

The Lake Breeze

The Newsletter of the Buffalo Forecast Office

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2007 a Top Ten Warm Year for U.S. and Globe

The year 2007 is on pace to become one of the 10 warmest years for the contiguous U.S., since national records began in 1895, according to preliminary data from NOAA's National Climatic Data Center in Asheville, N.C. The year was marked by exceptional drought in the U.S. Southeast and the West, which helped fuel another extremely active wildfire season. The year also brought outbreaks of cold air, and killer heat waves and floods. Meanwhile, the global surface temperature for 2007 is expected to be fifth warmest since records began in 1880. Preliminary data will be updated in early January to reflect the final three weeks of December and is not considered final until a full analysis is complete next spring.

U.S. Temperatures

- The preliminary annual average temperature for 2007 across the contiguous United States will likely be near 54.3° F- 1.5°F (0.8°C) above the twentieth century average of 52.8°F. This currently establishes 2007 as the eighth warmest on record. Only February and April were cooler-than-average, while March and August were second warmest in the 113-year record.
- The warmer-than-average conditions in 2007 influenced residential energy demand in opposing ways, as measured by the nation's Residential Energy Demand Temperature Index. Using this index, NOAA scientists determined that

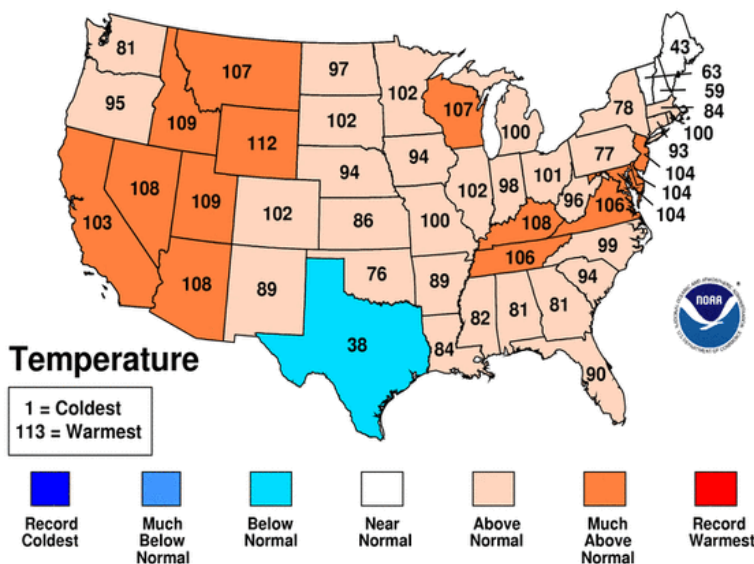
the U.S. residential energy demand was about three percent less during the winter and eight percent higher during the summer than what would have occurred under average climate conditions.

- Exceptional warmth in late March was followed by a record cold outbreak from the central Plains to the Southeast in early April. The combination of premature growth from the March warmth and the record-breaking freeze behind it caused more than an estimated \$1 billion in losses to crops (agricultural and horticultural).
- A severe heat wave affected large parts of the central and southeastern U.S. in August, setting more than 2,500 new daily record highs.

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January-November 2007 Statewide Ranks

National Climatic Data Center/NESDIS/NOAA



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2007 a Top Ten Warm Year for U.S. and Globe (cont.)

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Global Temperatures

- The global annual temperature – for combined land and ocean surfaces – for 2007 is expected to be near 58.0 F – and would be the fifth warmest since records began in 1880. Some of the largest and most widespread warm anomalies occurred from eastern Europe to central Asia.
- Including 2007, seven of the eight warmest years on record have occurred since 2001 and the 10 warmest years have all occurred since 1997. The global average surface temperature has risen between 0.6°C and 0.7°C since the start of the twentieth century, and the rate of increase since 1976 has been approximately three times faster than the century-scale trend.
- The greatest warming has taken place in high latitude regions of the Northern Hemisphere. Anomalous warmth in 2007 contributed to the lowest Arctic sea ice extent since satellite records began in 1979, surpassing the previous record low set in 2005 by a remarkable 23 percent. According to the National Snow and Ice Data Center, this is part of a continuing trend in end-of-summer Arctic sea ice extent reductions of about 10 percent per decade since 1979.

