

The Coastal Front

Summer 2010

NEWSLETTER LAUNCHED

By Chris Kimble, General Forecaster and Newsletter Team Leader

The National Weather Service in Gray has begun publication of a new quarterly newsletter. This newsletter is designed to be an easy way for you, our customers and partners, to stay informed of the latest happenings in our forecast area. We will provide a variety of information through this newsletter including information on recent major storms, outreach events and activities, local research and forecasting techniques, and updates on new technologies and changes. An updated newsletter will be available each season and posted



The National Weather Service in Gray, Maine
Photo by Mike Cempa

on our website (http://www.erh.noaa.gov/er/gyx/spotters_skywarn/index.shtml). You can also subscribe to the newsletter by sending an e-mail to GYX-Newsletter@noaa.gov. Subscribers will be informed by e-mail whenever a new edition is published and available for viewing.

Do you have suggestions for items to include in the next newsletter? Or do you have a weather question that you would like a forecaster to answer? Send us an e-mail with your question or comment at GYX-Newsletter@noaa.gov.

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POTENT WINTER STORM POUNDS REGION

By Jim Hayes, Senior Forecaster

On February 24-26, 2010, a major storm system affected New Hampshire and western Maine. Heavy snow, heavy rain, damaging winds and coastal flooding occurred with this complex and long lived system.

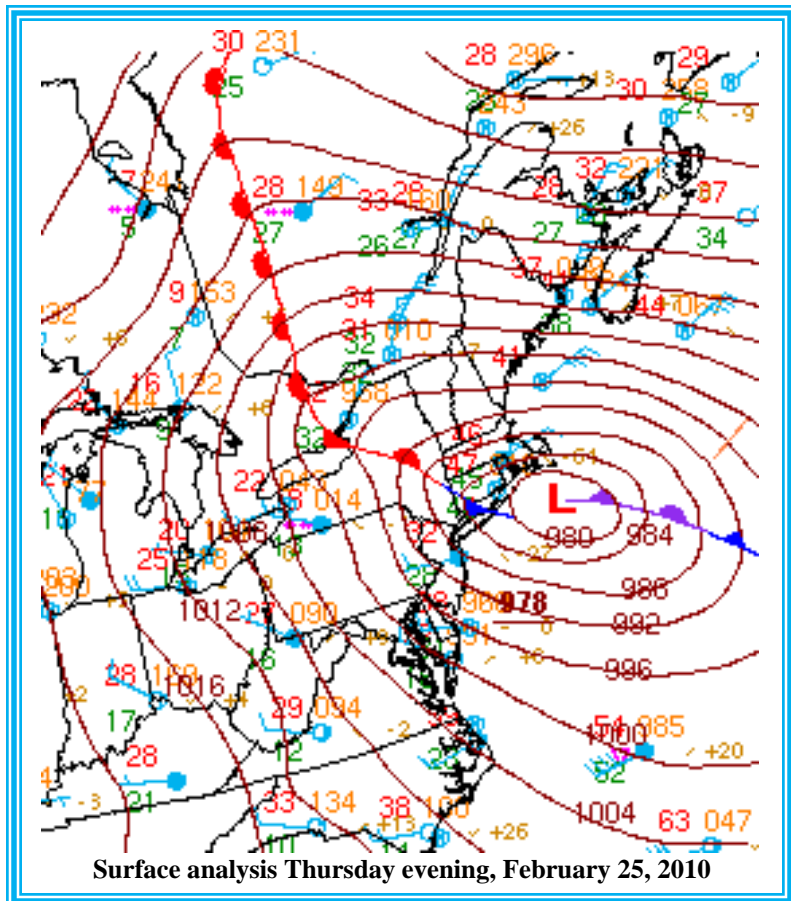
The initial phase of the storm began with low pressure off the mid Atlantic coast Tuesday evening, February 23. Precipitation overspread much of the region overnight, and by Wednesday morning, snowfall amounts ranged from 3 to 7 inches across western New Hampshire.

The precipitation continued Wednesday, falling as snow across the higher terrain of New Hampshire and western Maine, and as rain in the lower elevations. As the initial area of low pressure moved north to Long Island, New York and weakened, the precipitation became lighter during the evening hours.

