

Hurricane Season Outlook Information

(as requested by VELCO)

VELCO Operating Committee Meeting
June 18, 2020

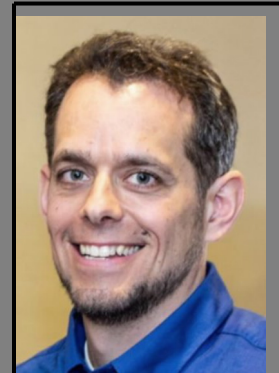
Jason.Shafer@northviewweather.com



Connor Pasquale



Ryan Paulino

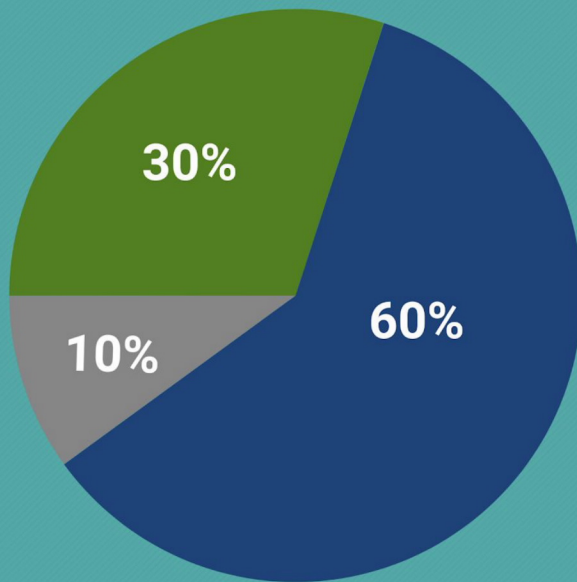


Jason Shafer





2020 Atlantic Hurricane Season Outlook



