

Petition for Upper Hudson American Viticultural Area



Written by Kathleen and Andrew Weber – Northern Cross Vineyard

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American Viticultural Area Petition for “Upper Hudson”

Submitted by Kathleen and Andrew Weber, Northern Cross Vineyard – Washington County New York

Pursuant to the provisions of 27 CFR Sections 9.3 and 4.25a (e) (2) and 70.701(c) Northern Cross Vineyard, on behalf of the other wineries and grape growers of the Upper Hudson, respectfully petitions the Alcohol and Tobacco Tax and Trade Bureau (TTB) to establish an American Viticultural Area (AVA) by the name of “Upper Hudson.”

EXECUTIVE SUMMARY

The business of grape growing and wine production is constantly changing with new grape varieties being developed and introduced. These newer varieties are being cultivated in regions previously unsuitable for grape growing. Over the past decade several varieties of cold hardy grapes have been developed that show considerable promise for regions with severe winters and short growing seasons. These grapes are producing quality wines that offer a distinct product to the consumer but have distinct challenges for the wine maker. This petition will describe the Upper Hudson region, its climate and distinctions that will support the existence of the proposed Upper Hudson AVA.

Introduction

The proposed Upper Hudson AVA lies in upstate New York. The bulk of the area is north and west of Albany, NY. This area includes portions of the New York State counties of Albany, Montgomery, Rensselaer, Saratoga, Schoharie and Washington and all of Schenectady County. The proposed Upper Hudson AVA contains a land mass of approximately 1500 square miles.

The Upper Hudson Region is now supporting several vineyards and wineries with grapes such as but not limited to, Marquette, Frontenac, La Crescent, La Crosse and Melody. These cold hardy grapes have been developed by Cornell University and viticultural pioneer Elmer Swenson at University of Minnesota to survive the winter cold. These cold hardy varieties, shorter growing season, regional soils, and topography make for distinct wines. Cornell University and Cornell Cooperative Extension have both launched cold climate grape initiatives to further the establishment of and to improve grape growing and wine making in the region.

A total of fourteen vineyards exist within the proposed AVA as shown in Appendix F with four more under development. These vineyards have approximately 65 acres of grapes under cultivation with another 14 acres planned for future plantings.

Name Distinction

The Upper Hudson Region is a geographic area whose territory has both a technical definition and a cultural definition. The official source of the Hudson is Lake Tear of the Clouds in the Adirondack Mountains. However, the waterway from the Lake Tear of the Clouds is known as Feldspar Brook and the Opalescent River, which feed into the Hudson at Tahawus, NY. The actual Hudson River begins several miles north of Tahawus at Henderson Lake. The Hudson River is joined at Waterford (north of Albany) by the Mohawk River, its major tributary, just south of which the Federal Dam separates the Upper Hudson from the Lower Hudson River Valley or simply the Hudson River Valley¹.

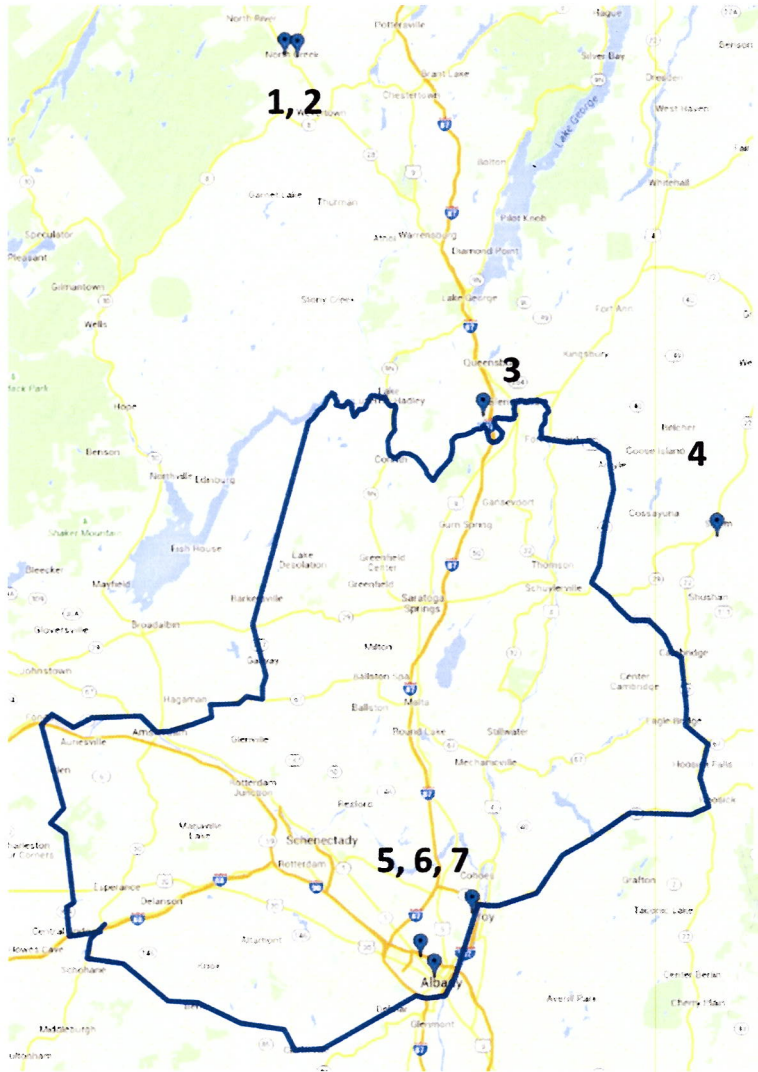
The technical start of the Upper Hudson is the Federal Dam located in Cohoes, NY. South of the Federal Dam the Hudson River is classified as an estuary. This area experiences tidal effects and the river was named *Mahicantuck* by the Indians and means a river that flows both ways². North of the Federal Dam is technically considered the Upper Hudson since this a non-tidal region. Also north of the federal dam is the where the Mohawk River and Hudson River converge.