U.S. Precipitation and Drought Highlights

- Severe to exceptional drought affected the Southeast and western U.S. More than three-quarters of the Southeast was in drought from mid-summer into December. Increased evaporation from usually warm temperatures, combined with a lack of precipitation, worsened drought conditions. Drought conditions

also affected large parts of the Upper Midwest and areas of the Northeast.

- Water conservation measures and drought disasters, or states of emergency, were declared by governors in at least five southeastern states, along with California, Oregon, Maryland, Connecticut, and Delaware at some point during the year.
- A series of storms brought flooding, millions of dollars in damages and loss of life from Texas to Kansas and Missouri in June and July. Making matters worse were the remnants of Tropical Storm Erin, which produced heavy rainfall in the same region in August.
- Drought and unusual warmth contributed to another extremely active wildfire season. Approximately nine million acres burned through early December, most of it in the contiguous U.S., according to preliminary estimates by the National Interagency Fire Center.
- There were 15 named storms in the Atlantic Basin (Atlantic Ocean, Caribbean Sea and Gulf of Mexico) in 2007, four more than the long-term average. Six storms developed into hurricanes, including Hurricanes Dean and Felix, two category 5 storms that struck Mexico's Yucatan Peninsula and Nicaragua, respectively (the first two recorded category 5 landfalls in the Atlantic Basin in the same year). No major hurricanes made landfall in the U.S., but three tropical depressions, one tropical storm and one Category 1 Hurricane made landfall along the Southeast and Gulf coasts.
- La Niña conditions developed during the latter half of 2007, and by the end of November, sea surface temperatures near the equator of the eastern Pacific were more than 3.6°F (2°C) below average. This La Niña event is likely to continue into early 2008, according to NOAA's Climate Prediction Center.

Forecasters Share Their Expertise

On October 21st, several meteorologists from the NWS Buffalo office attended the 2nd Annual Lake Effect conference in Oswego. The conference is sponsored by the Oswego State Student Chapter of the American Meteorological Society and is designed to bring together researchers from across the region to discuss advances in the science of meteorology of the Great Lakes. The conference sponsors hope to encourage more meteorology students to become interested in the field of research by hearing professionals share their discoveries.

David Zaff (Science and Operations Officer), Judith Levan (Warning Coordination Meteorologist), Robert Hamilton (Lead Forecaster) and Jonathon Hitchcock (General

Forecaster) were presenters at the conference. Jon spoke about an intense band of lake effect snow off Lake Michigan. Dave discussed the use of confidence graphics in forecasting. Bob and Judy teamed up to review last year's devastating October Storm across Western New York.



Tom Nizio, Meteorologist in Charge, was honored to be the keynote speaker at the Lake Effect Conference Banquet.

2007 SKYWARN™ Recognition Day

The 2007 Amateur Radio Special Event was again a huge success...thanks mostly to the enthusiasm and participation of hams all across the nation.

SKYWARN Recognition Day (SRD) was developed in 1999 by the National Weather Service and the American Radio Relay League. It celebrates the contributions that volunteer SKYWARN radio operators make to the National Weather Service. The NWS and the ARRL both recognize the importance that amateur radio provides during severe weather. Many NWS offices acquire real time weather information from amateur radio operators in the field. These operators, for example, may report the position of a tornado, the height of flood waters, or damaging wind speeds during hurricanes. All of this information is critical to the mission of the NWS which is to preserve life and property. The special event celebrates this special contribution by amateur radio operators.



On December 1st from 0000 UTC – 2400 UTC the 9th Annual SKYWARN Recognition Day took place. Base operators here at the Buffalo Office operated on 2-10-15-20-40 and 80 meter radio frequencies to make 399 contacts in 38 states...including contacts with 34 other NWS offices.