■ Above-normal ■ Near-normal ■ Below-normal season

Season probability

Named storms
13-19

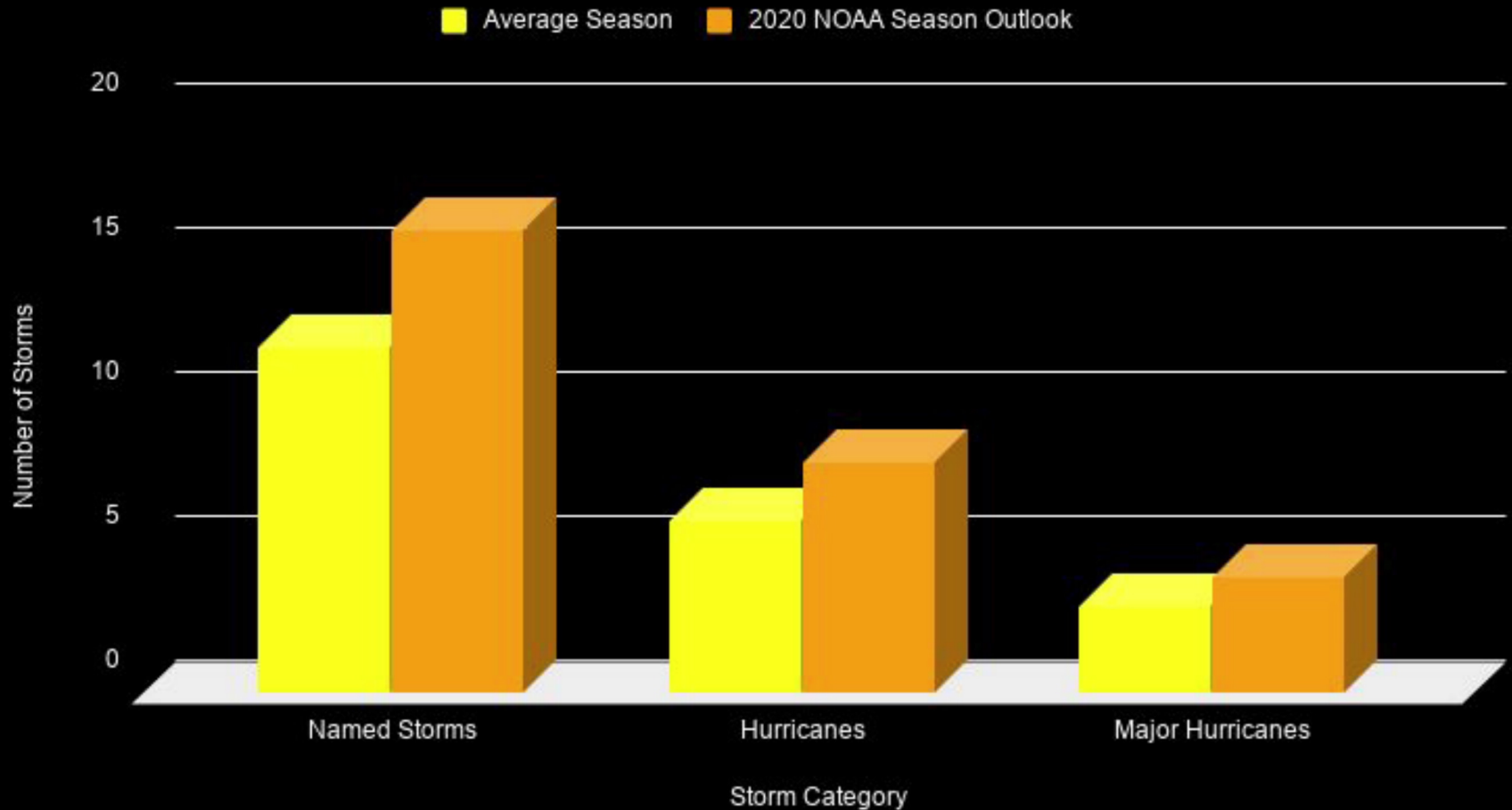
Hurricanes
6-10

Major hurricanes
3-6

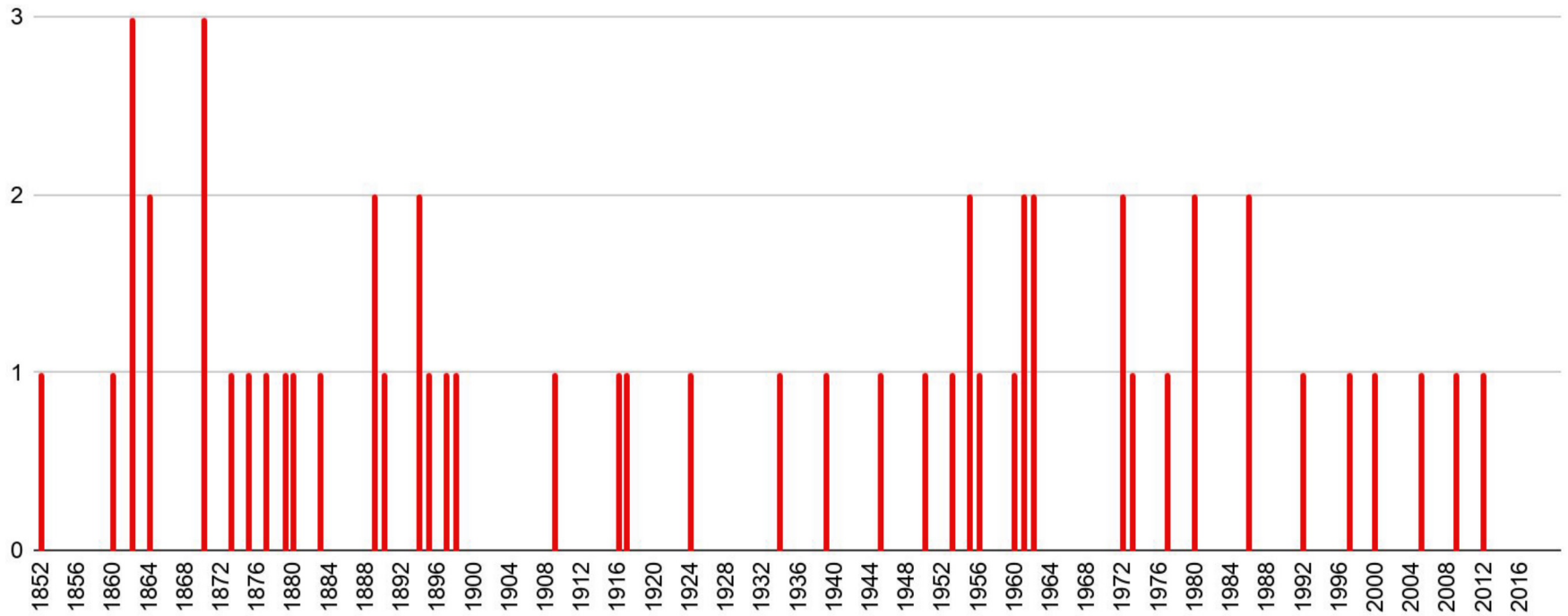
Be prepared: Visit hurricanes.gov and follow @NWS and @NHC_Atlantic on Twitter.