The cultural/societal start of the Hudson River Valley is south of Albany, NY. Here is where the Hudson River is flanked by the Catskill escarpment to the west and the Taconic Mountains to the east at Coxsackie, NY. From Coxsackie south is the Hudson River Valley, a wide waterway bounded by steep hills, picturesque vistas and milder winters.

A Google Search of the phrase "Upper Hudson" yields about 6.4M results, several of which are shown on the following map.

¹ http://en.wikipedia.org/wiki/Hudson_River

² <http://www.dec.ny.gov/lands/4923.html>



- 1 - Upper Hudson Railroad
- 2 - Upper Hudson Bluegrass Festival

- 3 - Upper Hudson Primary Care
- 4 - Upper Hudson Maple Producers

- 5 - Upper Hudson Planned Parenthood
- 6 - Upper Hudson Library System
- 7 - Upper Hudson Peace Action

Not listed includes

- Friends of the Upper Hudson Rail Trail
- Upper Hudson Phi Beta Kappa
- Upper Hudson Musical Arts
- Upper Hudson Research Center
- Upper Hudson Satellite Center
- Upper Hudson dredging (newspaper articles)
- Upper Hudson National Insurance Company
- Upper Hudson Musical Arts
- Upper Hudson entry in Frommer's Guide
- Upper Hudson Partnership
- Upper Hudson Dermatology

Upper Hudson Hoodie by Abercrombie & Fitch (\$44.95 on eBay)
USGS Links for Upper Hudson (<http://water.usgs.gov/lookup/getwatershed?02020001>)
Upper Hudson Heroes Organization
Upper Hudson Dental Hygienist Association
Kayaking in the Upper Hudson
EFA: Upper Hudson Chapter
Upper Hudson Green Party
Upper Hudson Woodlands – The Conservation Alliance
Upper Hudson Farm Direct

To the South of the proposed Upper Hudson AVA lies the Hudson River Valley AVA. The name Upper Hudson AVA is requested to differentiate this AVA from the Hudson River Valley AVA while still having a local meaning. A list of the regional AVA's is included in Appendix B

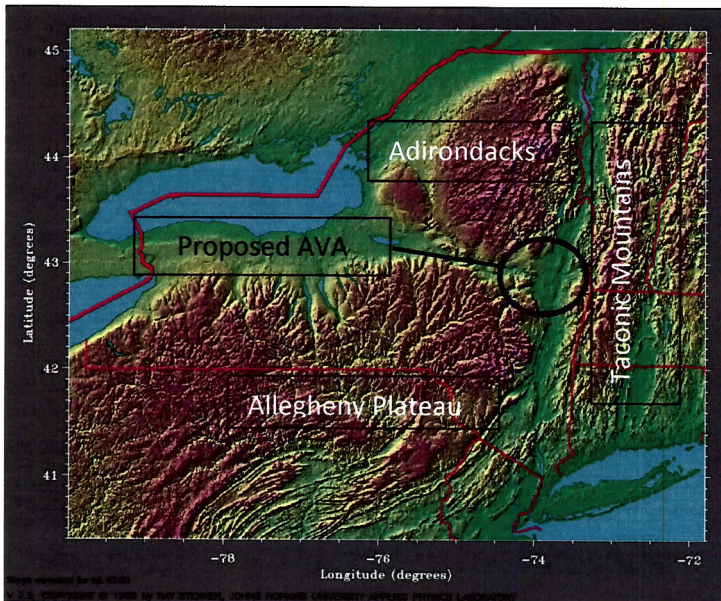
Upper Hudson AVA boundary description

A description of the outline of the area is as follows:

Starting in Glens Falls at the intersection of Route 9 and 32, east on 32 to 254 then east to Route 4 South to 197 then east to Route 40 south in Argyle to Route 29 in Middle Falls then east to Route 372 in Greenwich then east to Route 22 in Cambridge then south to Route 7 in Hoosick then west to Route 32 then south on 32 to Route 20 then west to Route 443 then west to Route 30 then north to Route 30A then north to Route 5 then east on Route 5 to Route 67 then east to the intersection of 147 and 67 then A line north northeast to where Daly Creek empties in to Sacandaga Lake then east Along the southern shore of Sacandaga Lake to the Hudson River then east along the southern bank of the Hudson River to Route 9 Bridge, then north on Route 9 returning to the intersection of Route 9 and 32 in Glens Falls

Upper Hudson

The Upper Hudson region is an area rich in geologic/tectonic activity. Over the course of history the Adirondack Mountains, Allegheny Plateau/Appalachian Plateau, Taconic Mountains and the Mohawk and Hudson Rivers all have



been produced by this activity. These features are the results of different tectonic movements and these features have created the topography that make up the Upper Hudson region and lends itself to creating the distinct differences from the surrounding areas.

