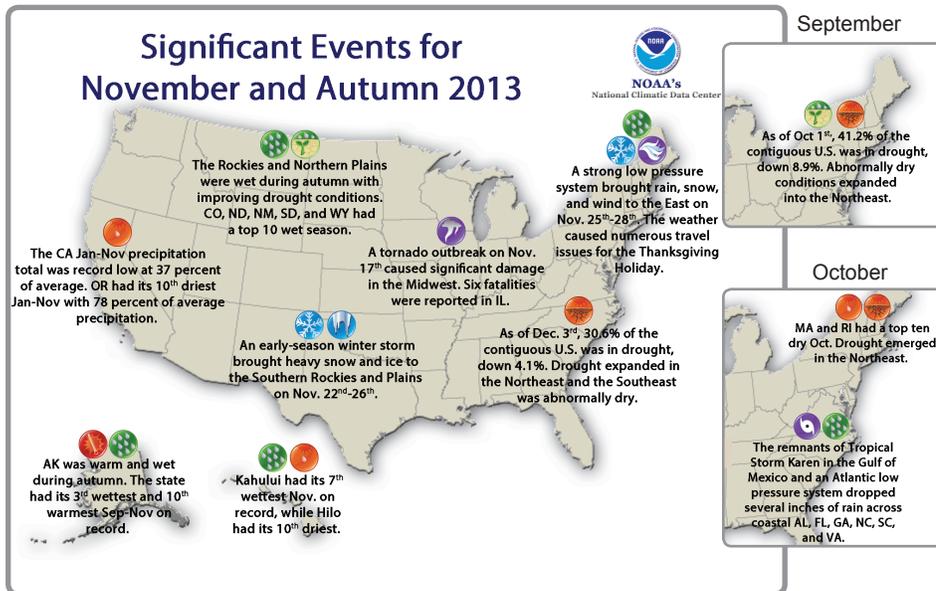


National - Significant Events for September–November 2013



Highlights for the East

The remnants of Tropical Storm Karen stalled off the East Coast from October 9 to 13, dumping up to 13 inches of rain and leading to flooding from North Carolina to Pennsylvania. Record-setting rainfall on the 10th and 11th helped Harrisburg, PA, set a record for wettest October. In addition, strong winds and pounding waves caused coastal erosion as far north as New York.

Three EF-1 and two EF-2 tornadoes damaged homes and trees in Ohio during a severe weather outbreak on November 17. Winds of up to 85 mph caused damage in parts of the region. More severe storms during fall caused flash flooding and produced eight tornadoes.

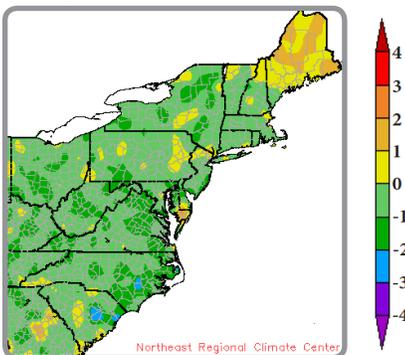
Two wildfires highlighted the danger of dry conditions in the region. A fire in the Table Rock area of the Pisgah National Forest, NC, was discovered on November 12 and scorched 2,800 acres before being extinguished on the 25th. The cost to suppress the fire was estimated at \$2 million. A fire in Pendleton County, WV, charred 1,620 acres of land. The fire began on November 10 and was contained on the 22nd.

The U.S.'s average temperature in November was 41.6°F, 0.3°F below average. During fall, the U.S.'s average temperature was 54.1°F, 0.5°F above average. The United States received 2.01 inches of precipitation, 0.11 inches below average, in November. During fall, the United States received 7.23 inches of precipitation, 0.52 inches above average. The contiguous United States had its 12th largest November snow cover extent in 48 years at 591,000 square miles, 116,000 square miles above average.

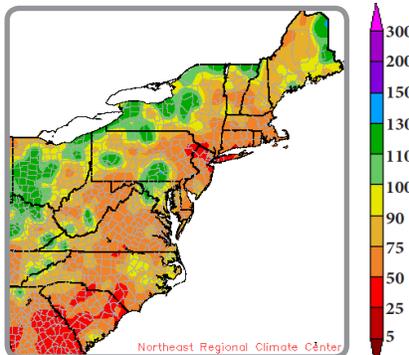
Regional - Climate Overview for September–November 2013