May 2020

Average Hurricane Season and 2020 NOAA Season Outlook

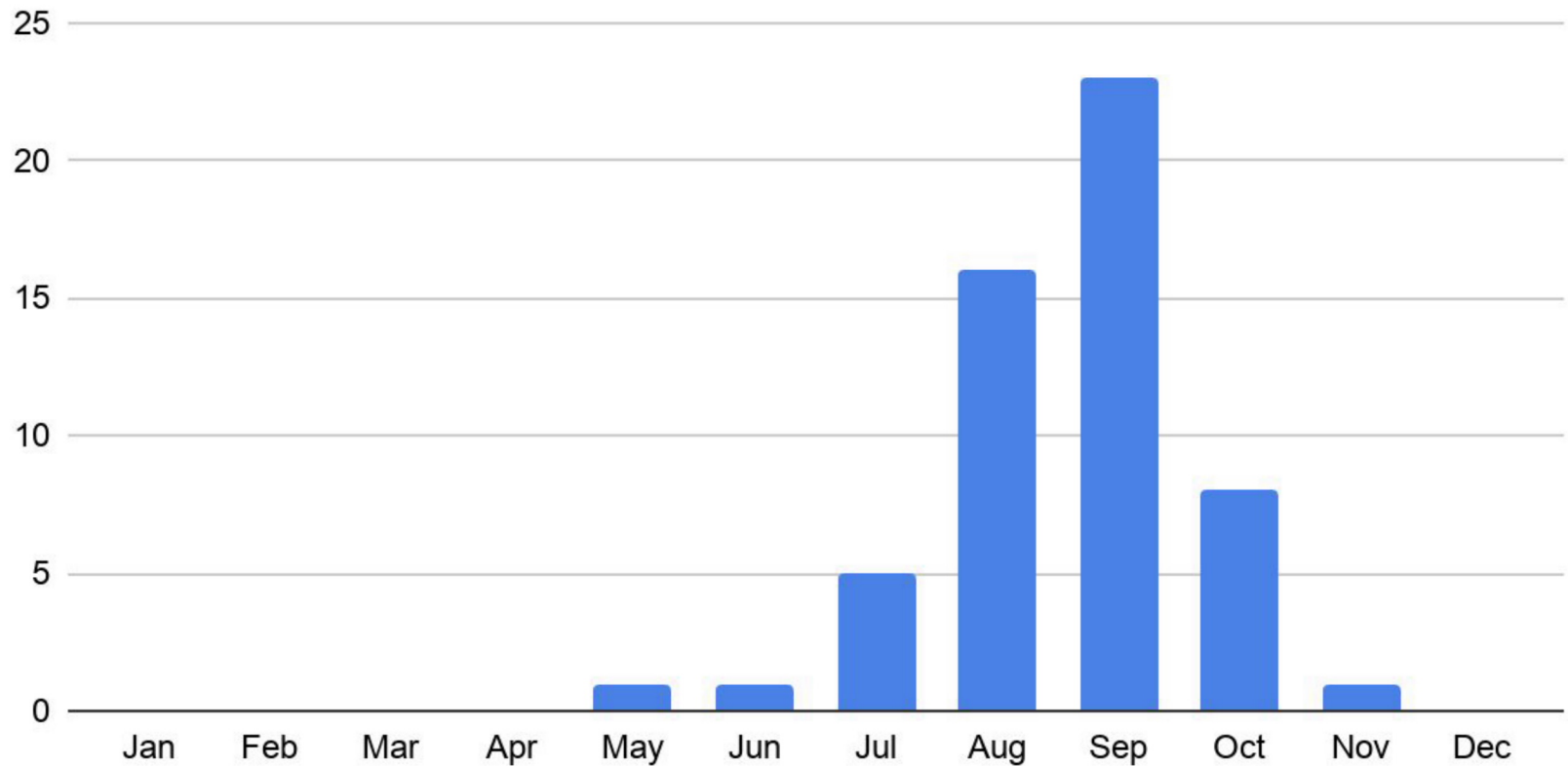


Historic Tropical Storms or Hurricanes tracking within 150 miles of Vermont



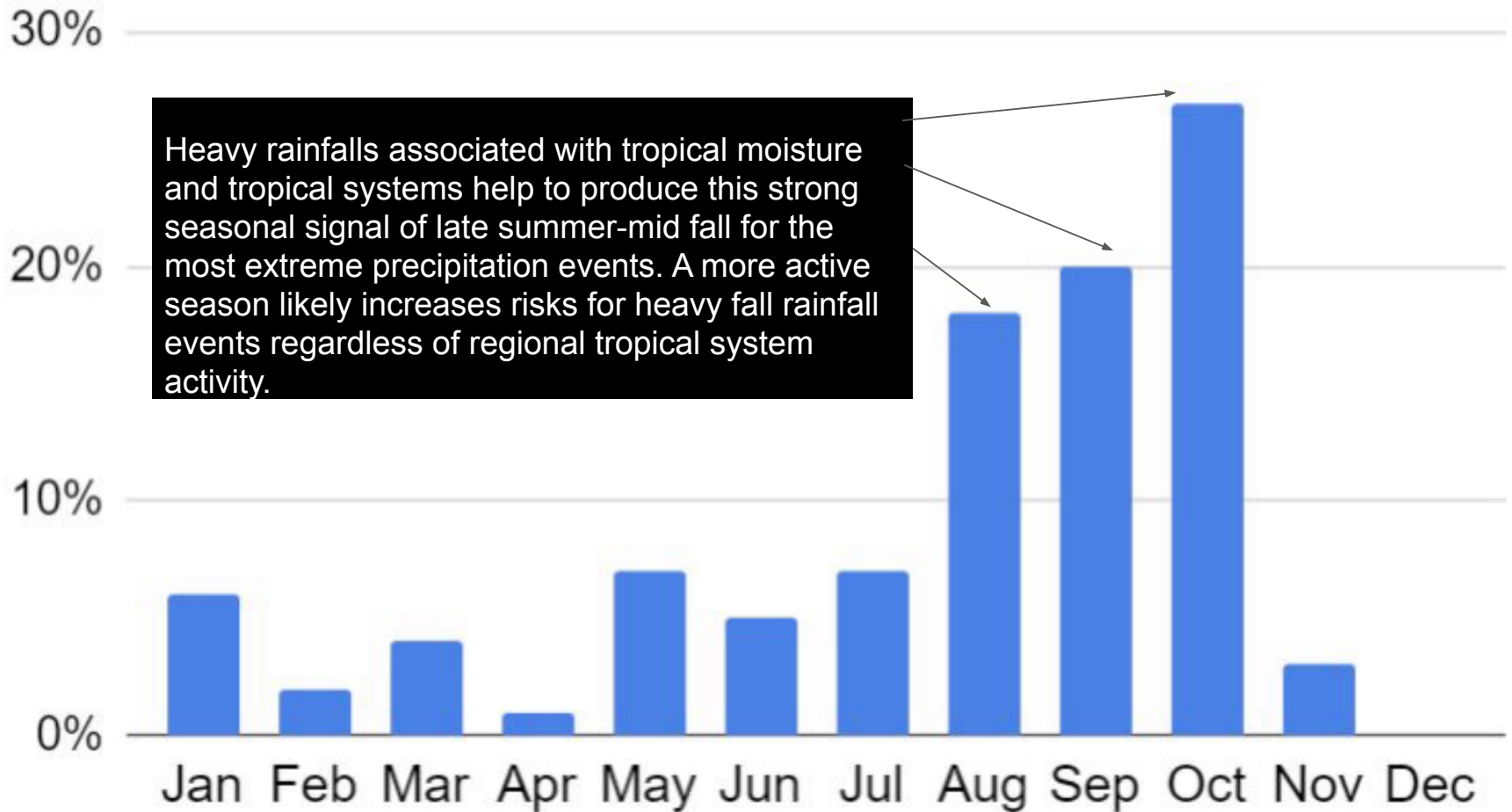
Data source: <https://oceanservice.noaa.gov/news/historical-hurricanes/>

