Tools for New Jersey weather and climate monitoring and analysis

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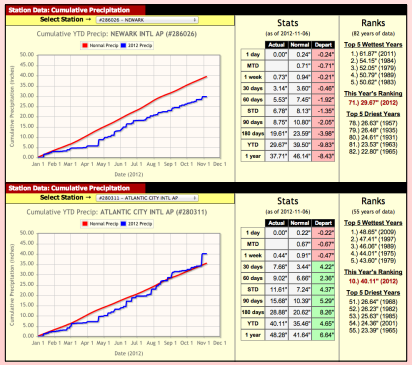
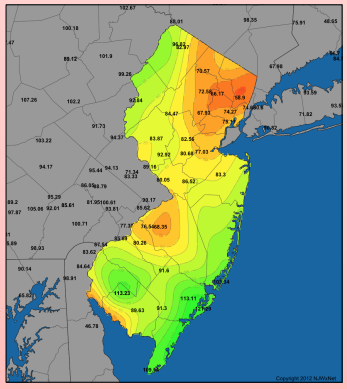
Drought Monitoring Tool

The ONJSC works closely with local officials, the NJ Department of Environmental Protection, the National Drought Mitigation Center, and others to regularly review rainfall and hydrologic conditions across the state. When much of New Jersey was designated to be in "Moderate Drought" in Spring 2012, a suite of interactive tools (below) was developed to actively monitor precipitation.





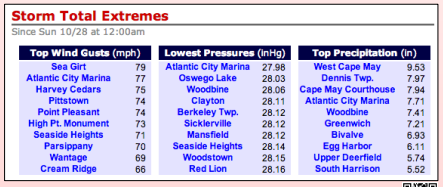
The map above shows year-to-date precipitation, as a percentage of normal, through November 6, 2012. While precipitation in the northeast corner of the state remains well below average for the year, summer and autumn rains have mitigated the drought concerns along the Jersey Shore.

Background

A significant part of the mission of the Office of the New Jersey State Climatologist is to collect weather and climate data and make it available to the public. The ONJSC operates a network of approximately 50 weather stations throughout New Jersey that report a variety of meteorological conditions every 5 minutes. This data stream can then be used to create maps, charts, and other dynamic tools to visualize and contextualize the weather and climate of New Jersey.

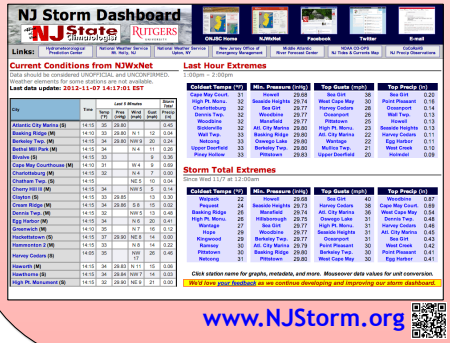
Hurricane Sandy Weather Dashboard

As Hurricane Sandy's forecast track aimed toward the Jersey Shore in October 2012, the ONJSC staff rushed development of a special web "dashboard", highlighting weather conditions (updating every 5 minutes) along with top wind gusts, lowest pressure readings, and highest storm total precipitation (right).



www.SandyNJ.com

Before, during, and after the storm, SandyNJ.com was frequented by the National Weather Service, NJ Office of Emergency Management, the media, stakeholders, and the public. In just four days (10/28-10/31), the site registered over 30,000 unique visitors and over 288,000 pageviews.

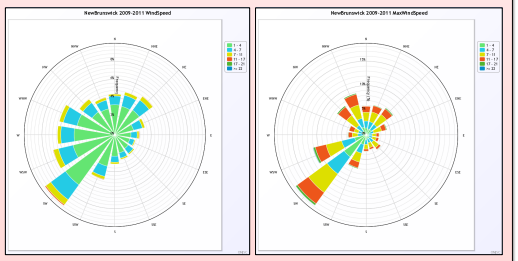


www.NJStorm.org

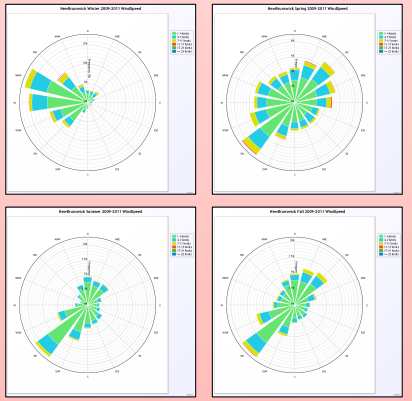
Following this viral success, the ONJSC is looking forward to continuing development and improvement of this event-driven storm dashboard concept. It will be used for future significant weather events in New Jersey (including the November 7, 2012 Nor'easter, left). We anticipate creating several dynamic layouts for a variety of weather types, including winter storms, heavy rain, severe thunderstorms, heat waves, and cold snaps. Stay tuned!

Wind Climatologies

A wind rose is a graphical tool used by meteorologists to visualize the distribution of wind speed and direction for a given location.



For example, the wind roses above show frequency of wind speed (left) and max wind speed (gust, right) at New Brunswick, NJ, based on hourly data from 2009 to 2011. There appears to be a clear dominance of Southwest winds on both charts, especially at slower wind speeds. More research is needed to determine whether this observed phenomena occurs naturally, or due to station siting or other factors.



Wind roses can also be created seasonally (the four charts above, again for New Brunswick), monthly, annually, etc. By creating a compendium of wind climatologies for locations across New Jersey, our stakeholders and the public can gain a clearer picture of wind behavior.

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