NORTHEASTERN STORM BUSTER

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FEATURES

DEPARTMENTS

UPCOMING UPPER AIR SYSTEM IMPROVEMENTS

Kimberly Sutkevich
Meteorologist, NWS Albany

The National Weather Service Forecast Office in Albany, New York is one of the 102 NWS offices around the country that routinely launch balloons to take atmospheric measurements above the surface. Every day, twice a day, we launch a special balloon carrying a device containing equipment to measure the temperature, relative humidity and barometric pressure. This instrument is called a radiosonde (See figure below). There are several different systems used to track the various types of radiosondes that are used by the NWS today. WFO Albany is currently one of only two NWS offices utilizing the ZeeMet system by Sippican, Inc. This system has been in use since the 1980s.

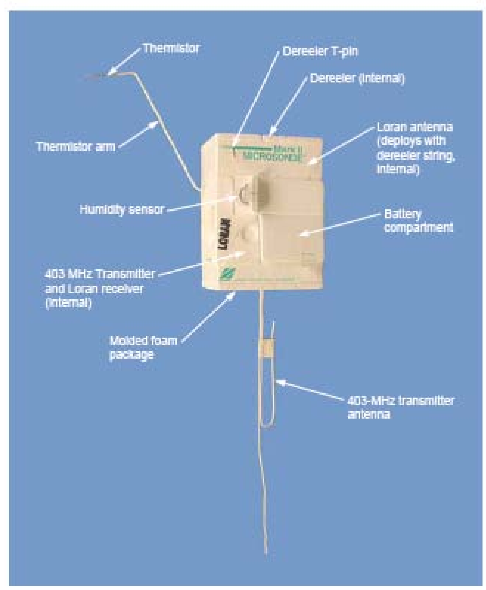


FIGURE 1-11: *The Mark II Loran MICROSONDE*

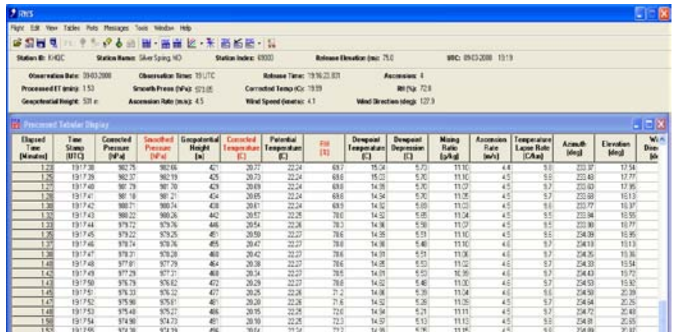
As time has progressed, so has the NWS Upper Air Program. NWS Albany is slated to receive the newest upper air system, known as the Radiosonde Replacement System (RRS). It is currently being installed at NWS Upper Air Program Stations throughout the country. These new installations will take several years to complete at the current installation rate of about two stations per month.

The new system takes advantage of newer computing power, requiring a minimum of a 3.2 GHz Pentium 4 processor and motherboard. It is also more user friendly, utilizing a Windows XP operating system currently in widespread use with other computer systems within the NWS. It will be able to store archived flight data on three different mediums: compact disk; 3.5 inch floppy disk, and; an external hard drive.

Another advantage of the RRS is that it is very interactive, allowing for a high degree of control over the data products that are generated and transmitted, producing and storing a greater amount of data and metadata. The RRS Workstation allows the observer to enter more pre-flight information than with the current upper air systems in use, including: the amount of helium used to inflate the balloon; the balloon type, and; the balloon manufacturer lot number.

The RRS state-of-the-art tracking system, known as the Telemetry Receiver System, will lead to increased data resolution and accuracy. One example of this is the higher resolution wind data, as RRS will record a wind data point every 100 meters compared to the current software recording of a wind data point every 300 meters.

With the RRS, NWS upper air observers will be able to see and quality-check more flight data. As the balloon rises, data will be transmitted back to the office. The RRS software not only shows the current temperature, relative humidity, height of the radiosonde, pressure and wind data, it also calculates and displays dew point depression, potential temperature, ascension rate, azimuth and elevation angle, and the corrections needed to be applied to the temperature and pressure. The added data display will result in better-quality upper air data checks, which will be ingested into model data used to produce better forecasts. (See figure at top of next column.)