Tropical Storms or Hurricanes within 150 miles of Vermont



Data: <https://oceanservice.noaa.gov/news/historical-hurricanes/>

Vermont Seasonal Frequency of Extreme Precipitation Events

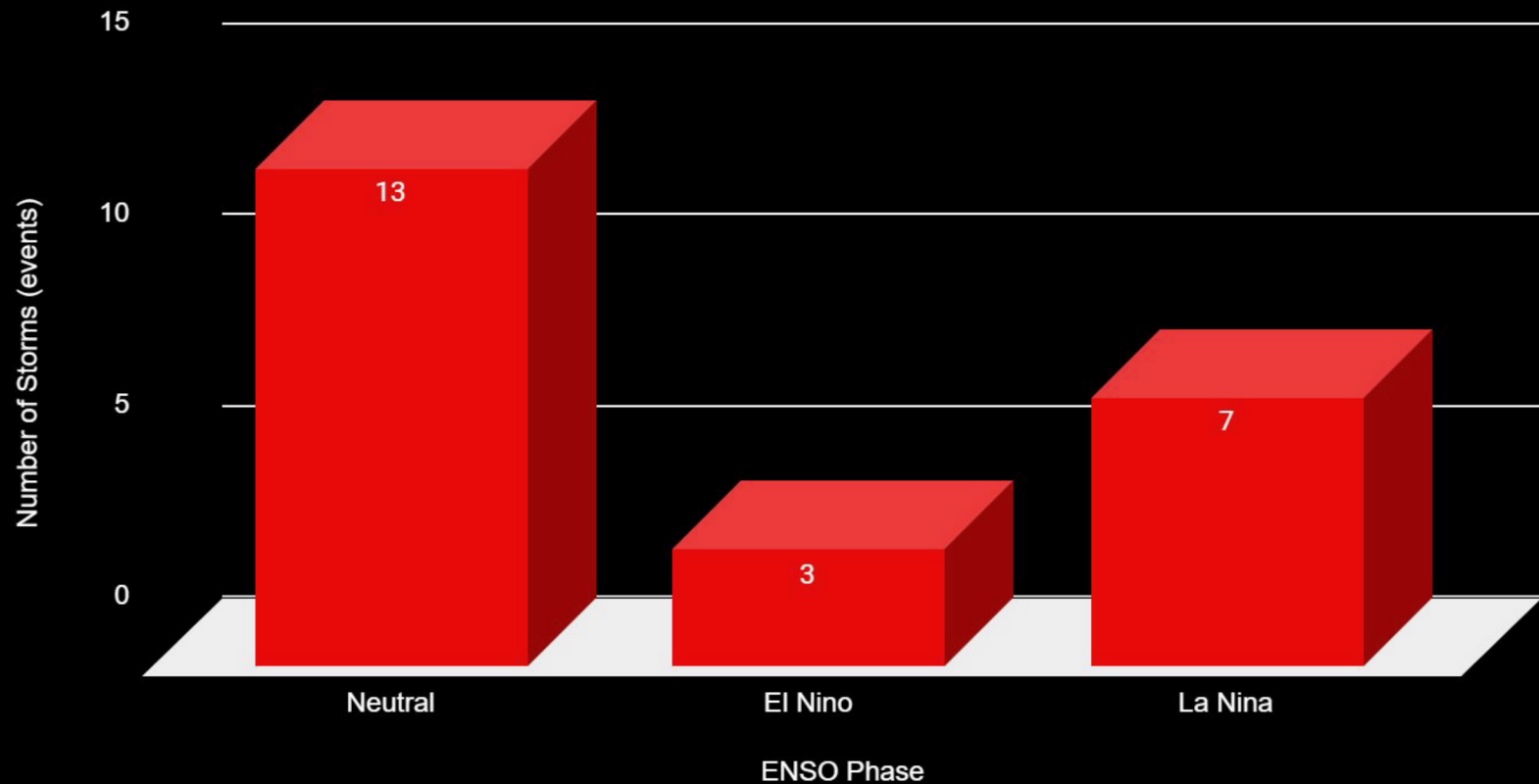


2020 Hurricane Season Risk Factors

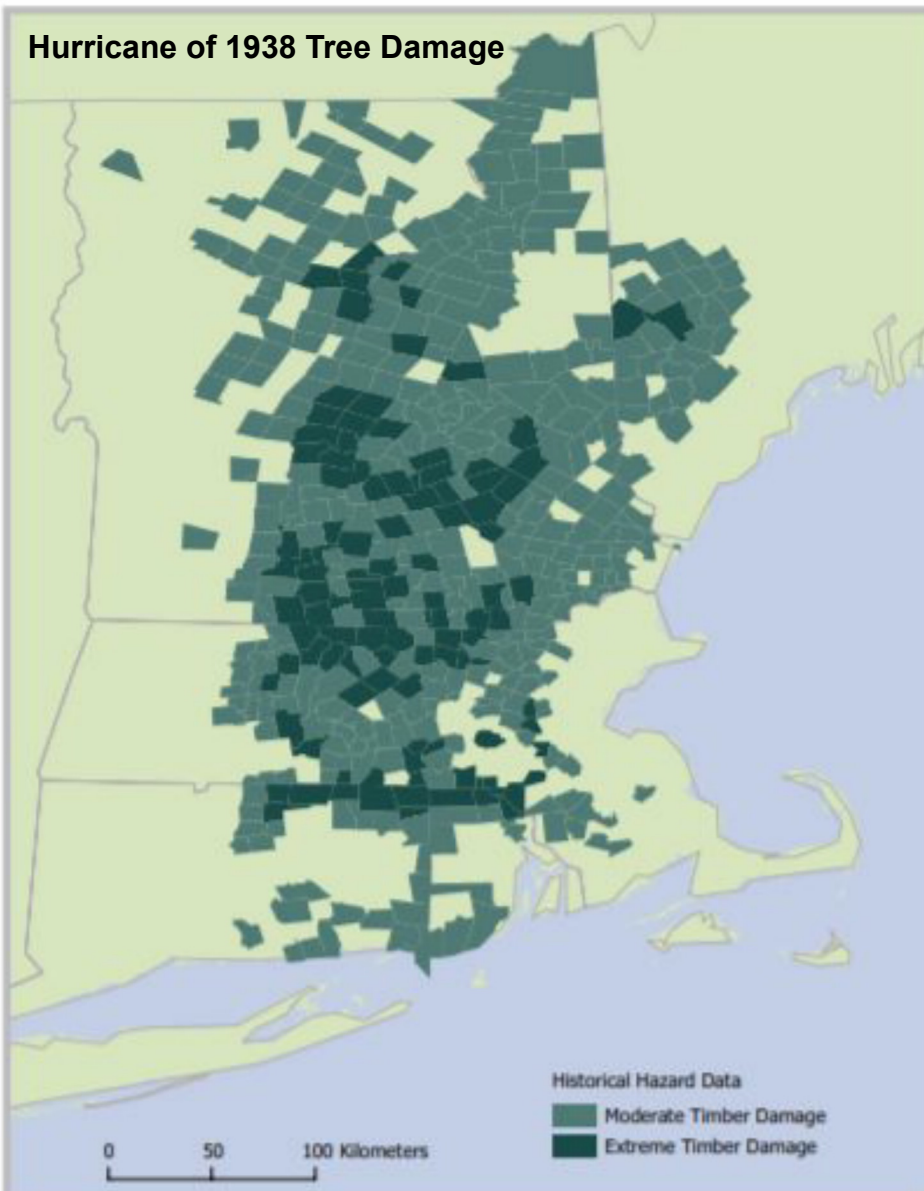
- **NOAA** Hurricane season forecast – **60% above-normal**, 30% near-normal, 10% below-normal.
- Lack of El Nino will provide less wind shear which will help to promote tropical activity.
- SST's are warmer than normal, providing more fuel and available energy for these storms. |
- ACE (Accumulated Cyclone Energy) values are high. This is a measure of the potential ocean energy available to any developing tropical systems.

