

Agricultural Surface Water Withdrawals

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Vermont is Getting Warmer and Wetter: Climate Change Study

The Green Mountain State has warmed nearly 2°F, with a 21% jump in precipitation

Key findings



Climate change is here – and impacting communities across Vermont.



Vermont is getting warmer. Winters are warming more quickly. Snow season is getting shorter.



Vermont is getting wetter. Heavy rain events happen more often, contributing more flooding and water quality problems.



Multiple, complex impacts could lead to surprises.



Climate impacts and risks will increase without action.



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Current vs. Revised: Avg. Precipitation

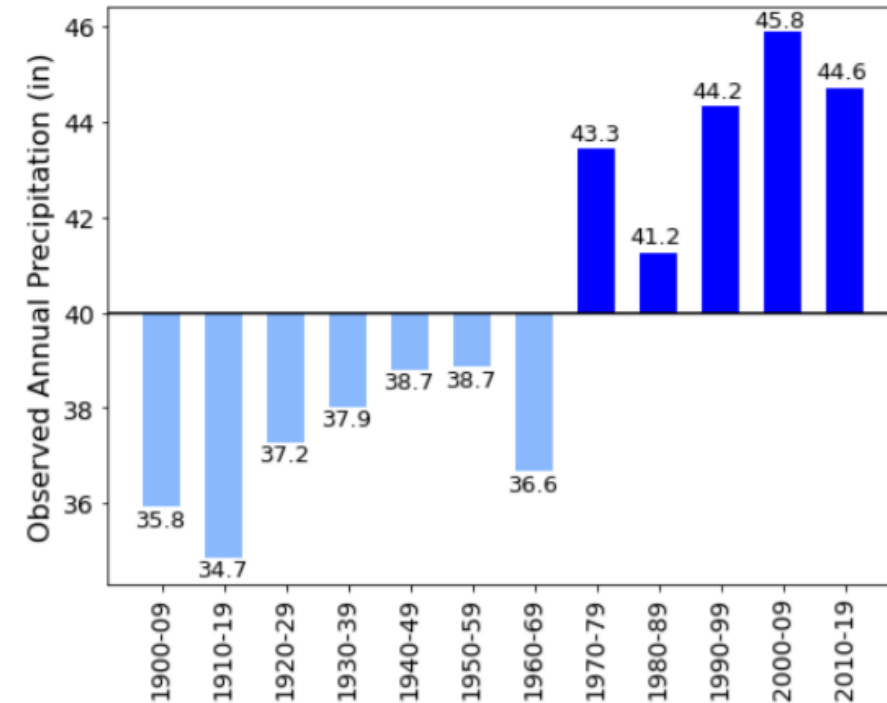
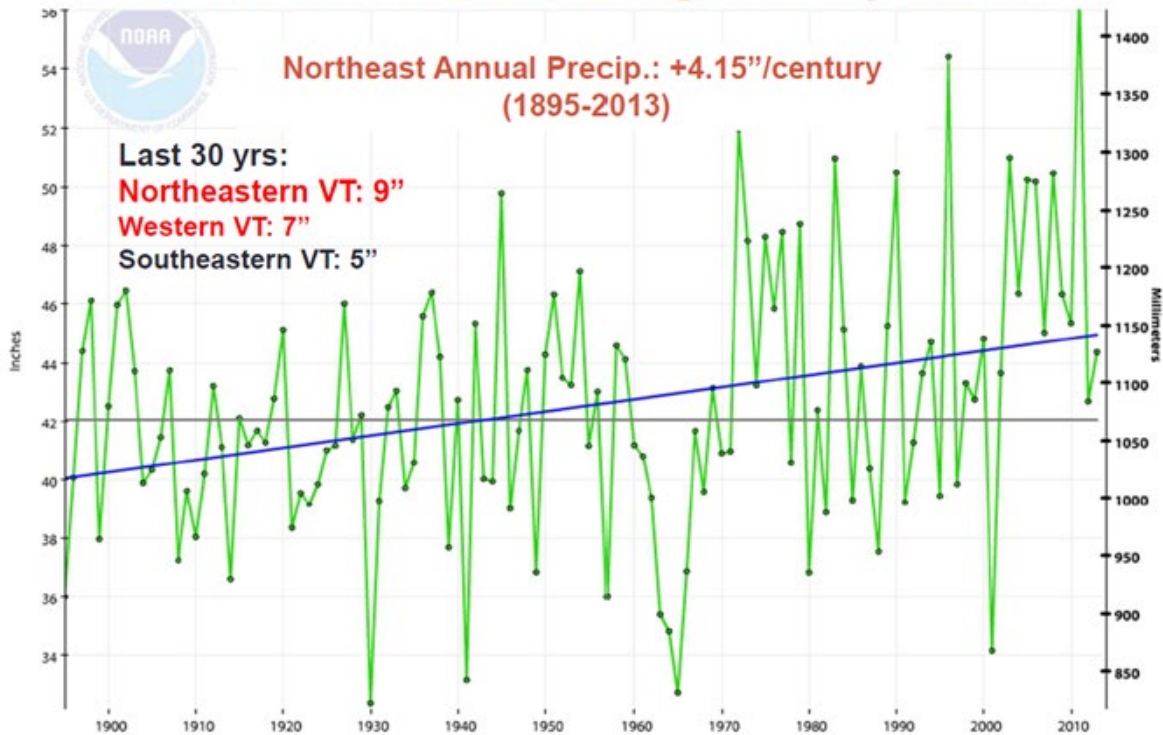
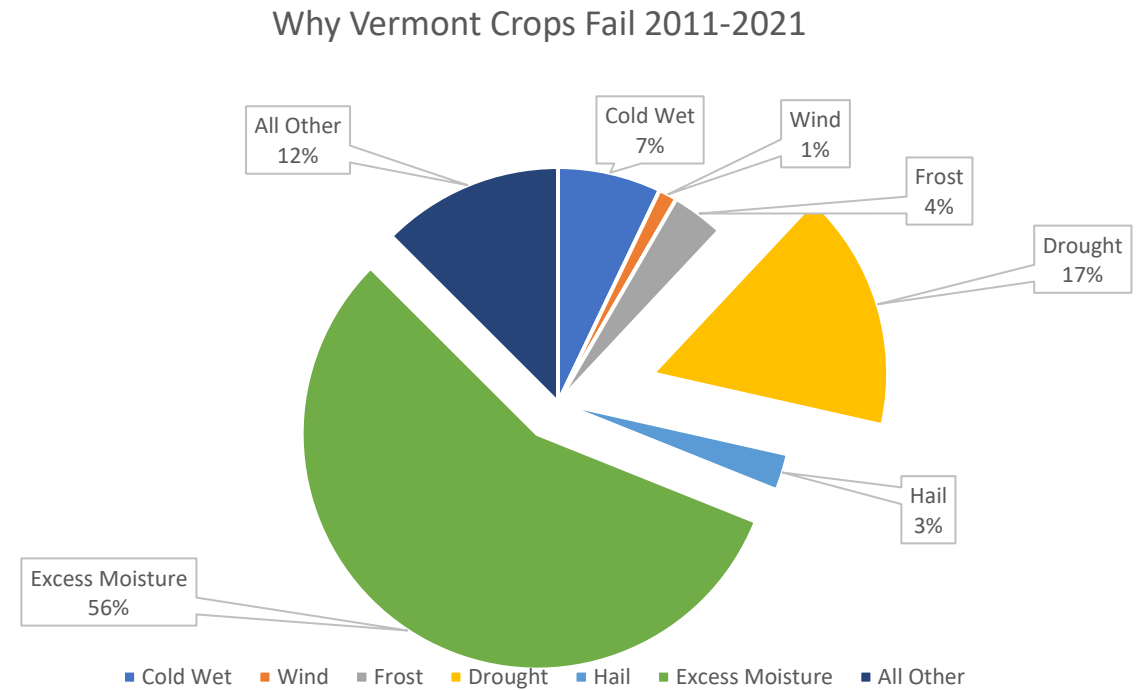
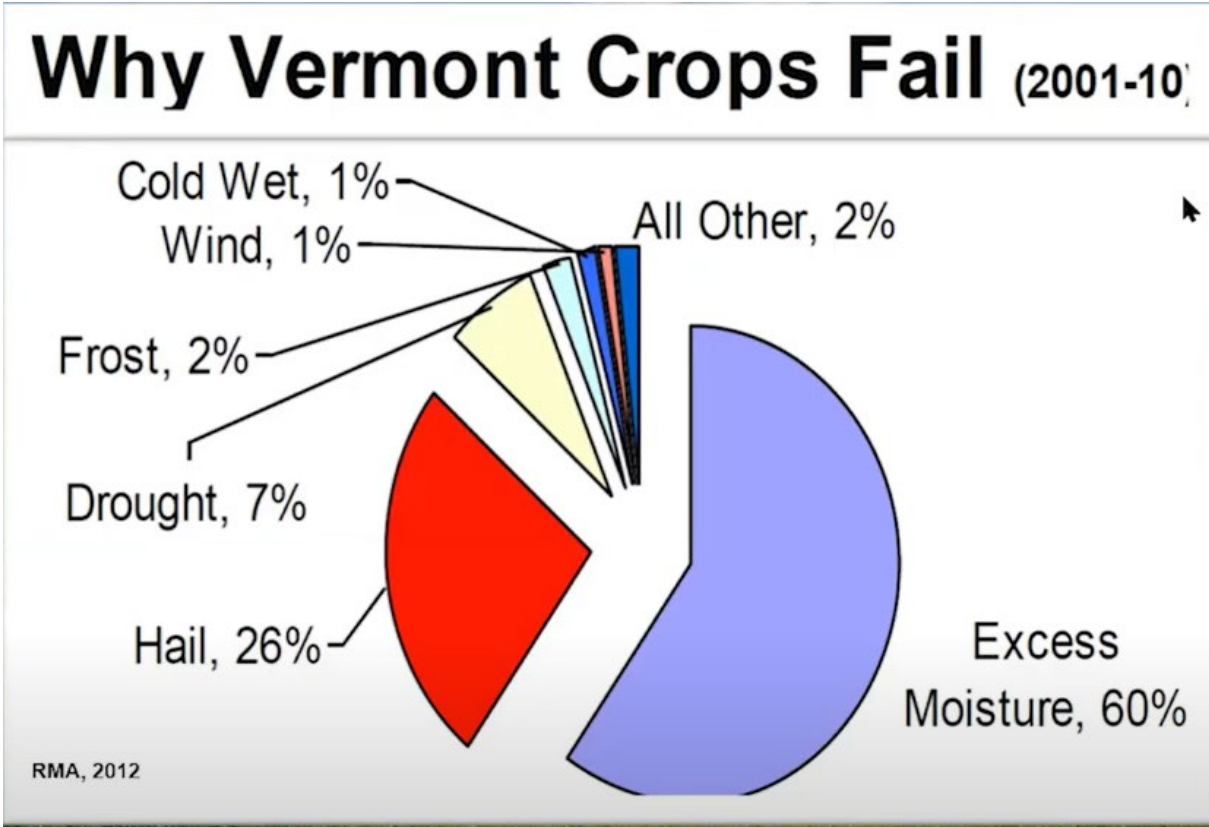