In conclusion, the improved data from upper air balloon launches produced by the RRS will result in better forecasts, watches and warnings for our NWS customers.■

FISCHER PORTER REPLACEMENT BEING INSTALLED

Timothy E. Scrom
Operational Program Leader, *NWS Albany*

During October and November, a number of Fischer Porter Rain Gages throughout eastern New York will be replaced. These units date back to the 1950s, and have been busy recording precipitation every 15 minutes for the past 50 to 60 years.

In their day, they represented the state-of-the-art mechanical weighing gage. They recorded their data onto paper tapes that lasted up to 90 days. Once each month, usually within the first 3 days of the month, cooperative observers would go out to the gage, mark it, and remove it from the unit. Then, they would fill out a small label listing the station name/number, as well as some information about the amount of precipitation last recorded, and the time the tape was removed.

A new state-of-the-art "load cell" and a small "computer" will be mated to the original Fischer Porter frame, and housed entirely within the body of the Fischer Porter containment shell. All of the old mechanical scales and tape assembly will be removed. Now the data will be recorded on an "SD card", instead of a punched paper tape. An SD card is a small computer chip which can hold large amounts of data. It will be inserted into a small chip drive at the end of each month. The computer will transfer the data onto the SD card within a few seconds.

These units will be deployed during the month of October, 2009. Then, during the month of November, they will be commissioned, and their data will become part of the official weather records of the United States.

Figure 1. Looking down alongside the new computer and battery.

Figure 2. The message Observers will see when data transfers between the computer and the SD Card.■

2009-A SUMMER TO REMEMBER

Evan. L. Heller
Climatologist, NWS Albany

The summer of 2009 shall long be remembered in Albany for the amount of rainfall the city received. The 18.51" total (Table 1) makes this past summer the 3rd wettest on record…the wettest since the upstart of the National Weather Service's Albany office. More than half the total (9.91") was received in July alone. This made July 2009 the wettest July on record at Albany (Table 3b), exceeding the previous record of 9.37", which had existed for the past 138 years! It was also the 2nd wettest of all months on record. Only September 1999 (#1), thanks in large part to Hurricane Floyd, and July 1999 (#2) were wetter. During this month, two daily precipitation records were broken. These occurred on the first and last days of the month. Together, these two dates accounted for more than half of the monthly total. Needless to say, flooding was a big issue in and around the Capital Region. Although August was the driest of the three months of climatological summer, the last of the season's three precipitation records was broken during the month, on the 18th, when 1.48" of rain fell.

There were no records at all in June in Albany, despite the nice-sized rainfall total. The only other record of note for the season was the occurrence of a minor heat wave from August 16th-18th (Table 3c). A heat wave exists if the temperature reaches 90º for three consecutive days. The season wound up being slightly below normal (Table 1), with June being the most normal month, July being on the cool side, and August being on the warm side.

Partly cloudy conditions made up the majority of the days of summer (Tables 4a-c), with a total of 49 of the 92. Only 9 days were considered cloudy, with the balance (34) being clear days. So there was plenty of sunshine to be had.

It was an interesting season from the standpoint of rainfall, but temperatures were not off the deep end, with only August 16th-18th recording 90º or higher (Table 2).

STATS

	JUN	JUL	AUG	SEASON
Avg. High/Dep. From Norm.	74.9°/-2.6°	77.4°/-4.8°	80.3°/+0.6°	77.5°/-2.3°
Avg. Low/Dep. From Norm.	57.2°/+2.2°	59.2°/-0.8°	61.7°/+3.4°	59.4°/+1.6°
Mean/ Dep. From Norm.	66.0°/-0.3°	68.3°/-2.8°	71.0°/+2.0°	68.4°/-0.4°
High Daily Mean/date	76.0°/25th	76.0°/29th	80.0°/18th	
Low Daily Mean/date	50.5°/1st	62.5°/8th&13th	61.0°/29th & 31st	
Highest reading/date	86°/25th	85°/28th	91°/17th	
Lowest reading/date	36°/1st	50°/15th	48°/8th	
Lowest Max reading/date	64°/18th	69°/2nd	65°/29th	
Highest Min reading/date	67°/24th	70°/29th	70°/18th, 21st & 22nd	
Ttl. Precip./Dep Fm. Norm.	5.02"/+1.28"	9.91"/+6.41"	3.58"/-0.10"	18.51"/+7.59"
Ttl. Snowfall/Dep. Fm. Norm.	0.0"/±0	0.0"/±0	0.0"/±0	0.0"/±0
Maximum Precip/date	1.30"/18th	2.76"/1st	1.48"/21st	
Maximum Snowfall/date	0.0"	0.0"	0.0"	