Tropical Storms or Hurricanes by ENSO Phase

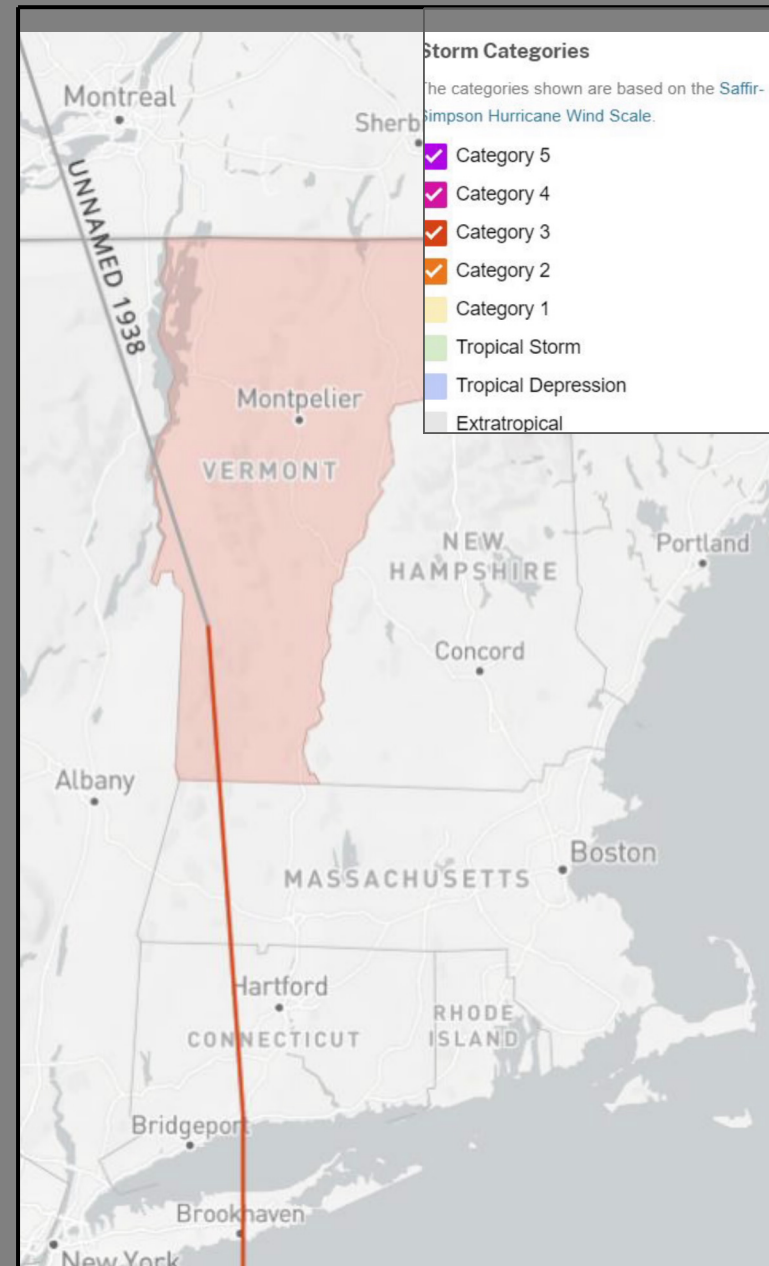
(1948-2019 within 150 miles of VT)



Hurricane of 1938 Tree Damage



Moderate and extreme severities of tree damage in each township as a result of the 1938 Great New England Hurricane, derived from the Northeastern Timber Salvage Administration survey (NETSA, 1943)