Most of New York State is under laid by sedimentary rocks: sandstone, shale, limestone and conglomerate. This is due to the fact that for much of New York States geologic history it was under water. During the Paleozoic Era from

500 to 300 million years ago, very thick limestone deposits formed, nearly two thousand feet of sedimentary rock was deposited at the bottom of that ancient sea. Today those rock layers are visible in many places.

Approximately 300MYA the tectonic plate movements that gave rise to the Allegheny Plateau and then the Taconic's began to shape the region and began to create dry land. The Adirondack Mountains are a relatively new feature that was formed in the last five million years due to an uplifting or dome. The Adirondacks continue to grow today at a rate of approximately 3.0 mm per year. These three features along with the Hudson and Mohawk rivers give the region its characteristics.

The second historic event is the ice sheets that advanced and retreated over the region numerous times. These ice sheets which at some time were more than 3 miles thick moved and deposited much of the overlaying soils in the region. They also changed some of the features developed from the much earlier tectonic movements and help to erode vast quantities of rock. They are the force that created the Finger Lakes. These glaciers also formed Lake Albany, a 130 mile inland body of water that stretched from Glens Falls NY to Poughkeepsie NY, but eventually drained.

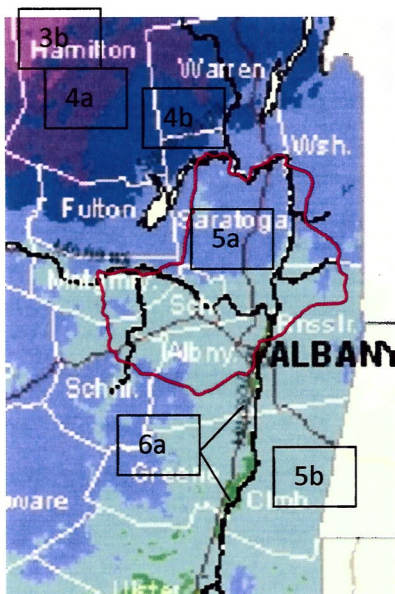
Climate

Two regional climate features, cold winters and the growing season directly influence regional grape growing. It is these features that make the region different from the surroundings. The minimum winter temperature limits the varieties of grapes that are viable. This will be described in greater detail with the Plant Hardiness Zones. The distinction for the growing season and why it is different than the surroundings will be further described by an evaluation and comparison of cumulative growing degree days (CGDD) inside and outside the region in the Growing Degree Day section.

Plant Hardiness Zones

Very broadly speaking, the majority of the Upper Hudson region falls into two plant hardiness zones, zone 5A and zone 5B. This puts minimum winter temperatures at -15F to -20F for the region. The map below shows a red outline of the Upper Hudson region imposed over the USDA Plant Hardiness Zone Map for New York

Areas to the Northwest of the Upper Hudson quickly fall off into zone 4b (-25 to -20), 4a (-30 to -25) and 3b (-35 to -30).



Many of the northern hardy grapes grown in the Upper Hudson are able to bear winter temperatures of -30F and the plant hardiness zones to the north can exceed -30F. Within the Upper Hudson there are still some varieties like Melody (white grape from the University of Cornell) which suffer some degree of winter damage every year and would likely not be commercially viable farther north or at higher elevations. The Cornell website has an LT50 (50% of buds killed) of approximately -13F for Melody.

South of the Upper Hudson remains 5b until approximately halfway down the Hudson River valley it becomes plant zone 6A (-10 to -5). Due to the warming effect of the Hudson River, small areas of plant zone 6a follow the river within the zone 5b region to Albany.

Below is a selection of grapes grown in the Hudson Valley AVA which shows many of the grape to be hardy to -15F.

Seyval Blanc (-10 to -15F) Iowa state doc. <http://viticulture.hort.iastate.edu/cultivars/Seyval%20blanc.pdf>
 Baco Noir (-10 to -15F) Iowa state doc. <http://viticulture.hort.iastate.edu/cultivars/baco%20noir.pdf>
 Cabernet Franc killing temp of -17F VTeh doc <http://www.avec.vaes.vt.edu/olson-h-smith/grapes/viticulture/extension/presentations/cabernet-franc.pdf>
 Pinot Noir -8 LT50 <http://wine.wsu.edu/research-extension/weather/cold-hardiness/>
 Vignoles (-10 to -15F) Iowa state doc. <http://viticulture.hort.iastate.edu/cultivars/Vignoles.pdf>
 Traminette (-15.3) LT50 <http://www.hort.cornell.edu/reisch/grapegenetics/bulletin/traminette.html>

Data from the Cornell website shows the LT50 for two varieties that are grown outside of the region and in the Hudson River Valley AVA. These grapes as well as the grapes listed above would not survive the winters in the Upper Hudson AVA, making them an unsuitable choice.

Cornell Midwinter Bud Hardiness

Date	Variety	LT50	Note
2014/2015	Cabernet Franc	-6.9	3/30/2015
	Riesling	-9.0	
2013/2014	Cabernet Franc	-11.6	3/10/2014
	Riesling	-13.7	
2012/2013	Cabernet Franc	16.5	4/16/2013
	Riesling	15.1	
2011/2012	Cabernet Franc	-6.7	
	Riesling	-11.6	
2010/2011	Cabernet Franc	-10.5	
	Riesling	-10.7	

<https://grapesandwine.cals.cornell.edu/extension/bud-hardiness-data>

As shown in Appendix D, from the low temp in the first few weeks of January was -24.9F in Glens Falls and -11.7F in Albany to the south. The record lows for the months of December, January February and March are also colder than -20F. This cold winter temperatures limit the grape that can be grown in the region and provides a distinction as compared to the varieties that can be grown outside the region.