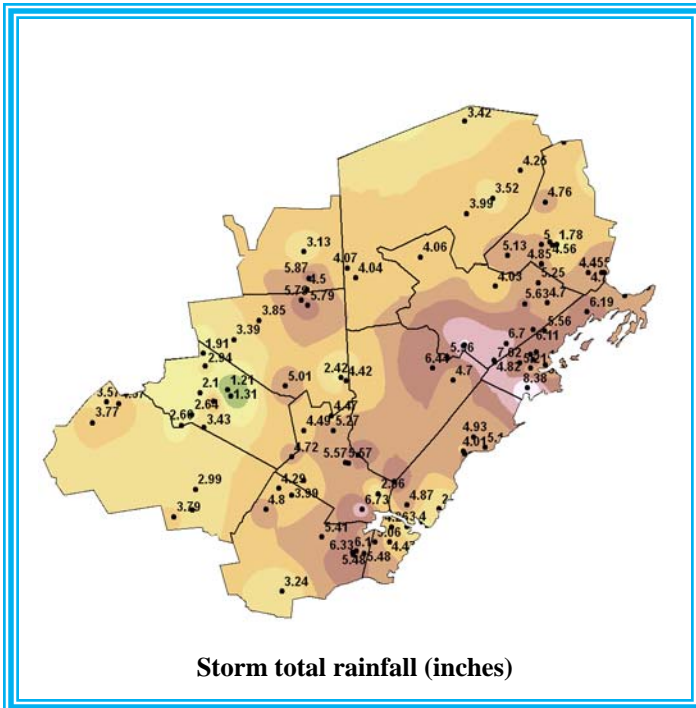
The next area of low pressure was already starting to take shape along the North Carolina coast Wednesday evening, and the next round of precipitation produced heavy rain across southeast New Hampshire and southwest Maine, where between 2 and 3 inches of rain fell during the overnight hours. Heavy snow continued across the mountains of New Hampshire and western Maine during the overnight hours as well.

This second area of low pressure strengthened rapidly as it tracked toward the southern New England coast Thursday evening (see Figure at right). Ahead of the low, heavy rain continued across southeast New Hampshire and southern Maine, prompting the issuance of Flood Warnings for a large portion of the area. Heavy snow continued across the mountains of northern New Hampshire where 2 day snowfall totals were approaching 3 feet.

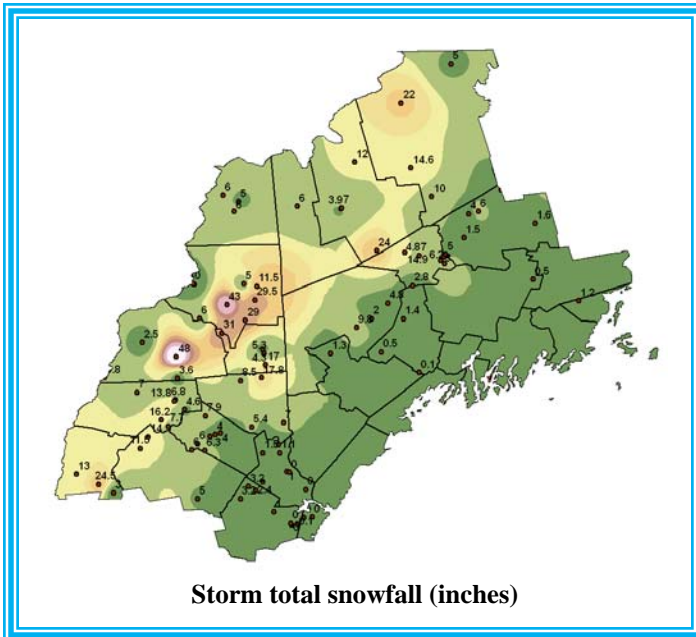
The most significant event occurred during the evening hours of Thursday, February 25th and the early morning of February 26th. As the surface low moved north, a trough extending from the low approached the coastline. East to northeast winds increased dramatically during the evening hours. As the troughed passed the coastline, wind gusts between 60 and 94 mph became common.



The strong low pressure system crossed the Gulf of Maine early Friday morning, then moved south of Nova Scotia Friday evening. As the low pulled away, the winds began to diminish, and the rain and snow finally started to come to an end. There were even some breaks of sunshine in the afternoon, although snow showers continued in the mountains.



Total rainfall amounts ranged from 4 to 8 inches across southeast New Hampshire and southwest Maine (Figure top, left). This resulted in flooding across the area, with the worst of the flooding across York County in Maine and Rockingham County in New Hampshire. Several rivers also were pushed into flood by the heavy rain with the Presumpscot River experiencing its highest crest since the Patriot's Day storm of 2007.



By the time the snow tapered off to snow showers Friday morning, many locations in the mountains of northern New Hampshire had received between 2 and 4 feet of snow (Figure below, left). Some of the more impressive totals included 48 inches on the Kamcamagas Highway, 43 inches at Lost River and 40 inches in Randolph.

Perhaps the greatest impact from the storm was strong wind. The highest wind gusts occurred near the coast, and were dependent on exposure to the east and northeast. Two (unofficial) wind gusts of 94 mph were recorded in Seabrook, New Hampshire and Cape Elizabeth, Maine. The strongest official wind gust (78 mph) occurred in Portland, which was the highest wind gust ever recorded there. The winds may have gusted higher, but the site lost power during the height of the storm.