Hurricane of 1938 Track

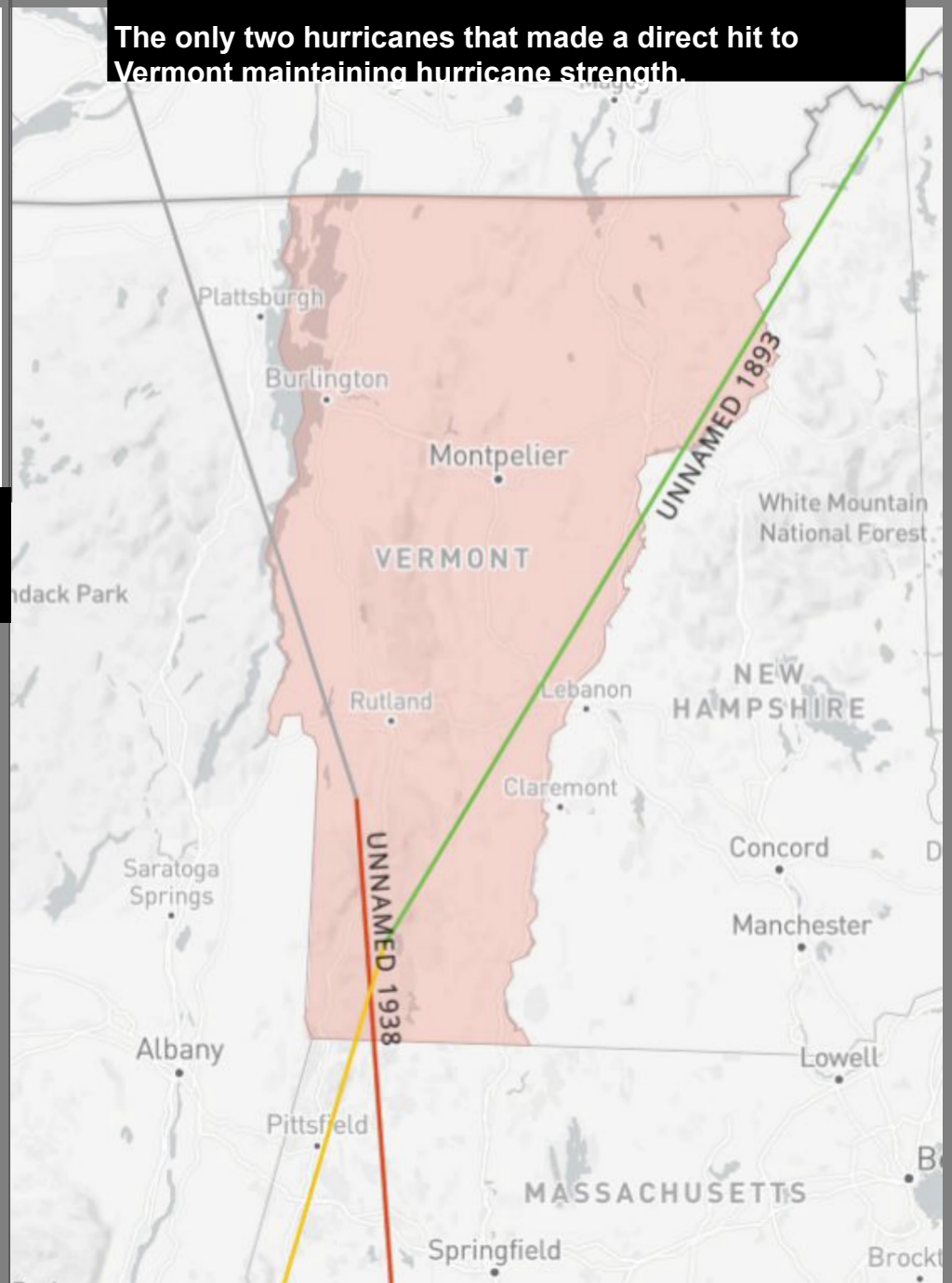
Storm Categories

The categories shown are based on the [Saffir-Simpson Hurricane Wind Scale](#).

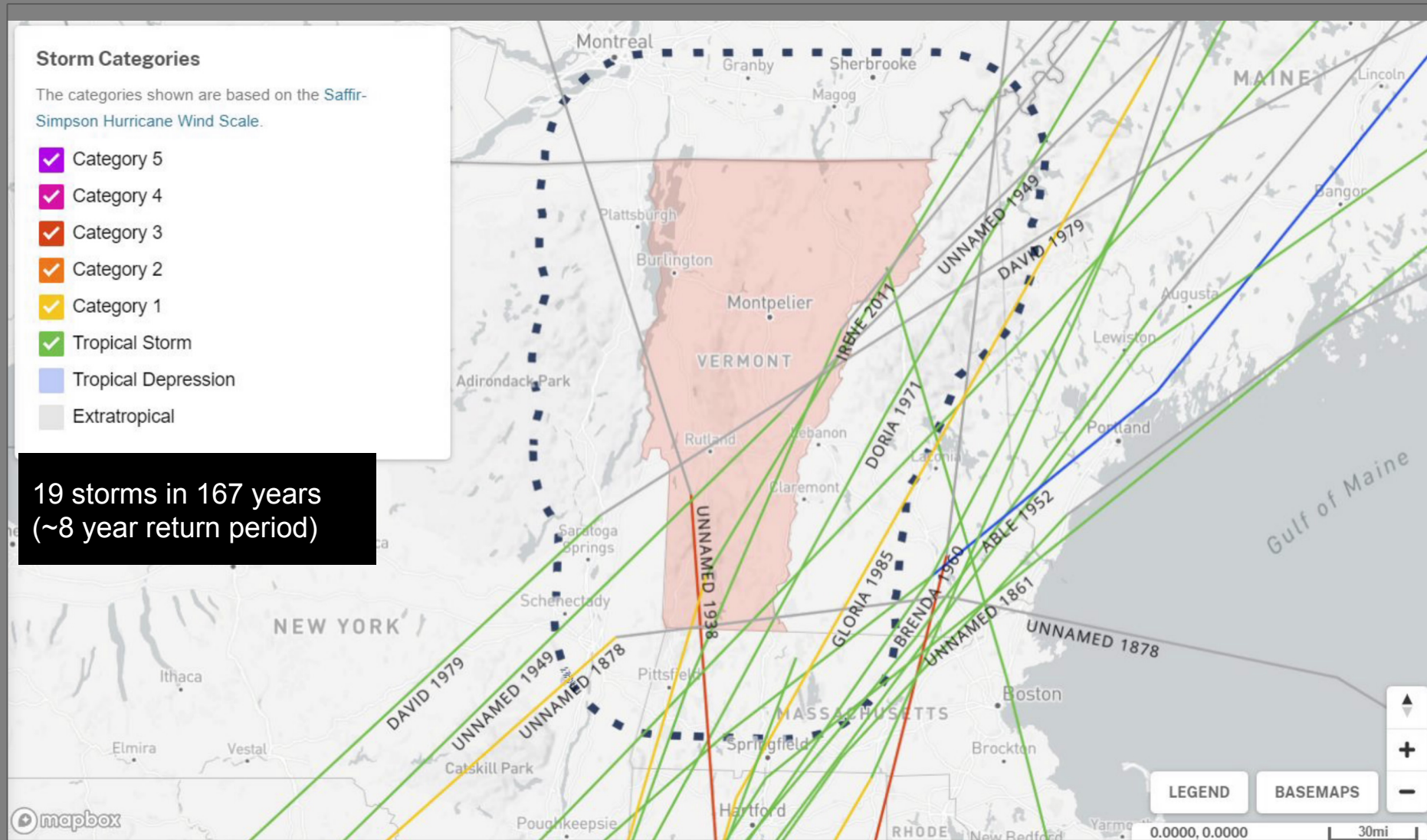
- ✓ Category 5
- ✓ Category 4
- ✓ Category 3
- ✓ Category 2
- ✓ Category 1
- ✓ Tropical Storm
- ✓ Tropical Depression
- ✓ Extratropical