Figure 1-8: Decadal averages of observed annual precipitation in Vermont



Source: Joshua Faulkner: Agriculture, Climate Change & Water Quality Presentation. Gund Institute for Environment at UVM. <https://www.youtube.com/watch?v=9uIzxc57n4w>

Source: USDA RMA, Cause of Loss Historical Data Files. Available at: <https://www.rma.usda.gov/Information-Tools/Summary-of-Business/Cause-of-Loss>

VT's average daily precipitation will deviate from normal (1980-1999) by 2050

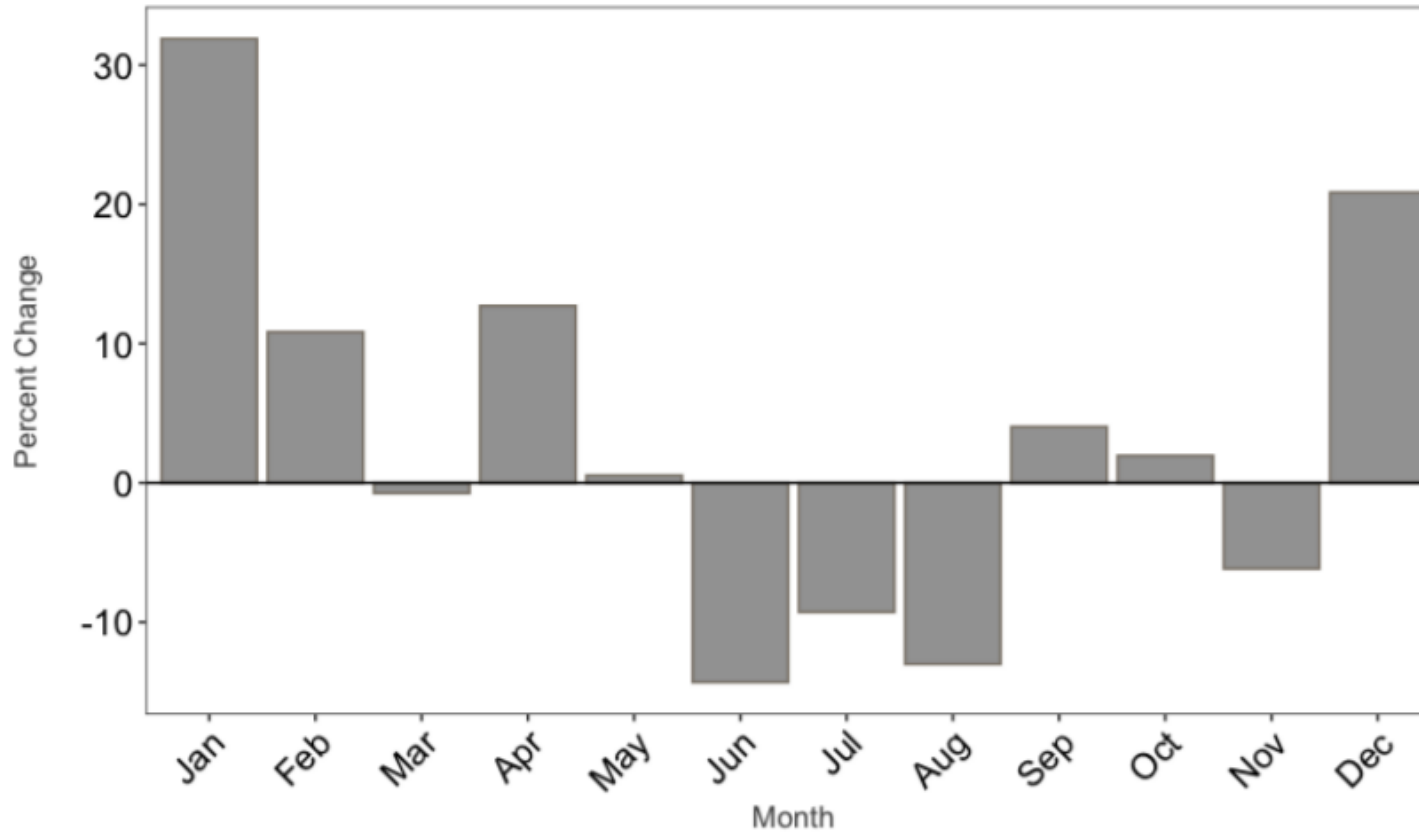
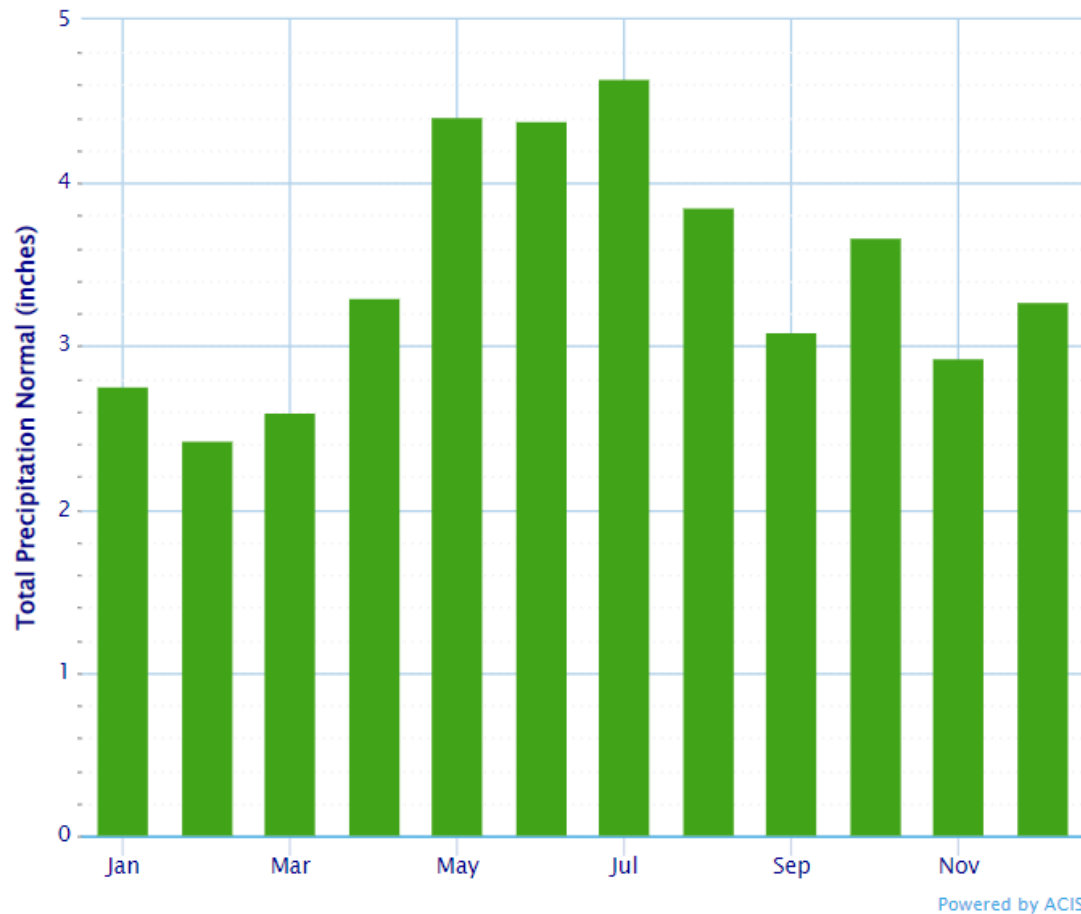