Finally, the persistent onshore flow, combined with the highest astronomical tides of the month, resulted in coastal flooding around the time of high tide Thursday evening and Friday morning. The storm surge just before the Thursday evening high tide peaked between 4 and 5 feet, which resulted in coastal flooding and inundation during this high tide cycle.

WEATHER REVIEW AND OUTLOOK

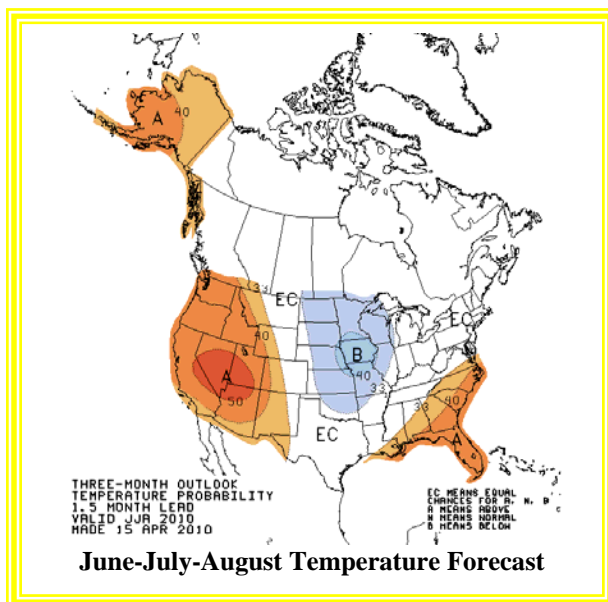
By Steve Capriola, Senior Forecaster and Climate Program Leader
and Chris Kimble, General Forecaster

The first three weeks of January brought typical winter weather. Portland recorded 20 inches of snow through January 20. But that soon changed. A big warm up, along with a significant rainfall event, melted most of the snow pack in a matter of days. With increasing temperatures and dry weather through mid February, the typical winter snow pack never returned. Starting on February 8, daily average temperatures warmed above normal and stayed that way for 46 consecutive days (through March 25) in Portland. Portland picked up just over three inches of snow in the months of February and March.

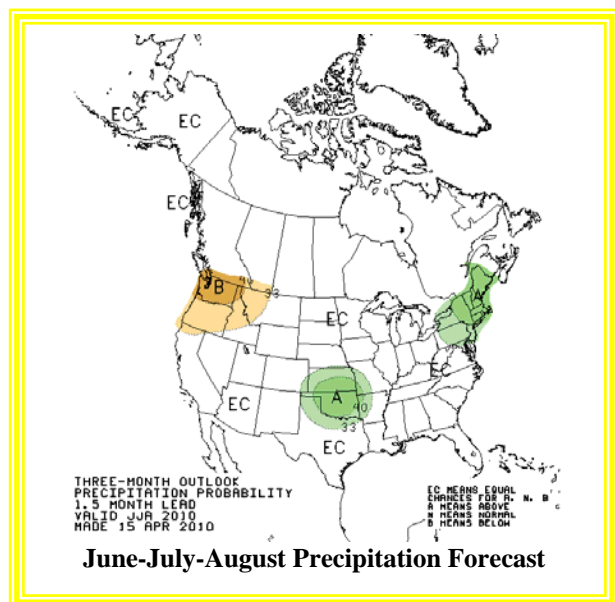
Despite the lack of snow, there was no lack of rain. Portland had the heaviest calendar day rainfall event ever for the month of February when 3.83 inches of rain fell on February 25. This event also saw extremely high winds at Portland (78 mph) and across much of coastal Maine and New Hampshire. Over the final five days of the month more than 6 inches of rain fell. March picked up where February left off. Three major rain events occurred during the month producing the wettest March ever in Portland.

Along with all the rain came very mild weather through the first three months of the year. In Portland, January averaged 3.3 degrees above normal, February averaged 6.0 degrees above normal and March averaged 6.2 degrees above normal. This was the warmest March in the past 70 years, while February was the fourth warmest ever. This was one of the warmest and wettest late winter/early spring periods on record.

The Climate Prediction Center (CPC) produces three-month temperature and precipitation outlooks for the United States. The current forecast for this summer (June, July, and August) is available below. The forecast calls for equal chances for temperatures to be above normal, below normal, or near normal for the period. This means there are no climatic signals favoring any one category. Normally, summer high temperatures are in the 70s across the area with lower 80s across southern interior locations by July and August. The precipitation forecast is for an enhanced chance of above normal precipitation. Normally precipitation during the summer months totals just under 10 inches.