Eastern New York and the Upper Hudson region do not have the great lakes, Atlantic Ocean, Lake Champlain or the Hudson River to help moderate temperatures. This allows for more extreme and sudden temperature changes. With the absence of cloud cover, spring nights can quickly produce a frost that will damage new shoots. Grape growing in the regions to the north and south has less chance of spring frost damage than the Upper Hudson region. These overnight frost events occurred on May 10, 11 and 13 2010 when overnight temperature fell to 28.9, 26.1 and 28.9 respectively in Glens Falls. On May 14 and 15, 2013 overnight temperature fell to 29.1F. This data is shown in Appendix E. The table above contains available data and averages for the frost events in the Upper Hudson with the overnight temperature in locations to the north and south. It compares Glens Falls average data to the same data

	GlensFalls	Willsboro	Whitehall	Poughkeepsie
May 10, 2010	28.9	35.1	32.0	na
May 11, 2010	26.1	30.9	30.9	na
May 13, 2010	28.9	32.0	30.9	na
May 14, 2013	29.1	na	33.1	33.1
May 15, 2013	29.1	na	30.9	36.0
Willsboro, NY	28.0	32.7		
Whitehall, NY	28.4		31.6	
Poughkeepsie, NY	29.1			34.6

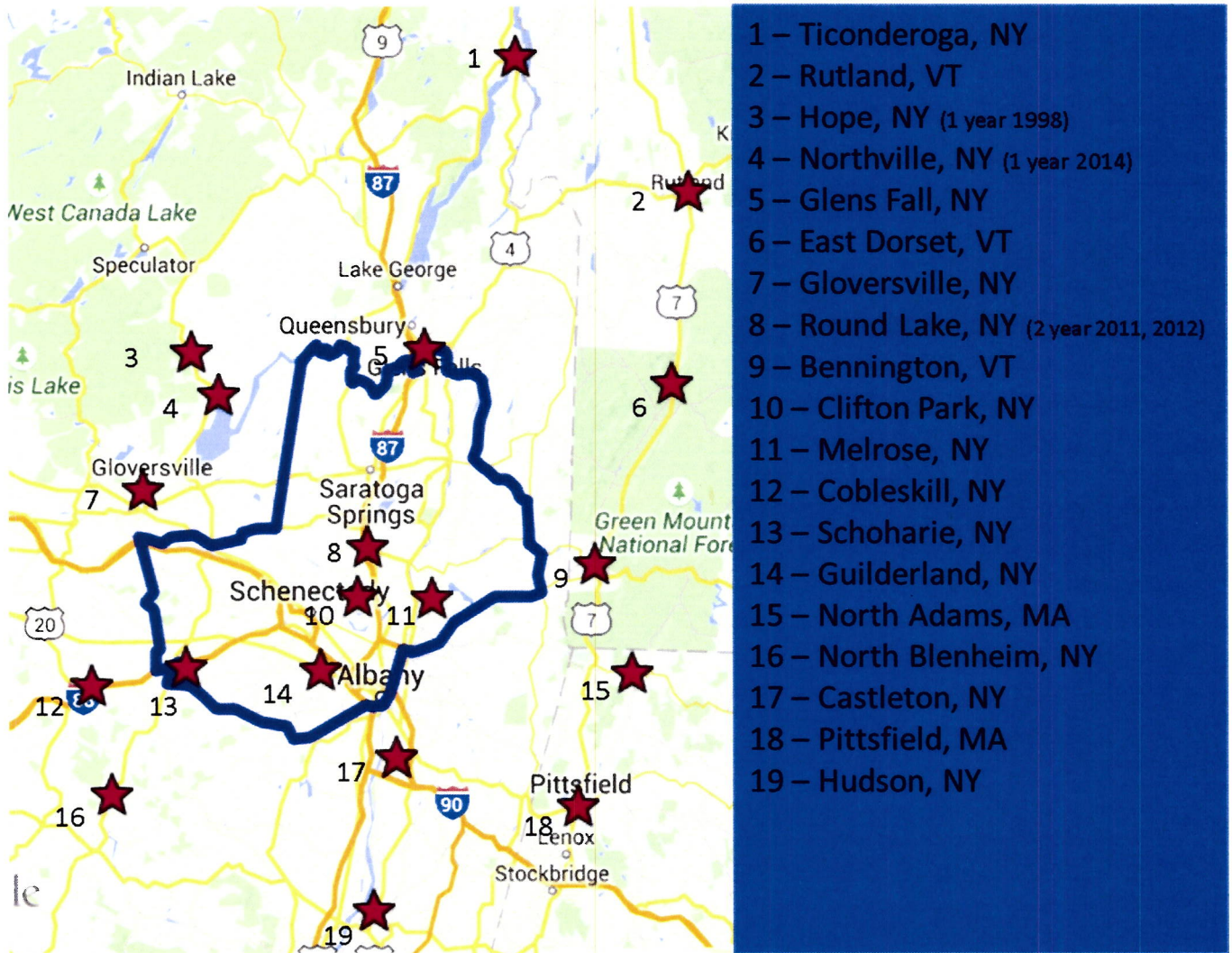
available data for the other locations. Glens Falls is at the Northern edge of the region. Whitehall and Willsboro are farther north and in the Champlain Valley, while Poughkeepsie is to the south in the Hudson River Valley AVA. Both of these regions have warmer overnight temperatures that then Upper Hudson during these frost events. The effects of Champlain have given Whitehall 3F warmer average temperature for the dates, and show a greater temperature difference for Willsboro which is located on a significantly wider section of the lake.