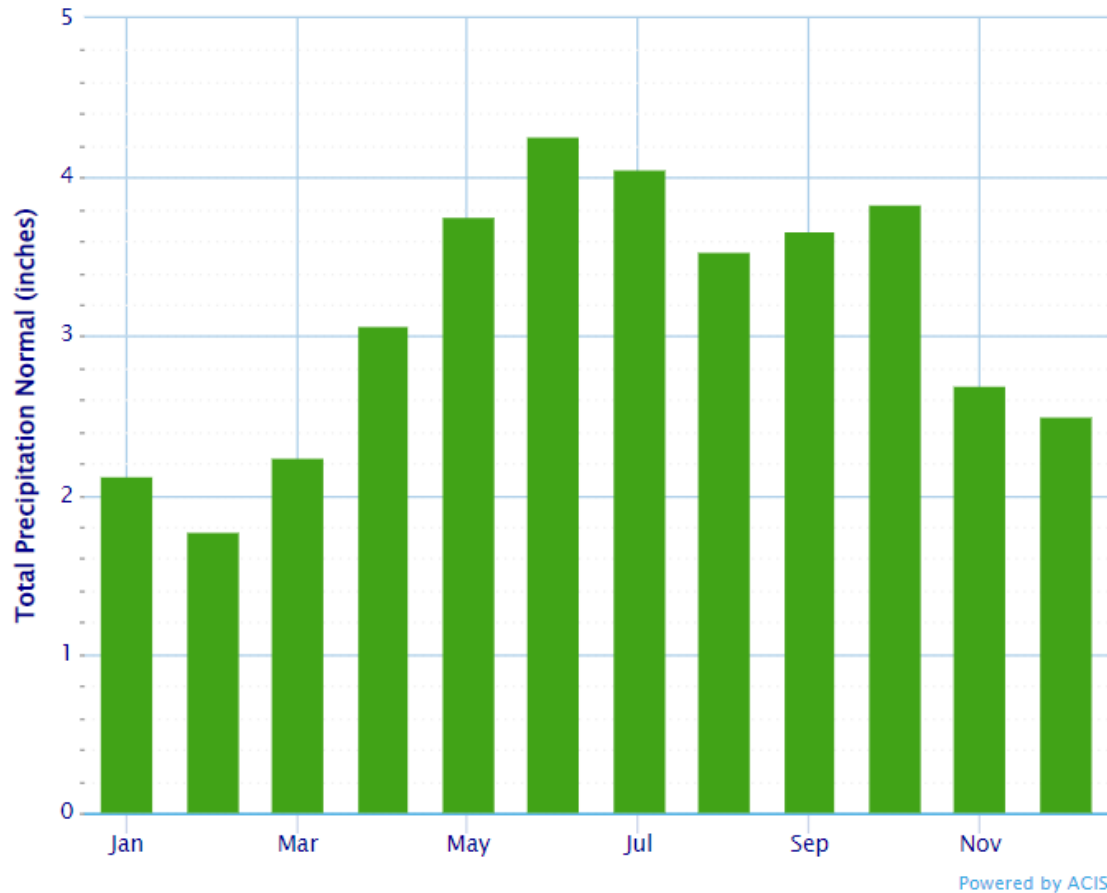
Figure 5-5: Projected daily mean precipitation in 2050 as percent deviation relative to 1980s–1990s shows lower summer growing season precipitation (USGS, 2021a)