Table 1

FALL SKYWARN SPOTTER TRAINING

Sign up at:

http://www.erh.noaa.gov/er/aly/Skywarn.htm

NORMALS, OBSERVED DAYS & DATES

	JUN	JUL	AUG	SEASON
High	77.5°	82.2°	79.7°	79.8°
Low	55.0°	60.0°	58.3°	57.8°
Mean	66.3°	71.1°	69.0°	68.8°
Precip	3.74”	3.50”	3.68”	10. 92”
Snow	0.0”	0.0”	0.0”	0.0”
OBS. TEMP. DAYS 2009				
High 90º or above	0	0	3	3/92
Low 70º or above	0	1	3	4/92
High 32º or below	0	0	0	0/92
Low 32º or below	0	0	0	0/92
Low 0º or below	0	0	0	0/92
OBS. PRECIP. DAYS 2009				
Days T+	17	21	12	50/92/54%
Days 0.01+	15	18	9	42/92/46%
Days 0.10+	11	12	7	30/92/33%
Days 0.25+	9	8	4	21/92/23%
Days 0.50+	2	4	3	9/92/10%
Days 1”+	1	3	1	5/92/5%
PRECIP. & SNOW DATES				
1.00”+ value/date	1.30”/18th	1.44”/29th	1.48”/21st	
2.00”+ value/date	-	2.76”/1st	-	
2.00”+ value/date	-	2.42”/31st	-	
3.5” snow value/date	-	-	-	

Table 2

RECORDS

ELEMENT	JUNE			
	1st		2nd	
NONE	/	/	/	/

Table 3a

ELEMENT	JULY			
	1st		2nd	
Precipitation/Date|Prev Rec./Yr.	2.76”/1st	1.59”/2005	2.42”/31st	1.29”/1939
Top 10 Wettest Julys/Rank|#1 Amount/Year	9.91”/#1	9.91”/2009		
All-Time Wettest Months/Rank|#1 Amount/Year	9.91”/#3	11.06”/Sept. 1999		

Table 3b

ELEMENT	AUGUST			
	1st		2nd	
Precipitation/Date|Prev Rec./Yr.	1.48”/21st	1.23”/1997	/	/
Heat Wave	August 16-18		-	

Table 3c

ELEMENT	SEASON		
	1st		2nd
All-Time Wettest Summers/Rank|#1 Amount/Year	18.51”/#3	27.21”/1871	

Table 3d

MISCELLANEOUS

JUNE

Avg. wind speed/Dep. Fm Norm.	5.3 mph/-2.3 mph
Peak wind/direction/date	33 mph/NNE/22nd
Windiest day avg. value/date	9.7 mph/22nd
Calmest day avg. value/date	1.8 mph/4th
# clear days	7
# partly cloudy days	18
# cloudy days	5
Dense fog dates (code 2)	15th, 20th, 27th & 30th
Thunder dates (code 3)	14th, 15th, 26th, 27th
Sleet dates (code 4)	-
Hail dates (code 5)	-
Freezing rain dates (code 6)	-

Table 4a

JULY

Avg. wind speed/Dep. Fm Norm.	5.5 mph/-1.5 mph
Peak wind/direction/date	38 mph/W/16th
Windiest day avg. value/date	13.4 mph/11th
Calmest day avg. value/date	1.2 mph/20th
# clear days	9
# partly cloudy days	19
# cloudy days	3
Dense fog dates (code 2)	1st, 8th, 9th & 17th
Thunder dates (code 3)	1st, 3rd, 6th, 7th, 11th, 12th & 16th
Sleet dates (code 4)	-
Hail dates (code 5)	-
Freezing rain dates (code 6)	-