Growing Degree Days

The Upper Hudson region falls into a distinct range of CGDD as compared to the surrounding areas. This is due to the region being in a bowl that has been created by the three sets of mountains and the two rivers. Although Albany NY is almost 150 miles from New York City, Albany is at sea level at the Hudson River.

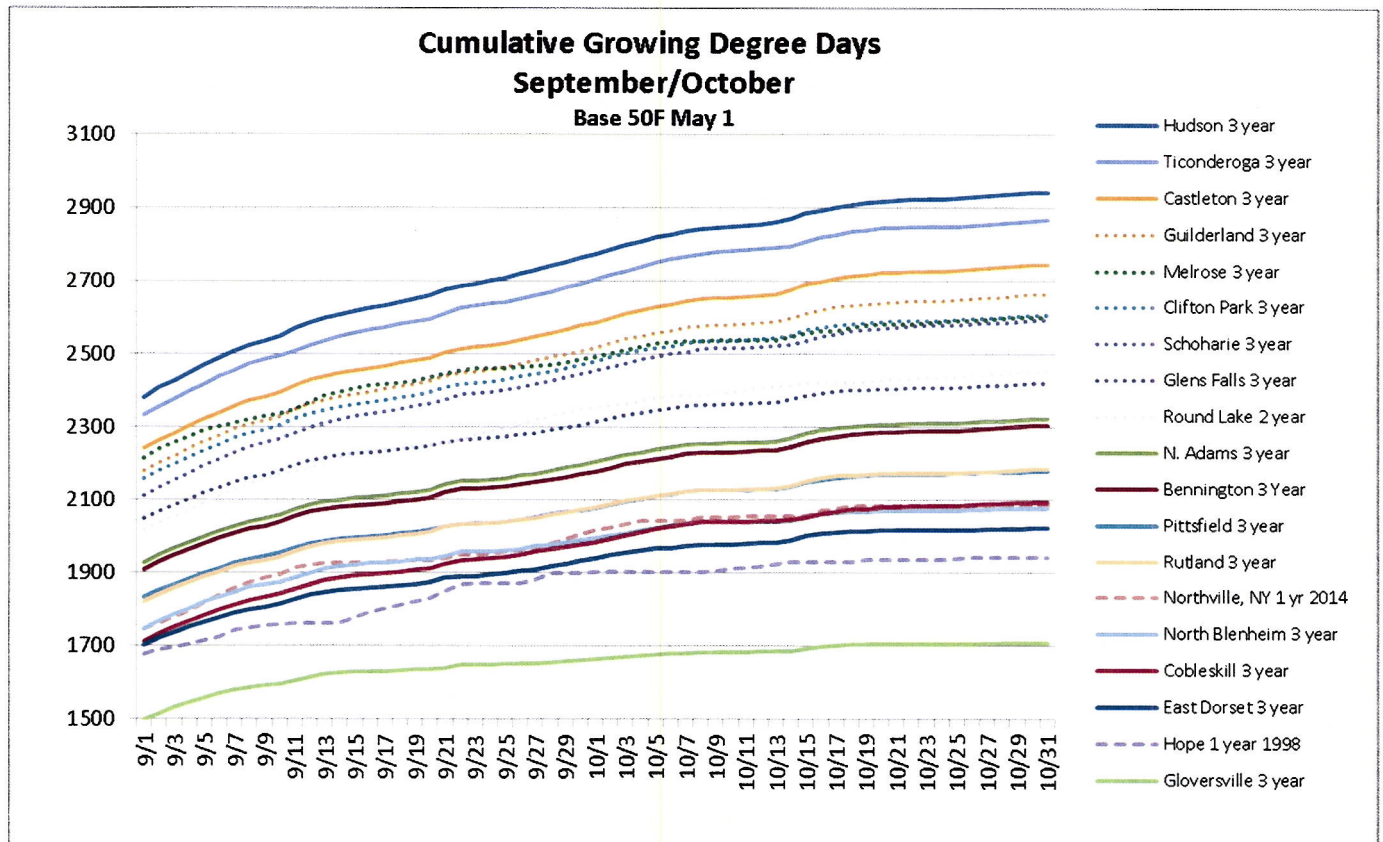
The highest peaks in the Adirondacks are greater than 5000 feet above sea level while Mt Equinox just over the border near Manchester, Vermont, and in the Taconic's, reaches 3800 feet. To the southwest the highest peaks reach over 4,100 feet. This region is hardly the Himalayans but it is what I call home.

The red stars on the map above represent the locations of CGDD data. Nineteen data points are shown with six data points representing the GGD for the Upper Hudson and 13 data points representing the surrounding area. Within the Upper Hudson region, CGDD data was available for Guilderland, Clifton Park, Glens Falls, Melrose, Round Lake and Schoharie, NY. Appendix C contains the URL of the daily temperature data source as well as which years the data average represents.



The graph below represents Upper Hudson and surrounding locations total CGDD trends for the months of September and October. The finely dotted lines are locations that are in the Upper Hudson region. The coarsely

dotted lines represent the locations with less than 3 years of CGDD data. The Upper Hudson region CGDD lines are relatively bunched together and do not overlap any of the surrounding regions.