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PREPARING FOR SUMMER STORMS

By John Jensenius, Warning Coordination Meteorologist

Summer brings warm weather...and with those warm temperatures comes the threat of thunderstorms and severe weather. Every thunderstorm, by definition, contains lightning and is, therefore, a potentially deadly storm. However, severe thunderstorms present other threats as well. These threats include high winds, large hail, tornadoes, and flash flooding. During the past several years, Maine and New Hampshire have experienced more than their normal share of severe weather. Will this trend continue? We simply don't know.

In 2009, there were a total of six tornadoes documented in Maine, with no documented tornadoes in New Hampshire. The Oxford County tornado of August 21st traveled a distance of more than 16 miles and had a maximum path width of about 700 yards. To my knowledge, this is the widest tornado path ever documented in Maine. In contrast to 2009, no tornadoes were recorded in Maine in 2008, with just one in New Hampshire. However, that one New Hampshire tornado traveled 50 miles, making it the longest single tornado path documented in New England.



Tornado damage in Oxford County, Maine in August 2009

While the damage caused by tornadoes and severe thunderstorms gets considerable attention, many people underestimate the deadly threat posed by lightning. Typically lightning kills more people in the U.S. than either tornadoes or hurricanes. During the last full week of June, the National Weather Service sponsors Lightning Safety Awareness Week. Take some time to learn more about the dangers of lightning. Most importantly, remember that if you hear thunder, you are within striking distance of the storm and need to get to a safe place immediately.

For severe storms, the NWS uses a WATCH and WARNING program to alert the public to the potentially threatening weather. In the summer, watches and warnings are issued for damaging winds, large hail, tornadoes, and flash flooding. Special marine warnings are issued for gusty winds in marine areas. A WATCH indicates that the atmospheric conditions are favorable for severe weather to develop. If a WATCH has been issued for your area, keep an eye on the sky, and monitor NOAA Weather Radio or your local broadcast media for any possible warnings. A WARNING indicates that severe weather is imminent or is already occurring. If a WARNING has been issued for your area, be prepared to seek a safe shelter immediately if you are in the path of the storm.

SEVERE HAIL THRESHOLD CHANGED

By Stacie Hanes, Senior Forecaster



An example of quarter-sized hailstones

On January 5, 2010 the National Weather Service raised the minimum size for severe hail nationwide to one inch in diameter (the size of a quarter). Prior to January, three-quarter inch (the size of a penny) hail was considered severe. The National Weather Service uses these benchmarks in order to decide whether or not to issue Severe Thunderstorm Warnings. If a storm is suspected to have hail of at least one-inch in diameter, it is considered severe, and a warning is issued. A table of common hail comparisons is shown at the bottom of the page.

The change to the severe hail criterion was prompted by recent research by wind engineers, suggesting that hail damage to common roofing materials such as shingles does not occur until the hail has a diameter of at least one inch. In addition, vehicles usually do not sustain damage until hail reaches the size of golf balls, or 1.75 inches in diameter.

The one-inch hail criterion was tested at several Weather Service offices around the country before implementation. Feedback from these studies showed that the public appreciated fewer warnings for marginal events, and that they had stronger confidence that a genuine threat existed for warnings that were issued. With fewer warnings issued, the NWS will keep more credibility by avoiding “overwarning” which may desensitize the public. In addition, there were fewer television viewer complaints about having to break into programming to announce a severe weather warning which posed little or no threat of damage.

Hail Size (diameter, inches)	Common Comparisons
1/4	Pea
1/2	Marble
3/4	Penny
7/8	Nickel
1	Quarter
1.25	Half Dollar
1.50	Ping-Pong Ball
1.75	Golf Ball
2	Hen Egg
2.50	Tennis Ball
2.75	Baseball
3	Tea Cup
4	Grapefruit
4.50	Softball

Table of commonly used terms to describe hail size

COOPERATIVE OBSERVERS RECOGNIZED

By David Glenn, Meteorologist

The Cooperative Observer Program in New Hampshire and Western Maine is comprised of over 150 individuals and institutions. These observers report daily weather conditions such as the amount of precipitation, maximum and minimum temperatures, and sky conditions. We are fortunate to have many long serving observers across our region, such as Mrs. Arlene Cole in Newcastle, Maine, and Mr. Harold Souther located in Livermore Falls, Maine (pictured below). Both observers have recently received their 35 year award. Two additional observers will soon be awarded their 35 year award: Mr. Fernald of Greenland, New Hampshire, and Mr. Webster of New Sharon, Maine. Our region's most tenured observers are Mr. and Mrs. Pike out of Farmington, Maine. In 2011 the Pike family will surpass 45 years of dedicated service to the Cooperative Observer Program. We greatly appreciate all of our observers and would like to celebrate these recent milestones!



Harold Souther is the National Weather Service's Cooperative Observer for Livermore Falls, Maine. He recently received his award for 35 years of dedicated service.

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