



Vermont State Climate Office  
Climate Impacts Summary  
**July 2011**

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***...Widespread thunderstorms in early July, followed by statewide heat wave on  
20-24 July...***

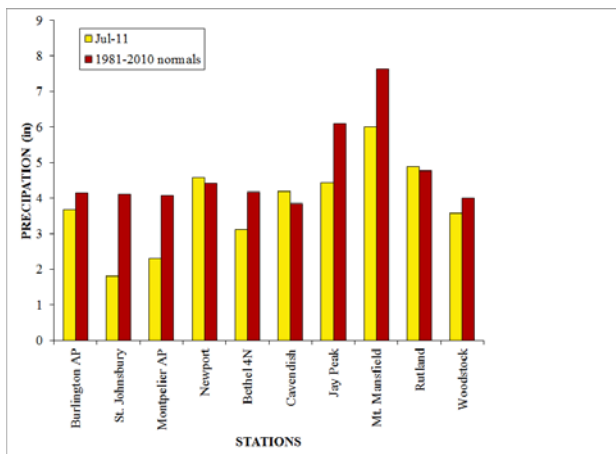
July 2011 was marked by a switch from thunderstorm activity early in the month, to progressive and intense drying in the latter part of the month. The incipient drought conditions were accompanied by high daily temperatures, culminating in a heatwave on 20-24 July.

In terms of thunderstorm activity, the most widespread event occurred on July 6<sup>th</sup> when warm and humid air was established across Vermont and a cold front moving south from Canada during the late afternoon and evening. These thunderstorms resulted in widespread wind damage. Across northwestern Vermont, trees and power lines were blown down across Chittenden and Franklin counties between 2:30 and 4:00 pm, and across Addison and Rutland counties between 3:30 and 4:45pm. In Franklin county, a roof was blown off a garage in the town of Fletcher, while the roof was damaged on a farm silo in the town of Milton (Chittenden County). Also in Chittenden County, a tree fell on and damaged a car on savage island, lightning struck the Holy Family Parish Church hall in Essex Junction, resulting in extensive fire damage and finally 1" diameter hail was reported in Burlington. Similar sized hail was also reported in the town on or Ripton in Addison County. Elsewhere in Vermont, numerous trees and power lines were blown down by thunderstorm winds between 3:30 and 4:45pm in numerous trees and power lines were blown down by thunderstorm winds between 3:30pm Washington, Lamoille, Orleans, Caledonia and Essex counties. In the town of Morrisville (Lamoille county) traffic signs were also blown down. Finally, in Windsor County, trees were blown down in the towns of Hartland and Bethel between 4:45 and 6:00pm in Windsor county to the southeast.

Isolated thunderstorms developed on July 13<sup>th</sup> in Rutland County, as a weak trough moved across southern Vermont during the afternoon. Specifically, between 4:30 and 5:30pm, thunderstorms resulted tree branches being blown down in Wallingford and 1 inch diameter hail in West Rutland. Almost a week later, a weak cold front across southern Canada resulted in a few thunderstorms across northern Vermont on July 17<sup>th</sup> and 18<sup>th</sup>. During the late evening of the 17<sup>th</sup>, tree branches were blown down by thunderstorm winds between 10:00 and 11:00pm with roof damage to a barn also

reported in East Charlotte (Chittenden County). On the following day, a weak cold front moved south, producing thunderstorms with 1" diameter hail and downed tree branches between 4:45 and 5:15pm in the towns of Vergennes and Waltham (Addison County). Winds gusted to 58 mph in Waltham. On July 21<sup>st</sup> late evening thunderstorms in Orleans County resulted in winds that blew down trees in Newport and Derby Center between 9:30 and 10:45pm. Finally, on July 26<sup>th</sup> isolated late afternoon thunderstorms moved across Washington County, with winds that downed trees and power lines near the town of Worcester between 5:30 and 6:00pm.

Yet despite this almost weekly thunderstorm passage and the resulting daily precipitation records being set at a number of stations across the state (e.g. Burlington airport on 3 July; Salisbury on 17<sup>th</sup> and Ball Mountain Lake on 21<sup>st</sup>), the month of July was marked by precipitation deficits which were greatest along the spine of the Green Mountains (including at Jay Peak, Mt. Mansfield, Morrville, Danby Four Corners) and eastern Vermont (St. Johnsbury, Island Pond, Union Village Dam). Figure 1 highlights these deficits relative to the new 1981-2010 averages (normals). The lack of rainfall was exacerbated by high temperatures including a heatwave between 20-24 July, 2011. The precipitation shortfalls of July and August led to drying of the soils in western and northeastern Vermont.



**Figure 1: July 2011 precipitation totals at selected Vermont stations relative to their 1981-201 averaging period.**

## TEMPERATURE IMPACTS

Vermont experienced a brief heat wave during from July 20-24. The National Weather Service defines a heat wave as “a period of abnormally and uncomfortably hot and unusually humid weather. Typically a heat wave lasts two or more days.” The unofficial definition of a New England heat wave is 3 days with daily maximum temperatures of 90 degrees or higher. Table 1 highlights the record maximum and minimum temperatures were set or tied at several COOP stations around the state throughout the month. Of particular note, are the record minima that were also observed during this stretch. When the temperatures and dew points do not dip at night, human comfort and health can become compromised especially among the elderly as well as individuals with

respiratory and congenital ailments. High daytime temperatures can also affect dairy production and farmers across Vermont took extra precautions to keep their herds cool and productive during this heat wave.

**TABLE 1: Record temperatures set in July 2011. Previous records are shown in parentheses. These data are preliminary and have yet to be quality checked.**

STATION	NEW Tmax (F)	NEW Tmin (F)	DATE	PREVIOUS RECORD
South Hero	92.0 (91.0)		11 July	1987
Burlington airport	97.0 (94)	76.0 (75.0)	21 July	1994, 1898
South Hero	98.0 (91.0)	77.0 (72.0)	21 July	1979, 1978
Northfield	95.0 (93.0)		21 July	1955
Ball Mountain Lake	92.0 (91.0)	67.0 (66.0)	21 July	1978, 1980
South Hero	98.0 (92.0)	72.0 (70.0)	22 July	1999, 1978
Northfield	94.0 (tie)		22 July	1955
Rochester	92.0 (87.0)		22 July	2004
Ball Mountain Lake	92.0 (88.0)		22 July	2004
Newport		69.0 (tie)	23 July	1994
Montpelier airport		67.0 (65.0)	23 July	2004
Burlington airport	93.0 (tie)		23 July	1952
Ball Mountain Lake		68.0 (69.0)	26 July	1976
Ball Mountain Lake		65.0 (tie)	30 July	1969

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### ADDITIONAL RESOURCES

<http://www.disasterassistance.gov/>

<http://www.healthvermont.gov>