Many thanks to those who worked the base stations at the Buffalo Office, including: Mark Barnack N2LAB, Luke Calianno N2GDU, Jay Clark KF2JY, Jim Collins KA2IWK, Don Czaplak KC2IOU, Jim Glor N8GXR, Bill Kasperkoski WB2SXY, Pam Kasperkoski W2PHK, Bill Klepser WB2AIV, John Leitten KA2RFT, Steve Piotrowski KC2QZF, Jim Starr N2TFA, and Pam Ware KC2NRM.

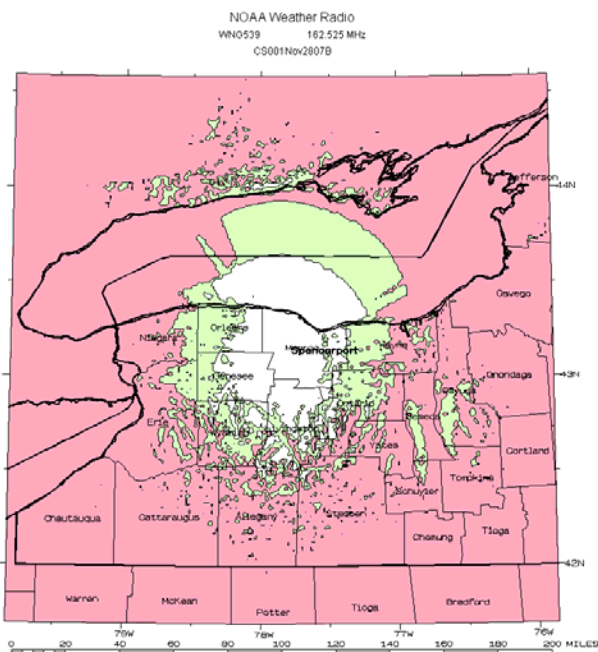
National stats will soon be posted to the website and more information about the 2007 Special event can be found at <http://hamradio.noaa.gov>

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NOAA Weather Radio WNG539 Spencerport

Western Monroe County residents, visitors, and boaters now have access to weather information anytime, thanks to a new NOAA Weather Radio All Hazards transmitter recently approved at Spencerport New York.

NOAA Weather Radio All Hazards WNG539 at Spencerport transmits on a frequency of 162.525 MHz with broadcasts originating from NOAA's National Weather Service in Buffalo, N.Y. The broadcasts from began October 24, 2007. NOAA Weather Radio All Hazards (NWR), known as "The Voice of the National Weather Service," is a continuous 24-hour source of the latest weather forecasts and warnings broadcast directly from the Buffalo forecast office.



Last year, the Departments of Education, Commerce and Homeland Security joined together to distribute NWR receivers to all public schools in the Nation. That distribution will be expanded to include all private schools, universities and School District offices this academic year. The addition of the new Spencerport site will allow for improved notification of NWR alerts.

This radio broadcast has been made possible through a partnership between NOAA and Monroe County to bring the National Weather Service's vital information to people in this area.

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NWS Takes Part in “Storm the Mall”

Meteorologists Tom Niziol, Judy Levan and Dave Zaff took part in Storm the Mall at Eastern Hills Mall on October 6th. The event was sponsored by the Mall, the Buffalo Chapter of the American Red Cross, and First Niagara Bank.

The event commemorated the 2006 October Storm and helped families become better prepared for future disasters that can occur in our communities.

Each child received a “Preparedness Passport”. A “Preparedness Village” was set up throughout the mall and as the children stopped at the different stations they did fun activities and learned relevant safety tips. Every time an activity was completed, the Passport was stamped.

Children who stopped at the NWS booth learned about win-

ter weather safety and made snowflake rubbings. Parents weren't forgotten. They received helpful information about NOAA Weather Radio All Hazards.