Temperature and Precipitation Anomalies

Departure from Normal Temperature (°F)
September 1–November 30, 2013



Percent of Normal Precipitation (%)
September 1–November 30, 2013

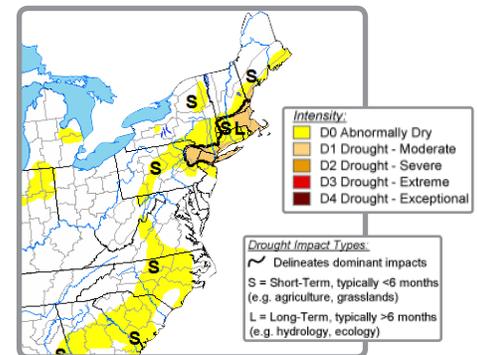


Fall was cooler than normal in the Eastern Region. The average temperature of 53.1°F was 0.5°F below normal, with 13 of the 16 states cooler than normal. September was slightly cooler than normal at 63.8°F, -0.3°F, with ten states seeing below-normal temperatures. October was warmer than normal in all states, with the region ending the month at 55.0°F, +1.9°F. Delaware had its 10th warmest October on record. November was cooler than normal in all states, with the region having an average temperature of 40.5°F, -3.1°F.

The Eastern Region had its fifth wettest January–August, but dried out beginning in September. For fall, the region received 9.12 inches of precipitation, 81% of normal. Fifteen of 16 states were drier than normal, with three ranking the season among their top 20 driest. The region received 75% of normal precipitation in September and 73% of normal in October, while November brought 96% of normal. Three states ranked September and six states ranked October among their top 20 driest, while two states ranked September and one state ranked October among their top 20 wettest.

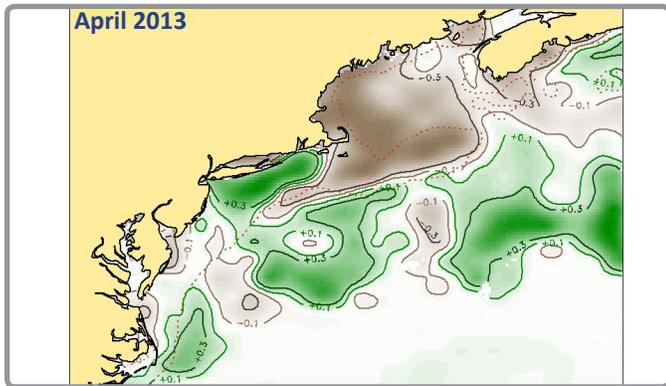
Drought in the East

U.S. Drought Monitor
December 17, 2013



In early September, abnormal dryness (D0) was present in two of the 16 states, but by early October, D0 conditions were found in 14 states. Rain in mid-October temporarily eased dryness in much of the Mid-Atlantic, but moderate drought (D1) was introduced in southern New England and southeastern New York by month's end due to continued dryness. D0 and D1 conditions expanded through mid-November. Precipitation in late November and early December eased dryness slightly, but 15 states were still experiencing D0 or D1 conditions in mid-December.

Regional - Impacts for September–November 2013



Marine Ecosystem

While sea surface temperatures in the Northeast Shelf Large Marine Ecosystem (Gulf of Maine to Cape Hatteras, NC) moderated during the first half of 2013 compared to 2012, temperatures remained above the long-term average, according to the NOAA Northeast Fisheries Science Center's Ecosystem Advisory. The 2013 spring zooplankton biomass on the Northeast Shelf was the lowest on record and followed an unusually low spring phytoplankton bloom (see map above: brown is below average bloom, green is above average). Perhaps the most notable ecosystem event in the region was the cancellation of the northern shrimp fishery for this coming winter. Northern shrimp are a subarctic species, and the collapse of this lucrative fishery follows several years of very warm temperatures and declining abundance. (See <http://www.nefsc.noaa.gov/ecosys/advisory/current/> & <http://www.asmf.org/species/northern-shrimp>)

Sandy: One Year Later

The East Coast is still recovering a year after Superstorm Sandy. At least 27,000 households in New York and New Jersey are still displaced, according to an October 29 NBC News report. The Metropolitan Transit Authority estimates 2.3 million man-hours worked on Sandy projects, such as installation of nearly 100 miles of new cable. The Port Authority of New York and New Jersey put the total value of damage from Sandy at \$2.2 billion. Ellis Island reopened on October 28, but the site is still undergoing construction and artifacts are in storage. On October 24, the Department of the Interior announced an additional \$162 million in funding for storm-protection projects, such as salt marsh restoration. The Department also announced \$100+ million in grants for projects that strengthen natural ecosystems to reduce communities' vulnerability to future storms and natural events in states that declared a natural disaster due to Sandy. On November 13, the U.S. Department of Housing and Urban Development announced \$5.1 million of funding available for six states affected by Sandy. The states must analyze risks from climate change prior to using the funds.