Southern Boundary:

The top blue line on the graph below represents the CGDD for the city of Hudson, NY in the Hudson River Valley AVA which is to the south. It shows that the city of Hudson, NY reaches 2500 CGDD nearly two weeks before Guilderland and other locations in the Upper Hudson region. This data also shows a limit of approximately 2700 CGDD for the Upper Hudson while areas in the Hudson River Valley AVA easily exceed that. Castleton the third line from the top is also south of Albany but farther north than the city of Hudson. This location shows the effects of the tidal Hudson River on cumulative CGDD. The distance between the southern edge of the Upper Hudson region and Castleton, NY is only about 10 miles but Castleton reaches 2500 CGDD nearly a week earlier. This is due to the twice daily tidal surge up the Hudson. This is compared to Schoharie which is also on the southern edge and to the west but experiences no effects from the Hudson River.

The Upper Hudson also has a much smaller window after reaching the 2500 CGDD for the fruit to continue maturing. The slope of the lines at the end of the season is less than the slope in the first week of September. The Lower Hudson fruit could continue to ripen for nearly a month. This gives the Upper Hudson greater challenges in working

with tart fruit and removing that tartness in the winery with Malolactic fermentation, residual sugars or pH adjustment. The Hudson Valley to the south would have the tartness reduced in the vineyard.

The CGDD, along with LT50 and cold winter hardiness illustrate a distinction from the areas to the south of the Upper Hudson Region.

Northern Boundary:

To the north is the town of Ticonderoga which is the second line from the top on the CGDD graph and represents a location in the Champlain Valley of NY. This line clearly shows the warming effect of Lake Champlain on that location. The Lake Champlain Valley reaches ~2500 CGDD nearly three weeks earlier than in the Upper Hudson. For the areas to the Northwest, the Adirondacks and the increased elevation cause the Plant Hardiness Zones to drop off rather quickly. This makes the Northwestern region (Adirondacks) unsuitable for grape production as winter temperatures would kill the vines.

Eastern Boundary:

The eastern border of the Upper Hudson region starts to run up against the foothills of the Taconic Mountains. The increase in elevation and the effects of topography show a distinct reduction in cumulative CGDD for Bennington VT, East Dorset VT, Rutland VT, North Adams MA and Pittsfield MA. The locations to the east of the Upper Hudson region have a maximum of approximately 2300 CGDD. These locations all lie on the same latitudes as parts of the proposed AVA and are not very far from the Upper Hudson, yet have a lower average CGDD.

Western Boundary:

The areas to the west of the Hudson Valley region show similar CGDD trends as the east side. The west side rises into two different sets of mountains, the Adirondack's to the north and the Allegheny's to the south. To the south west the towns of Cobleskill and North Blenheim have lower CGDD than the Upper Hudson region. These towns are located on the Allegheny plateau (edge of the Catskill Mountains) and are at higher elevations.

The areas to the Northwest and towns such as Peck Lake, NY, Hope NY, Gloversville, NY and Northville, NY also have a lower CGDD than areas within the Upper Hudson Region. This is due to the increase in elevation from the Adirondack's and the effects of topography which create a cooler climate than the Upper Hudson Region.

Conclusion

The rich history of the proposed Upper Hudson AVA over millions of years, from continent formation and doming to glacial activity and today's climate provide for a wonderful region to grow northern hardy grapes and make wine.

Although still in our infancy, we are starting to make award winning wines. We have great flavors in Frontenac that are spicy and smoky to the clean apricot in La Crescent. The hard work of the regional vineyards and wineries has won over a dedicated and enthusiastic consumer who greatly enjoys all that the product has to offer. The product goes beyond just the bottle of wine but extends to the landscape with the established trellises, the comradery and pleasure of harvest on a warm September day and the excitement that comes with the a new release. Time and again the consumer explains that his is not the New York State wine that they expected.

The establishment of the Upper Hudson AVA will be a significant step in acknowledging the hard work that has been done by the present wineries as well as establishing for future vineyards and wineries the advantages an AVA has to offer.

Appendix A - Upper Hudson AVA USGS Map lay out

Gloversville 30x60 Minute Series 1:100,000 Scale	Glens Falls 30x60 Minute Series 1:100,000 Scale
Amsterdam 30x60 Minute Series 1:100,000 Scale	Albany 30x60 Minute Series 1:100,000 Scale

Maps are provided.

Appendix B - Regional American Viticultural Areas

Hudson River Valley, New York

Long Island, New York

The Hamptons, Long Island, New York

North Fork of Long Island, New York

Niagara Escarpment, New York

Lake Erie, New York, Pennsylvania, Ohio

Finger Lakes, New York

Cayuga Lake, New York

Seneca Lake, New York

Western Connecticut Highlands, Connecticut

Southeastern New England, Connecticut, Massachusetts, Rhode Island

Martha's Vineyard, Massachusetts

Cape May Peninsula, New Jersey (pending)

Champlain Valley of New York (pending)