Judy Levan, Warning Coordination Meteorologist, and Dave Zaff, Science and Operations Officer, storm the mall.

This Winter Is going To The Dogs



At NWS Buffalo, we name our lake effect snow events after they end so it is easier to refer back to them for archiving and research. It's very unofficial, but each winter, the staff of NWS Buffalo votes on the theme of that year's lake effect events. This year, the theme is dogs.

Previous years have had themes of: Insects, Cats, Fruits, Minerals, Scientists, Birds, Trees, Native American Nations and Leaders, and Heavenly Bodies.

In addition to giving the storm a name, we assign a “flake scale”. We subjectively rank the events from 1-flake (*) for minor (wimpy) events to 5-flakes (*****) for epic mega-storms, based not only on snowfall amounts but the impact on population centers as well.

Lake effect “Akita” occurred on November 6th-7th. A sharp cold front crossed the region the evening of the 5th and lake effect snows developed as cold air built into the region. Six to eight inches of snow fell over the Chautauqua ridge.

Our second lake-effect event this winter, “Borsoi”, occurred when the first true arctic airmass of the season swept into western and central New York on the heels of a major synoptic storm during the first few days of December. Off Lake Erie, snowfall amounts ranged from 10 to 15 inches, while downwind of Lake Ontario, snowfall amounts peaked at 16 to 21 inches.

Check out our Lake Effect Page for a primer on lake effect snow, information about our snow spotter program, and an archive of the past 10 winters of lake effect snow on our website at <http://www.erh.noaa.gov/buf/lakeeffect/indexlk.html>

Geostationary Lightning Mapper

NOAA and NASA announced Lockheed Martin Space Systems Company of Palo Alto, Calif., has been selected for a \$96.7 million (including options) contract award to design and develop a new instrument on the next generation of weather satellites that will detect patterns in lightning flashes that give forecasters an early indicator of severe thunderstorms and tornadoes.

Called the Geostationary Lightning Mapper, the instrument will monitor all lightning flashes occurring anytime and anywhere in the Western Hemisphere, including the United States. It will fly on NOAA's next geostationary

satellite series known as GOES-R first set to launch in December 2014.

Lightning is the second highest storm-related killer in the United States and causes \$4 to \$5 billion in losses each year in the civilian sector. Lightning costs about \$2 billion annually in airline operating expenses and passenger delays and are a frequent cause of wildfires.



International Polar Year 2007-2008

The Polar Regions are remote areas of the Earth that have profound significance for the Earth's climate and ultimately environments, ecosystems and human society. However we still remain remarkably ignorant of many aspects of how polar climate operates and its interaction with polar environments, ecosystems and societies. To have any hope of understanding the current global climate and what might happen in future the science community needs a better picture of conditions at the poles and how they interact with and influence the oceans, atmosphere and land masses. Existing climate models do not work well in the Polar Regions and have for example failed to predict the dramatic break-up of Antarctic ice shelves observed in recent years. The three fastest warming regions on the planet in the last two decades have been Alaska, Siberia and parts of the Antarctic Peninsula, thus the Polar Regions are highly sensitive to climate change and this raises real concern for the future of polar ecosystems and Arctic society.

There have been a number of major international science initiatives in Polar Regions and all have had a major influence in overhauling our understanding of global processes in these important areas. These initiatives have involved an intense period of interdisciplinary research, collecting a broad range of measurements that provide a snapshot in time of the state of the Polar Regions.

The First International Polar Year (IPY), 1881 - 1883 was the first in the series of coordinated international expeditions to the Polar Regions. The first IPY was inspired by the Austrian explorer and an officer with the Austro-Hungarian Navy, Carl Weyprecht. Although he died before the commencement of the First International Polar Year, 12 countries participated in 15 expeditions, fulfilling Weyprecht's dream and heralding a new age of scientific discovery.