2 storms in 167 years
(~75 year return period)

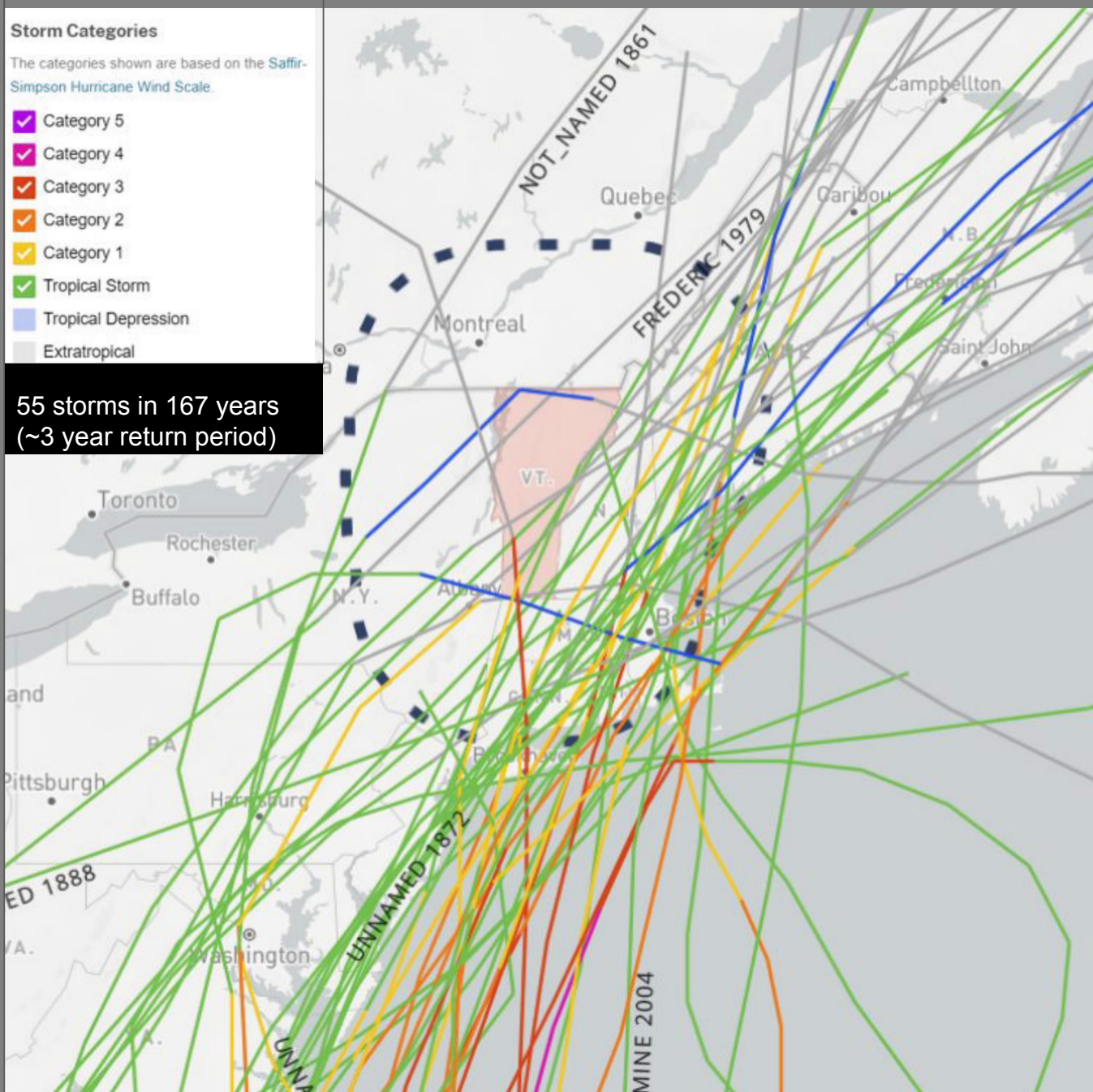
The only two hurricanes that made a direct hit to Vermont maintaining hurricane strength.



Tropical Storms or Hurricanes tracking with 50 miles of Vermont (19 storms)



Tropical Storms or Hurricanes tracking with 150 miles of Vermont (55 storms).