Agriculture

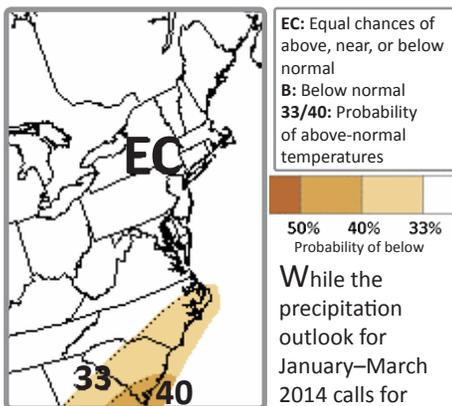
Ideal growing conditions produced bountiful apple and corn crops across the region. According to the New York Apple Association, the state is expected to produce 32 million bushels (average is 29.5 million), a modern record. Virginia's corn yield is estimated at 150 bushels per acre, up four bushels from the previous record, according to the U.S. Department of Agriculture. Pumpkins, however, had a mediocre season as excess moisture stunted plant growth and caused disease. According to the University of Delaware Cooperative Extension, pumpkin prices were higher due to the decreased yield. (See <http://www.vdacs.virginia.gov/news/releases-b/110813crops.shtml>)

Regional - Outlook for Winter 2014

Eastern Region Partners

Three-Month Precipitation Outlook

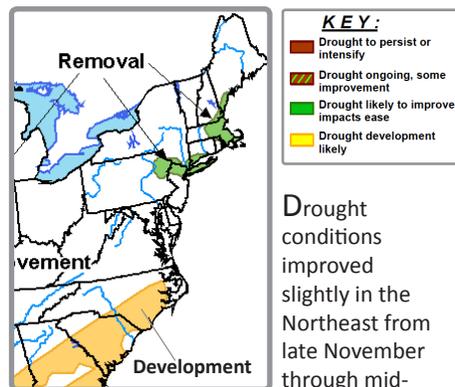
Valid for January–March 2014



While the precipitation outlook for January–March 2014 calls for equal chances of above-, near-, or below-normal precipitation for most of the region, an increased likelihood of below-normal precipitation is forecast for parts of the Carolinas. As for the temperature outlook, western parts of the Carolinas and a portion of southwest Virginia has an enhanced chance of above-normal temperatures. For the rest of the region, it is just as likely to see below-normal temperatures as it is to have above- or near-average temperatures. With ENSO (El Niño/Southern Oscillation) neutral conditions predicted to continue through early 2014, the outlooks were based on computer models and long-term trends.

U.S. Seasonal Drought Outlook

Drought Tendency from December 19, 2013–March 31, 2014



Drought conditions improved slightly in the Northeast from late November through mid-December as

increased precipitation fell. With up to several inches of precipitation forecast through the end of December and increased surface moisture (in soils and water sources or snowpack) likely from January through March, drought improvement or removal is anticipated in the Northeast. However, with the precipitation outlook calling for an increased likelihood of below-normal precipitation in parts of the Carolinas, drought conditions in those areas are forecast to persist where it already exists and expand to other areas that are dry.

National Oceanic and Atmospheric Administration
www.noaa.gov

National Climatic Data Center

www.ncdc.noaa.gov

National Weather Service, Eastern Region

www.weather.gov

NOAA Fisheries Science Centers and Regional Offices, Northeast and Southeast

www.nmfs.noaa.gov

Coastal Services Center and National Centers for Ocean and Coastal Science

www.oceanservice.noaa.gov

NOAA Research, Climate Program Office and Geophysical Fluid Dynamics Lab

www.oar.noaa.gov

NOAA National Sea Grant Office

www.seagrant.noaa.gov

NOAA's North Atlantic, South Atlantic, and Great Lakes Regional Collaboration Teams

www.regions.noaa.gov

Climate Prediction Center

www.cpc.noaa.gov

Northeast Regional Climate Center

www.nrcc.cornell.edu

Southeast Regional Climate Center

www.sercc.com

National Integrated Drought Information System

www.drought.gov

Carolinas Integrated Sciences and Assessments

www.cisa.sc.edu

Consortium on Climate Risk in the Urban Northeast

www.ccrun.org

Cooperative Institute for North Atlantic Research

www.cinar.org

Eastern Region State Climatologists

www.stateclimate.org

Normals based on 1981–2010