The Second International Polar Year (IPY), 1932 - 1933 marked the 25th anniversary of the first IPY. It was proposed in 1928 at an international conference of meteorological service directors. Forty nations participated in Arc-

tic research from 1932-1933, in the fields of meteorology, magnetism, aurora, and radio science. However, due to the worldwide economic depression, the second IPY was smaller than originally planned.

The Third International Polar Year (IPY), 1957 - 1958, later renamed the International Geophysical Year, was proposed in 1952 by the International Council of Scientific Unions, following a suggestion by the National Academy of Sciences (NAS) member Lloyd Berkner. The Third IPY/IGY was based on the earlier IPYs, but included research outside of the Polar Areas. These international research programs involved 80,000 scientists from 67 countries. It produced unprecedented exploration and discoveries in many fields of research and fundamentally changed how

science was conducted in the polar regions. Fifty years on, technological developments such as earth observation satellites, autonomous vehicles and molecular biology techniques offer enormous opportunities for a further quantum step upwards in our understanding of polar systems.

The Fourth International Polar Year (IPY) in 2007-2008 marks the 50th anniversary of the Third International Polar Year to continue the tradition of international science

years that began in 1882-1933 with the first International Polar Year and continued with a second International Polar Year in 1932-1933."It will provide an opportunity to engage the upcoming generation of young Earth System scientists and to get the public to realize just how much the cold ends of the sphere we all live on really do influence us. In order to have full and equal coverage of both the Arctic and the Antarctic, IPY 2007-8 covers two full annual cycles from March 2007 to March 2009 and will involve over 200 projects, with thousands of scientists from over 60 nations examining a wide range of physical, biological and social research topics. It is also an unprecedented opportunity to demonstrate, follow, and get involved with, cutting edge science in real-time.

The NOAA Website on the International Polar Year can be found at: <http://www.ipy.noaa.gov/>



Beaufort Island in the Ross Sea, Antarctica.

Photo by Michael Van Woert, NOAA NESDIS, ORA.



SKYWARN™ Training—Spring 2008



SKYWARN is a National Weather Service effort to save lives during severe weather emergencies with an expanding network of trained volunteer weather spotters. SKYWARN spotters support their local community and government by providing reports of severe weather directly to the National Weather Service in Buffalo through amateur radio or the NWS spotter toll-free hotline. The services performed by SKYWARN spotters have saved many lives.

The National Weather Service has a number of devices for detecting severe thunderstorms. Included in these are Doppler radar, satellite, and lightning detection networks. However, the most important tool for observing thunderstorms is the trained eye of the storm spotter. By providing observations, SKYWARN spotters assist the National Weather Service staff in their warning decisions and enable the National Weather Service to fulfill its mission of protecting life and property. Storm spotters are, and always will be, an indispensable part of the severe local warning program.

The training sessions review basic topics including the roles and responsibilities of the National Weather Service, severe weather safety, and basic severe weather meteorology including how

thunderstorms, severe thunderstorms and tornadoes form. The session will also include discussion on storm reporting techniques and tips for staying in tune with the current and forecast weather.

For those who have already attended a training session, we recommend you attend another spotter training session at least once every three years to remain on our spotter list. Anyone can become a severe weather spotter for the National Weather Service. SKYWARN training is free and open to the public and lasts about two hours.

If you know of any group (emergency responders, law enforcement, civic organizations, or amateur radio groups, for example) that would like SKYWARN training or refresher training, contact Judy Levan at judith.levan@noaa.gov.

Specific times, locations and details of scheduled training sessions will be posted, as available, on our website at <http://www.weather.gov/buf/skywarn.htm>

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THE STAFF OF NATIONAL WEATHER SERVICE BUFFALO WISHES YOU AND YOURS A SAFE, HEALTHY AND HAPPY NEW YEAR!

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EDITORS NOTE:

Published quarterly, each of issue of "The Lake Breeze" contain articles about our operations, new products and services, and interesting local weather submitted by various members of our staff. If you have a comment about our programs, or an idea for something you'd like to see included in an upcoming issue, we'd like to hear from you. You can email me at judith.levan@noaa.gov.

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