Appendix C – Growing Degree Day information

Location	URL	Years
Hudson, NY	http://newa.cornell.edu/index.php?page=degree-days	2012, 2013, 2014
Ticonderoga	http://climod2.nrcc.cornell.edu/	2012, 2013, 2014
Castleton	http://newa.cornell.edu/index.php?page=degree-days	2012, 2013, 2014
Guilderland	http://newa.cornell.edu/index.php?page=degree-days	2012, 2013, 2014
Melrose	http://gis.ncdc.noaa.gov/map/viewer/#app=cdo&cfg=cdo&theme=daily&layers=111&node=gis	2012, 2013, 2014
Clifton Park	http://newa.cornell.edu/index.php?page=degree-days	2012, 2013, 2014
Schoharie	http://climod2.nrcc.cornell.edu/	2012, 2013, 2014
Glens Falls	http://newa.cornell.edu/index.php?page=degree-days	2012, 2013, 2014
Round Lake	http://gis.ncdc.noaa.gov/map/viewer/#app=cdo&cfg=cdo&theme=daily&layers=111&node=gis	2011, 2012
North Adams	http://newa.cornell.edu/index.php?page=degree-days	2012, 2013, 2014
Bennington	http://newa.cornell.edu/index.php?page=degree-days	2012, 2013, 2014
Pittsfield	http://newa.cornell.edu/index.php?page=degree-days	2012, 2013, 2014
Rutland	http://newa.cornell.edu/index.php?page=degree-days	2012, 2013, 2014
Northville	http://gis.ncdc.noaa.gov/map/viewer/#app=cdo&cfg=cdo&theme=daily&layers=111&node=gis	2014
North Blenheim	http://www.usclimatedata.com	2012, 2013, 2014
Cobleskill	http://gis.ncdc.noaa.gov/map/viewer/#app=cdo&cfg=cdo&theme=daily&layers=111&node=gis	2012, 2013, 2014
East Dorset	http://newa.cornell.edu/index.php?page=degree-days	2012, 2013, 2014
Hope	http://gis.ncdc.noaa.gov/map/viewer/#app=cdo&cfg=cdo&theme=daily&layers=111&node=gis	1998
Gloversville	http://climod2.nrcc.cornell.edu/	2012, 2013, 2014

Appendix D Temperature charts



Home United States New York

Monthly Daily History Geo &

Monthly Daily History Geo &

2014 Select month

2014 Select month

Weather history Albany january 2014

Day	High (°F)	Low (°F)
1 Jan 2014	24.3	10.2
2 Jan 2014	17.2	-1.8
3 Jan 2014	5.2	-10.8
4 Jan 2014	22.1	-11.7
5 Jan 2014	35.1	2.1
6 Jan 2014	50.0	13.1
7 Jan 2014	13.1	4.1
8 Jan 2014	20.1	1.2
9 Jan 2014	27.1	10.2
10 Jan 2014	34.0	10.2
11 Jan 2014	55.9	33.1
12 Jan 2014	46.0	34.0
13 Jan 2014	46.0	24.3
14 Jan 2014	46.9	34.0
15 Jan 2014	46.9	24.3
16 Jan 2014	35.1	28.2
17 Jan 2014	39.0	18.1
18 Jan 2014	34.0	21.2
19 Jan 2014	34.0	22.1
20 Jan 2014	36.0	15.3
21 Jan 2014	15.3	2.1
22 Jan 2014	9.1	-5.8
23 Jan 2014	16.2	-0.8
24 Jan 2014	17.2	1.2
25 Jan 2014	21.2	15.3
26 Jan 2014	21.2	6.3
27 Jan 2014	32.0	10.2
28 Jan 2014	16.2	3.2
29 Jan 2014	22.1	-2.7
30 Jan 2014	27.1	1.2
31 Jan 2014	33.1	22.1

Weather history Glens Falls january 2014

Day	High (°F)	Low (°F)	P
1 Jan 2014	21.2	-1.8	
2 Jan 2014	4.1	-3.8	
3 Jan 2014	0.1	-24.9	
4 Jan 2014	18.1	-24.9	
5 Jan 2014	30.2	-0.8	
6 Jan 2014	48.9	16.2	
7 Jan 2014	16.2	3.2	
8 Jan 2014	18.1	3.2	
9 Jan 2014	26.2	1.2	
10 Jan 2014	30.2	2.1	
11 Jan 2014	52.0	29.1	
12 Jan 2014	45.0	35.1	
13 Jan 2014	45.0	24.3	
14 Jan 2014	44.1	32.0	
15 Jan 2014	45.0	24.3	
16 Jan 2014	35.1	23.2	
17 Jan 2014	35.1	18.1	
18 Jan 2014	37.9	14.2	
19 Jan 2014	30.2	22.1	
20 Jan 2014	34.0	4.1	
21 Jan 2014	7.2	-0.8	
22 Jan 2014	5.2	-9.8	
23 Jan 2014	13.1	-9.8	
24 Jan 2014	16.2	-10.8	
25 Jan 2014	20.1	13.1	
26 Jan 2014	18.1	4.1	
27 Jan 2014	32.0	7.2	
28 Jan 2014	15.3	-7.8	
29 Jan 2014	18.1	-16.8	
30 Jan 2014	24.3	-2.7	
31 Jan 2014	33.1	16.2	

<http://www.usclimatedata.com>

Appendix E – Spring Frost Data



Home United States New York

Monthly Daily History Geo &

2010 May

Weather history Glens Falls may 2010

Day	High (°F)	Low (°F)
1 may 2010	82.0	43.0
2 may 2010	84.9	57.9
3 may 2010	79.0	48.9
4 may 2010	68.0	42.1
5 may 2010	77.0	35.1
6 may 2010	68.0	48.9
7 may 2010	66.9	44.1
8 may 2010	64.0	41.0
9 may 2010	48.9	37.0
10 may 2010	54.0	28.9
11 may 2010	57.0	26.1
12 may 2010	52.0	32.0
13 may 2010	64.0	28.9