Table 4b

AUGUST

Avg. wind speed/Dep. Fm Norm.	4.9 mph/-1.4 mph
Peak wind/direction/date	39 mph/WSW/18th
Windiest day avg. value/date	8.7 mph/5th & 7th
Calmest day avg. value/date	0.7 mph/14th
# clear days	18
# partly cloudy days	12
# cloudy days	1
Dense fog dates (code 2)	2nd, 3rd, 10th, 14th, 15th, 20th & 21st
Thunder dates (code 3)	10th, 18th, 19th & 21st
Sleet dates (code 4)	-
Hail dates (code 5)	-
Freezing rain dates (code 6)	-

Table 4c■

TROPICAL UPDATE: 2009

Brian Montgomery
Senior Forecaster, NWS Albany

This year’s tropical season activity level has been below average, and was clustered during the months of August and September (the peak of the Hurricane Season is September 10th). As of the end of September 2009, we have had just four (4) Tropical Storms, and two (2) Hurricanes since the start of the season. September was unusually quiet for the Tropical Atlantic, with only two (2) named systems, Erika and Fred. The long-term average is four (4) named systems. The only storm that had made landfall in the United States was Tropical Storm Claudette, along the Panhandle of Florida in the middle of August. For a review of tropical cyclones in the Atlantic basin through September 2009, please visit the National Hurricane Center web page at http://www.nhc.noaa.gov/archive/2009/tws/index.shtml.

Recently, the NOAA National Hurricane Center Web Site was updated! Historical information has been reorganized, and enhanced with user-friendly features: http://www.nhc.noaa.gov/pastall.shtml

Satellite imagery from our Geostationary Operational Environmental Satellites (GOES) continues to become more user-friendly, with a web implementation of Flash. Be sure to visit:
http://www.nhc.noaa.gov/satellite.shtml

As a reminder, if you are a user of Google Earth and other GIS information, historical hurricane tracks are available from the NOAA Coastal Services Center:
http://csc-s-maps-q.csc.noaa.gov/hurricanes/■

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 Arctic sea ice extent statistics.

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.

Based on satellite measurements of Arctic sea ice extent which began in 1979, the average summer minimum Arctic sea ice extent for the period from 1979 to 2000 is 2.59 million square miles. For 2009, the summer minimum extent was reached on September 12, and was 1.97 million square miles. As a result, the 2009 minimum extent was 23.9 percent below the 1979-2000 average.

There has been a noticeable trend of decreasing ice extent since satellites began measuring Arctic sea ice extent in 1979. The lowest summer minimum ice extent occurred in 2007, and was measured at 1.60 million square miles (38.2 percent below the 1979-2000 average). This caused great concern that global warming was accelerating, and that the Arctic could be ice-free during the summer months within a relatively small number of years, thereby further accelerating the impacts of global warming.

However, in 2008, the summer minimum ice extent increased to 1.75 million square miles, and, as stated earlier, the 2009 minimum increased further to 1.97 million square miles. Thus, the 2009 summer minimum was 23.1 percent above the 2007 summer minimum, but still 23.9 percent below the 1979-2000 average.

Has the summer Arctic sea ice extent begun to recover, or is the recent rise in summer ice extent just a brief pause in the overall decreasing trend? It will likely take several more years of observations before these questions can be answered.■

WCM Words

Raymond G. O'Keefe
NWS Albany Warning Coordination Meteorologist

The fundamental mission of the National Weather Service is the protection of life and property. Much of our outreach efforts are focused toward that goal. That's why I ask you to consider attending one of our Fall Skywarn sessions. Last winter season was marked by an epic ice storm across much of our forecast area. Snow and ice reports during and after these winter storms are critical for warning and verification operations. I ask you to consider becoming a Skywarn volunteer if you have not already done so. Skywarn training sessions will be posted on our web site shortly. I hope you'll consider attending a session in your area.■

From the Editor's Desk

Fall has finally arrived, and so has this issue of Northeastern StormBuster. We begin with two articles focusing on changes to the way we do things. First-time contributor Kim Sutkevich opens the issue discussing the new and improved upper air system that's on the way for Albany. OPL Tim Scrom follows with the changes to the Fischer Porter Rain Gages. Next, I provide the wrap-up of the summer climate season, and Brian Montgomery summarizes the season's tropical aspects. Closing the *Features* section, first-time contributor

George Maglaras provides the lowdown on the Arctic Ice shield. Finally, Ray sends his words to us from NWS Pittsburgh, where he's on temporary assignment. Enjoy the reading, enjoy the season! See you again at the holidays.■