Monthly Climate Normals (1991–2020) – MONTPELIER 2, VT



Month	Total Precipitation Normal (inches)
January	2.76
February	2.43
March	2.60
April	3.30
May	4.41
June	4.39
July	4.64
August	3.86
September	3.09
October	3.67
November	2.93
December	3.27
Annual	41.35

Monthly Climate Normals (1991–2020) – BURLINGTON INTERNATIONAL AIRPORT, VT



Month	Total Precipitation Normal (inches)
January	2.13
February	1.77
March	2.24
April	3.07
May	3.76
June	4.26
July	4.06
August	3.54
September	3.67
October	3.83
November	2.70
December	2.50
Annual	37.53

RAPs, Irrigation, Surface Water Withdrawal

- **RAPs Section 3.2(d)-(e):** The agricultural practices on farms meeting the minimum threshold criteria set forth in Section 3.1 that are governed by this rule include:
 - (d) the preparation, tilling, fertilization, planting, protection, irrigation, and harvesting of crops;
 - (e) the ditching and subsurface drainage of farm fields and the construction of farm ponds;
- **Surface Water Withdrawal in RAPs:** “Farm operations utilizing surface waters for irrigation purposes are advised that water withdrawals above a *de minimis* rate are required to obtain a permit / permission from DEC consistent with their *Procedure for Determining Acceptable Minimum Stream Flows*.”
- **Groundwater Withdrawal in RAPs:** Farms are exempt from groundwater registration and reporting requirements per 10 V.S.A. § 1417(b)(4) & 10 V.S.A. § 1418(b)(3)

USDA Ag Census and Survey of farming and irrigation

2017 USDA NASS Census of Agriculture:

- The 2017 Census of Agriculture is the 29th Federal census of agriculture and the fifth conducted by the U.S. Department of Agriculture (USDA), National Agricultural Statistics Service (NASS).
- https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_1_State_Level/Vermont/

2018 USDA Irrigation and Water Management Survey:

- Is the ninth survey devoted entirely to collecting on farm irrigation data for the U.S.
- https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/Farm_and_Ranch_Irrigation_Survey/intro.pdf