Home United States New York

Monthly Daily History Geo &

2010 May

Weather history Willsboro may 2010

Day	High (°F)	Low (°F)
1 may 2010	66.0	45.0
2 may 2010	77.0	48.9
3 may 2010	84.0	63.0
4 may 2010	77.0	34.0
5 may 2010	68.0	30.9
6 may 2010	75.9	53.1
7 may 2010	68.0	28.9
8 may 2010	57.0	45.0
9 may 2010	61.0	37.9
10 may 2010	44.1	35.1
11 may 2010	54.0	30.9
12 may 2010	61.0	39.9
13 may 2010	57.9	32.0



Home United States New York

Monthly Daily History Geo &

2010 May

Weather history Whitehall may 2010

Day	High (°F)	Low (°F)
1 may 2010	82.0	46.9
2 may 2010	86.0	60.1
3 may 2010	84.9	66.0
4 may 2010	79.0	54.0
5 may 2010	78.1	44.1
6 may 2010	77.0	44.1
7 may 2010	69.1	50.0
8 may 2010	69.1	48.0
9 may 2010	55.9	39.0
10 may 2010	55.9	32.0
11 may 2010	60.1	30.9
12 may 2010	61.0	30.9
13 may 2010	66.0	30.9



Home United States New York

Monthly Daily History Geo &

2013 May

Weather history Glens Falls may 2013

Day	High (°F)	Low (°F)
1 may 2013	78.1	39.9
2 may 2013	82.0	43.0
3 may 2013	72.0	48.0
4 may 2013	77.0	39.9
5 may 2013	77.0	41.0
6 may 2013	75.0	45.0
7 may 2013	81.0	41.0
8 may 2013	73.9	48.9
9 may 2013	71.1	51.1
10 may 2013	75.9	46.0
11 may 2013	69.1	55.0
12 may 2013	60.1	41.0
13 may 2013	50.0	33.1
14 may 2013	57.0	29.1
15 may 2013	60.1	29.1



Home United States New York

Monthly Daily History Geo &

2013 May

Weather history Whitehall may 2013

Day	High (°F)	Low (°F)
1 may 2013	79.0	46.0
2 may 2013	82.0	46.0
3 may 2013	82.0	48.0
4 may 2013	78.1	44.1
5 may 2013	79.0	46.0
6 may 2013	79.0	46.0
7 may 2013	84.9	46.0
8 may 2013	84.0	46.0
9 may 2013	84.0	46.0
10 may 2013	75.9	54.0
11 may 2013	78.1	60.1
12 may 2013	78.1	52.0
13 may 2013	61.0	39.9
14 may 2013	61.0	33.1
15 may 2013	61.0	30.9



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Monthly History Geo & Map

2013 May

Weather history Poughkeepsie may 2013

Day	High (°F)	Low (°F)
1 may 2013	72.0	41.0
2 may 2013	73.9	43.0
3 may 2013	79.0	43.0
4 may 2013	70.0	43.0
5 may 2013	75.0	39.9
6 may 2013	72.0	39.9
7 may 2013	73.0	39.9
8 may 2013	79.0	50.0
9 may 2013	66.9	50.0
10 may 2013	64.9	50.0
11 may 2013	79.0	51.1
12 may 2013	70.0	53.1
13 may 2013	64.9	41.0
14 may 2013	53.1	33.1
15 may 2013	59.0	36.0

Appendix F - Vineyards and Wineries in the Upper Hudson Region

1. Altamont Vineyard

3001 Furbeck Road Altamont, NY
25 acres planted
23 varieties of grapes

2. Amorici Vineyards

637 Colonel Burch Road Easton, NY
Established 2010
2.0 acres planted
Kay Gray, Frontenac, Marquette, Frontenac

3. Capoccia Vineyards and Winery

2820 Balltown Road Niskayuna, NY
0.5 acres planted

4. Hummingbird Hills

1442 Burtonville Rd, Fultonville, NY 12072
20.0 acres planted
Many varieties

5. Ledge Rock Hill Winery

41 Stewart Dam Road Corinth
0.5 acres planted
3.0 acres expansion planned
Marquette

6. Natural Selection Vineyard

23 Darwin Rd, Cambridge NY
2.0 acres planted
Marquette and others

7. Northern Cross Vineyard

1106 Beadle Hill Road Valley Falls, NY
2.0 acres planted
2.0 acres expansion planned
Marquette, Frontenac, St Croix, La Crescent, La Cross, Prairie Star

8. Mariposa Field Vineyard

4784 Western Avenue Guilderland
4.0 acres planted
4.0 planned expansion
Tocai Fuilano, Frontenac Blanc and others

9. Oliva Vineyards

2074 U.S. 4 Fort Edward
2.0 acres planted
Frontenac, Frontenac Gris

10. Victory View Vineyards

11975 State Route 40, Schaghticoke, NY

3.5 acres

3.0 acres expansion planned

Marquette, Frontenac, Marechel Foch, La Crosse, Melody, La Crescent

Wineries in development

11. Dupois Vineyard

2.0 acres planned

12. Mike Engle

0.5 acres Marquette, Brianna and others

0.5 acres expansion planned

13. Fossil Stone Winery

Greenfield Center NY

2.0 acres

Marquette, Lecrescent

14. Vattimo's

214 Becker Road, Berne NY

1.0 acre of Frontenac Gris, Frontenac Blanc, and others