. They also have a mobile version of the Severe Weather Reporting Form: (http://cstar.cestm.albany.edu/EMReport/EMReport.htm). This form was specifically created for users to enter weather reports via a mobile device.

Finally, if the above methods are not feasible, you can send us reports via email at: ALB.STORMREPORT@NOAA.gov

SUMMARY OF WINTER ARCTIC SEA ICE EXTENT

George J. Maglaras
Senior Meteorologist, NWS Albany

Trends in Arctic sea ice extent are frequently used as a measure of climate change, especially the summer minimum extent. While changes in weather patterns and ocean currents from one season to the next can cause large variations from year to year, a multi-year trend of increasing sea ice extent is seen as evidence of a cooling climate, while a trend of decreasing sea ice extent is taken as evidence of a warming climate. This article will present the latest maximum Arctic sea ice extent statistics for this past winter, as provided by the National Snow and Ice Data Center. Although winter ice extent variations over the past decade have not been as dramatic as summer ice extent variations, the maximum winter ice extent can provide clues as to what will occur in the summer. For example, the record low maximum ice extents during the 2005-06 and 2006-07 winter seasons eventually led to the record low minimum ice extent during the summer of 2007. After that, winter maximum ice extents increased during the 2007-08 and 2008-09 winter seasons, and the summer minimum ice extents during the following summers were considerably higher than in 2007.

Arctic sea ice extent is defined as an area of sea water where ice covers 15 percent or more of that area. Thus, for any square mile of sea water to be included in the ice extent total, at least 15 percent of that square mile must be covered with ice.

The maximum Arctic sea ice extent during the 2009-10 winter season was reached on March 31, 2010, and was the latest that the maximum extent has occurred since satellite measurements began in 1979. Cold weather across much of the Arctic during March allowed Arctic sea ice to keep growing well past the normal peak period from the end of February through early March. The maximum ice extent on that day was 5.89 million square miles. This was 260,000 square miles greater, and 4.4 percent higher, than the record low maximum ice extent that occurred during the 2006-2007 winter season. The maximum ice extent this past winter was just under the average maximum ice extent for the period from 1979 to 2000.

The maximum ice extent during this past winter was also 20,000 to 40,000 square miles greater than for the 2007-08 and 2008-09 winter seasons. As a result, it would appear that winter ice is also slowly recovering from the record low levels reached during the 2005-06 and 2006-07 winter seasons. Although the maximum ice extent from this past winter would suggest that ice extent this summer will not approach the record low levels reached during the summer of 2007, it is still too early to conclude that the minimum ice extent this summer will continue to increase as it has during the past two summers.

WCM Words

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This will be my last "WCM Words". But, I'm not going anywhere. Effective April 25, 2010, I was named the Meteorologist in Charge of the Albany National Weather Service office. So, I'll be staying right here. The process to name my successor is underway. For the Fall StormBuster, the new WCM will be occupying this space.

It's been a great experience to write to you during each edition of StormBuster. I look forward contributing articles from time to time. In particular, I will have some comments on my new position for the Fall StormBuster.

If you have comments on StormBuster, or any operations of the National Weather Service, please let me know at raymond.okeefe@noaa.gov.

From the Editor's Desk

An earthquake rocked the Capital Region on the day I'm writing this. Yours truly was on the road and didn't notice it, but several people in our office did. It appears the epicenter was about a magnitude 5.0, located 33 miles north of Ottawa, Ontario. Luckily, the affects across our region were minimal. We have several interesting selections for our summer issue. Kevin Lipton opens the issue with an insightful summer hurricane forecast for the Atlantic basin. Then we have something new and different. Brian Frugis will begin sharing his experiences hiking up the tallest accessible mountains in each county within our County Warning Area, as part of a StormBuster miniseries. Part 1 covers the Taconics. Next, I will have a recap of our unusually mild spring. Then Brian Montgomery lets you see some of the important 'apps' we use to do our jobs. And Vasil Koleci will discuss how you can help us out by 'tweeting' your weather reports to us. Finally, George Maglaras returns for a look at the progression of the arctic sea ice he examined in last fall's issue. We hope you enjoy this special issue, but more importantly, enjoy the summer! The following images depict airborne activities which take place in the Catskill mountains during the summer months.

Airplane glider from above, near Middletown, Orange County, NY

Hang gliders over Ellenville Flight Park, Ulster County, NY