2017 USDA NASS Ag Census - Vermont

- **627 Farms in Vermont (9% of farms) report withdrawing either surface or groundwater for irrigation purposes.**
- **36% of farms that are withdrawing water for irrigation are withdrawing from surface water for irrigation – the rest are withdrawing from groundwater, which is not the subject of this study committee.**
- **3,017 acres of land in 2017 were irrigated (0.57% of all cropland and pasture acres in Vermont).**
- **93% of farms withdrawing from surface or groundwater are managing between 1 to 9 acres of irrigated cropland.**

2018 USDA IWMS Survey - Vermont

- **244 Vermont farms reported withdrawing surface water for irrigation purposes on 785 acres of cropland in 2018. (0.15% of all crop and pastureland)**
- **The 244 farms withdrawing surface water reported withdrawing an estimated 355,036,699 gallons across the entire state of Vermont.**
- **This amount of surface water withdrawal across all agriculture in Vermont– 355 million gallons – is equivalent to the lower range of the annual surface water withdrawal by Okemo Resorts in Ludlow, Vermont.**

Source: 2018 Irrigation and Water Management Survey – USDA NASS, Table 4: Estimated Quantity of Water Applied By Source: 2018 and 2013, Available at: https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/Farm_and_Ranch_Irrigation_Survey/fris_1_0004_0004.pdf

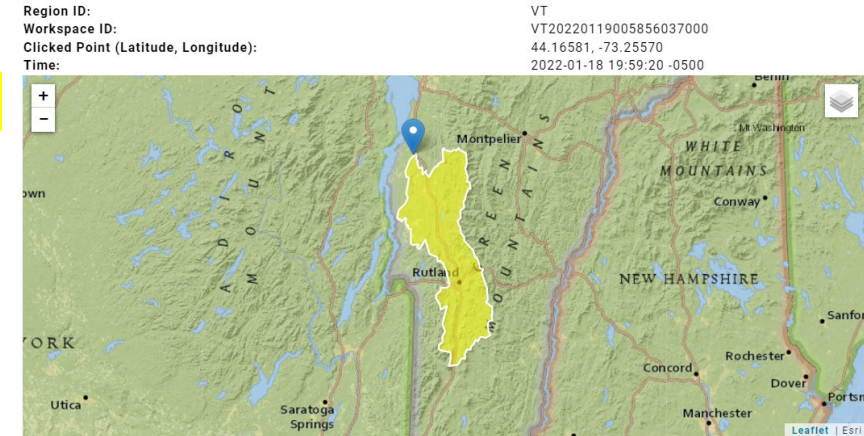
Source: Uncertainty and Unpredictability, Vermont Law School, 2021, https://issuu.com/vermontlawschool/docs/eac_surface_waters?fr=sZDRkNDMxNTAxOTk

De minimis surface water withdrawals

De Minimis Withdrawals:

- It is recognized that certain withdrawals are so small in relation to the stream flow even during periods of drought, that the resultant impact on the natural stream values is negligible. In such cases, it is the Agency's policy to permit such withdrawals of water regardless of the natural instantaneous stream flow. For the purposes of this procedure, a withdrawal rate equal to or less than .005 cubic feet per second times the drainage area in square miles at the proposed withdrawal site, or 5% of the 7Q10 stream flow is considered a *de minimis* impact on the stream flow.
 - Seven-day low flow, ten-year return period (7Q10) means a drought flow equal to the lowest mean flow for seven consecutive days, adjusted to nullify any effects of artificial flow regulation, that has a 10% chance of occurring in any given year.

StreamStats Report



Basin Characteristics			
Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	874	square miles

Otter Creek at point above:
2,824,405 gallons/day *de minimis*
withdrawal or 104 acre inches.

H.466 As Passed by House: AAFM Comments

A. 10 V.S.A. § 1002(20)(D)

A. Clarify the current proposed ag exclusion definition to ensure clear exclusion of ‘constructed farm ponds used for irrigation or watering of livestock’.

B. 10 V.S.A. § 1042 Registration & Reporting; Exceptions

A. Metering data as a negative economic impact for *de minimis* ag use.

C. 10 V.S.A. § 1043 Permit Requirement; Program Development

A. Continue current policy where *de minimis* withdrawals of surface water are allowed uses – do not require *de minimis* withdrawals to be permitted.