Summary


- NOAA's forecast for above average tropical activity appears reasonable and prudent.
- Tropical systems are low frequency events, it's difficult to meaningfully predict tropical activity over a region this far in advance.
- In general, deep inland penetration of strong wind fields is relatively rare, heavy precipitation is a more common hazard from tropical systems.
- Heavy fall precipitation events are likely a greater likelihood as tropical moisture interacts with mid latitude storm systems without direct or immediate hits from tropical systems.
- Risks from tropical systems is likely ~2x higher than the long-term average for storms to track near Vermont this season.

	Long-Term Yearly Risk Probability of Occurrence	This Season's Forecast Probability of Occurrence
Direct hit by hurricane	1%	~2%
Tropical Storm or Hurricane within 50 miles of VT	11%	~20%
Tropical Storm or Hurricane within 150 miles of VT	33%	~60%


MATCHING STORMS 3 SORTED BY Year (Newest)



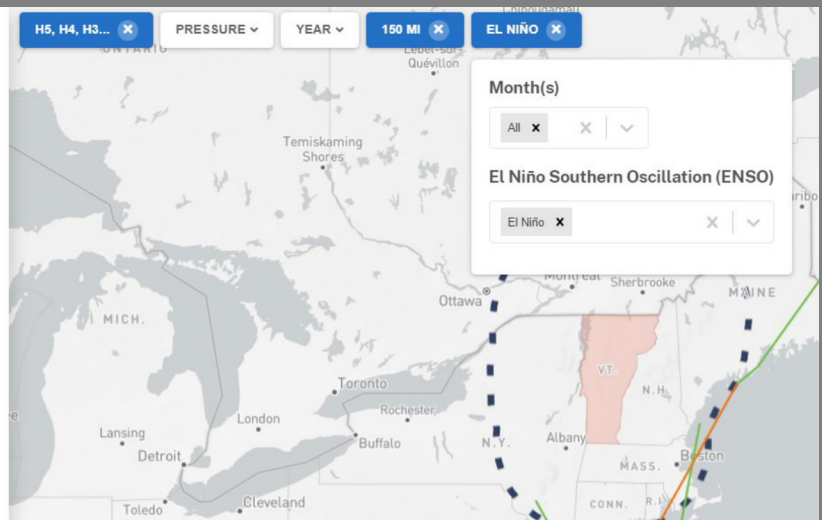
TROPICAL STORM
HERMINE 2004
Aug 27, 2004 to Aug 31, 2004




HURRICANE
BOB 1991
Aug 16, 1991 to Aug 29, 1991




HURRICANE
AGNES 1972
Jun 14, 1972 to Jun 23, 1972




MATCHING STORMS 7 SORTED BY Year (Newest)




HURRICANE
IRENE 2011
Aug 21, 2011 to Aug 30, 2011



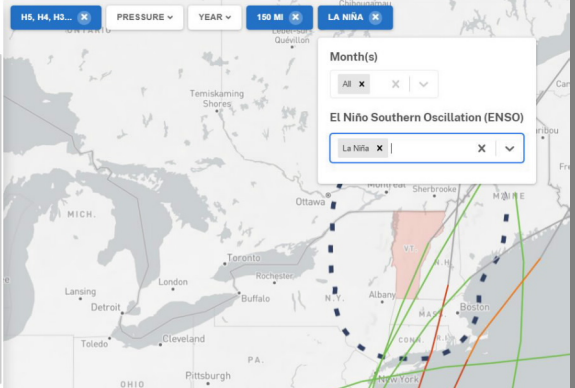
HURRICANE
FLOYD 1999
Sep 07, 1999 to Sep 19, 1999




TROPICAL STORM
HEIDI 1971
Sep 11, 1971 to Sep 15, 1971




TROPICAL STORM
DORIA 1971
Aug 20, 1971 to Aug 29, 1971




MATCHING STORMS 13 SORTED BY Year (Newest)




HURRICANE
HANNA 2008
Aug 28, 2008 to Sep 08, 2008



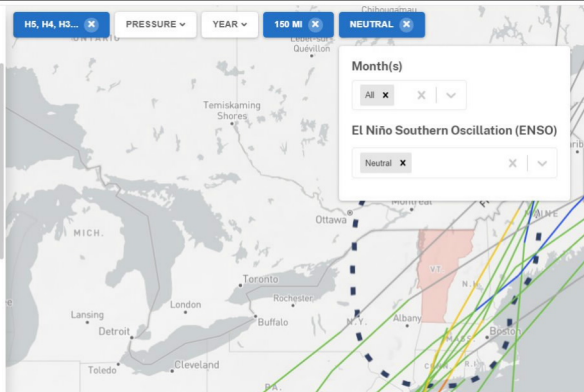
HURRICANE
BERTHA 1996
Jul 05, 1996 to Jul 17, 1996



TROPICAL STORM
HENRI 1985
Sep 21, 1985 to Sep 25, 1985



HURRICANE
GLORIA 1985
Sep 16, 1985 to Oct 02, 1985



Neutral	El Nino	La Nina
Hurricane Able (1952)	Hurricane Agnes (1972)	Hurricane Carol (1954)
Hurricane Cindy (1959)	Hurricane Bob (1991)	Hurricane Edna (1954)
Tropical Storm Brenda (1960)	Tropical Storm Hermine (2004)	Hurricane Diane (1955)
Hurricane Donna (1960)		Tropical Storm Doria (1971)
Hurricane Esther (1961)		Tropical Storm Heidi (1971)
Tropical Storm (1961)		Hurricane Floyd (1999)
Hurricane Belle (1976)		Hurricane Irene (2011)
Hurricane David (1979)		
Hurricane Frederic (1979)		
Hurricane Gloria (1985)		
Tropical Storm Henri (1985)		
Hurricane Bertha (1996)		
Hurricane Hanna (2008)		