



Vermont State Climate Office
Climate Impacts Summary
March 2011

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...March entered and left on rather benign terms...

Snowfall and wind events

March 2011 began with chilly but inconsequential weather, and departed with mild, benign weather. In between, however, it was an active month in Vermont with the record-setting snowfall on March 6-7th helping to make conditions to date, the third snowiest winter season on record in Burlington.

This snow storm of March 6-7 was the 3rd largest snowfall ever recorded in Burlington and the greatest total snowfall of any March storm as measured at the NWS Office-Burlington, VT (Table 1). The storm was preceded by steady rain ahead of a cold front on March 5th and March 6th. Ice jams formed on some rivers especially in Plainfield, Woodstock and Clarendon with localized flooding being observed. Many COOP stations reported 1-2" of rainfall before the precipitation changed to snow. Montpelier set a record daily liquid precipitation on March 6th with 1.87 inches. As the cold front moved across Vermont on March 6th, low pressure moved north along the front. The influx of cold air changed the rain to a heavy wet snow during the late morning and afternoon of March 6th. By March 7th, the intense storm moved across southeastern New England with snow tapering off gradually across Vermont in the afternoon.

Table 1: Five largest snowstorms observed at the Burlington International Airport

RANK	SNOWFALL (inches)	DATE
1	33.1	2-3 January 2010
2	29.8	25-28 December 1969
3	25.8	6-7 March 2011
4	25.7	14-15 February 2007
5	24.7	13-14 January 1934

Table 2: Daily snowfall and liquid precipitation records observed at COOP stations around Vermont

CLIMATE DIVISION	STATION	SNOWFALL (inches)		LIQUID PRECIPITATION (inches)		
		7 March 2011	8 March 2011	6 March 2011	7 March 2011	8 March 2011
Northeast	Bethel 4N				2.59	
	Brookfield 2WSW	24				
	Chelsea 2NW				1.91	
	Corinth	6.7			2.05	
	Eden 2S	18			2.64	
	Island Pond				1.91	
	Jay Peak				3.80	
	Montpelier 2	14			2.42	
	Barre Montpelier Airport (ASOS)			1.87		
	Newport	19 (tie)			2.57	
	Northfield	14 (tie)			2.25	
	Rochester				2.65	
	Sutton	16.6				
	Sutton 2NE	14			1.75	
	Worcester 2W	17			2.67	
Western	Danby Four Corners				2.60	
	Essex Junction 1N	20.2			1.99	
	Hankville		21.2			2.32
	Salisbury 2N	19			2.43	
	South Lincoln				2.57	
Southern	North Hartland Lake				2.05	
	Union Village Dam				2.20	
	North Springfield Lake				2.10	

This March “monster” greatly affected travel and business operations across the state. On the 7th, many Burlington businesses were closed, as were schools statewide (Figure 1) and the State government offices. Sections of Interstate 89 were periodically closed due to drifting and blowing snow or the inability of trucks to climb hills. This included a 10-12 mile stretch of the highway between the towns of Richmond and Williston in Chittenden County. Drivers were warned to stay off the road and numerous accidents were reported as cars spun out of control. In some cases these accidents impeded the plowing of roads, which in turn prevented the movement of fire and rescue vehicles. There were reports of snow plows overheating or malfunctioning. Some private locations were not plowed for a day or so. Vermont Gas and the Vermont Emergency Management issued warnings about carbon monoxide poisoning due to the blocking of vents as the heavy snow accumulated. Snowfall was generally 16-30" across most of western and northeastern Vermont (Figure 2). Across the southern third of western Vermont snowfall tapered off to 5-12". Across southeast Vermont, snowfall ranged from 3-6" in the southern third of that climate division (due to mixed precipitation) to between 8-16" in the north portion of the zone. Figure 3 highlights marked north-south line of the rain-snow divide. In Killington, US Route 4 was closed during the afternoon of 6 March due to snow and rain accumulating in a blocked culvert.



Figure 1: Donald Devoil takes his children to a neighbor's home since his daycare was closed due to snow on Monday in Montpelier, VT. [Photo credit: Toby Talbot, Associated Press]



Figure 2: “The scene on Vermont 36 in St. Albans at around 7:30 a.m. Monday, March 7, 2011” [Matt Sutoski’s blog - Burlington Free Press]



Figure 3: Daily snowfall total (inches) across New England as of 0700 EST on 7 March, 2011

On March 10th, a storm system over lower Michigan intensified as it moved northeast across eastern Lake Huron on March 11th. Gusty southerly winds developed during the afternoon of March 10 and continued overnight into the morning of March 11th. Wind gusts across western and northeastern Vermont were generally 35 to 45 mph. However, along the western slopes of the Green Mountains (eastern Chittenden and western Lamoille counties) wind gusts were 45 to 72 mph. The wind gusted to 101 mph on the summit of Mt Mansfield and 72 mph in Pleasant Valley. Scattered power outages were reported.

Temperature and Maple Sugar Operations

Favorable temperatures for the maple sap flow were observed in mid- to late March. Between March 10-20th, afternoon temperatures rose into the 40s°F except 50°-60°F on the 17-18th. The southern COOP stations of Bennington, Springfield, and Sunderland 2 all registered 61°F on March 18th. The period of March 29-31 was also favorable with afternoon temperatures generally in the 40°-50°F range.

In Burlington the average temperature was 0.9°F below the 1981-2000 normal, while at St. Johnsbury it was 2.8°F below the normal. Burlington experienced 25 days with afternoon high temperatures of 32°F or greater. Daily maxima for the month were observed on 18 March including 58°F, 59°F and 61°F at Burlington, St. Johnsbury and Springfield respectively. These mild afternoon temperatures and cold nights also favored the development of numerous potholes on many area roadways as they thawed and refroze.



Figure 4: Some of the potholes facing drivers in Chittenden County [Photo credit: Burlington Free Press]

Overall, the snow melted gradually in March with minor flooding episodes. The most widespread, though not extreme flooding occurred on March 6th when mild air and steady rain resulted in rising rivers and some ice jams.