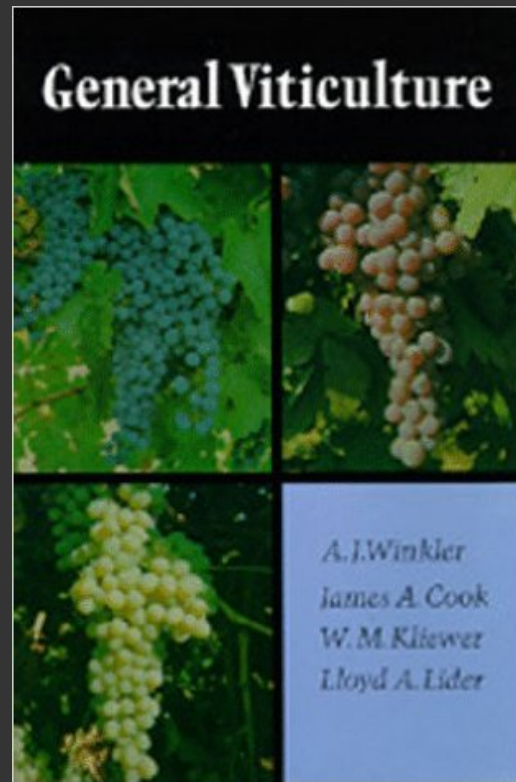


Cool Climate Deep Dive

What does cool climate mean?

Let's start at the beginning:



(Still *THE* text book
for UC Davis
Viticulture 101)

What does cool climate mean?

- Climate directly influences grape quality:
 - “Centuries of experience and research of European growers and enologists have definitely established the effect of climate on wine grapes.”
- How?:
 - Climate influences the rates of change in the constituents of the fruit during development, and composition at maturity
 - **Cool weather** fosters a high degree of acidity, low pH, and a good color, and brings optimum development of the aroma and flavoring constituents
 - In **warm climates** grapes lose delicacy, richness, and balance.
 - “Hence, the resulting table wines, even from the best grape varieties, ***cannot compare with the best wines of cooler regions.***”

What does cool climate mean?

- But “climate” represents many things?
 - 1935-1944, Drs. Winkler and Amerine investigated California wine growing regions and determined: *“The only factor of climate that proved to be of predominant importance was **temperature.**”*
 - Other factors, i.e. rainfall, fog, humidity, duration of sunshine have effects, but more limited than the effect of temperature/***heat summation.***
- So what is “heat summation” and how is it helpful?...

What does cool climate mean?

- Heat summation:
 - The sum of the average monthly temperature above 50 degrees (f) from April to October (the growing season)
 - Above 50 degrees because there is no shoot growth below this temperature.
 - Summation is expressed as **degree-days**
 - e.g. if the average temp for a day is 70, the heat summation is 20 degree-days.
 - If the average temp for June is 70, the summation is 600 degree-days (20 degrees times 30 days).
- This is a long way of saying Dr. Winkler created his famous climate regions based on this research, determining that wine grapes are grown in five regions:

Winkler Scale

- **Region I: less than 2,500 degree-days**
- **Region II: 2,501- 3,000 degree-days**
- **Region III: 3,001- 3,500 degree-days**
- **Region IV: 3,501- 4,000 degree-days**
- **Region V: 4,001 or more**

Winkler Scale

- Region I: Burgundy, Champagne, Rhine, Willamette
- Region II: Bordeaux, Sonoma, Southern Napa
- Region III: Rhône Valley, Northern Napa, Dry Creek, Alexander Valley
- Region IV: Spain, Tuscany, Veneto, Lodi
- Region V: Sicily, Fresno, Western Australia

(A quick note about soils)

- Yes, soil is important to grape quality. However, great wine comes from a myriad of different soils:
 - “If the soil were so important a factor. . . there should be some uniformity in one or more characteristics between the soils of the various good districts. . . [the] lack of uniformity, of soils in the areas generally recognized as among the best indicates the wide adaptability of *vinifera* varieties.”

Let's get specific

Bordeaux (Médoc)

- **Climate:**

- Maritime— mild winters, warm summers, long, sunny autumns; most rainfall for a wine region in France (950 mm)

- **Winkler Region II**

- Mean July temp 68.5 degrees, avg. Sept. rainfall 70mm

- **Soils:**

- Vary. Topsoils of gravel mixed with sand at varying particle size over deep, diverse subsoils of gravel, sand, humus, limestone, and clay

Let's get specific

Sonoma

- **Climate:**
 - Mediterranean climate– mild, wet winter (737-1,073mm), hot, dry summers, hot, sunny autumn. Whole region heavily influenced by ocean fog.
- **Winkler Region I:** Sonoma Coast/Carneros
- **Winkler Region II:** Sonoma Valley, Russian River Valley
- **Winkler Region III:** Dry Creek, Alexander Valley, Knight's Valley
 - Mean July temp 71.5 (Healdsburg), 70.3 degrees (Sonoma)
 - Avg. Sept. rainfall 15mm (Healdsburg), 10mm (Sonoma)
- **Soils:** Vary
 - Sonoma Valley: low-fertile loam
 - RRV, Alexander Valley: alluvial
 - Chalk Hill: Volcanic ash
 - Dry Creek, Knight's Valley: gravelly, low-fertility

Let's get specific

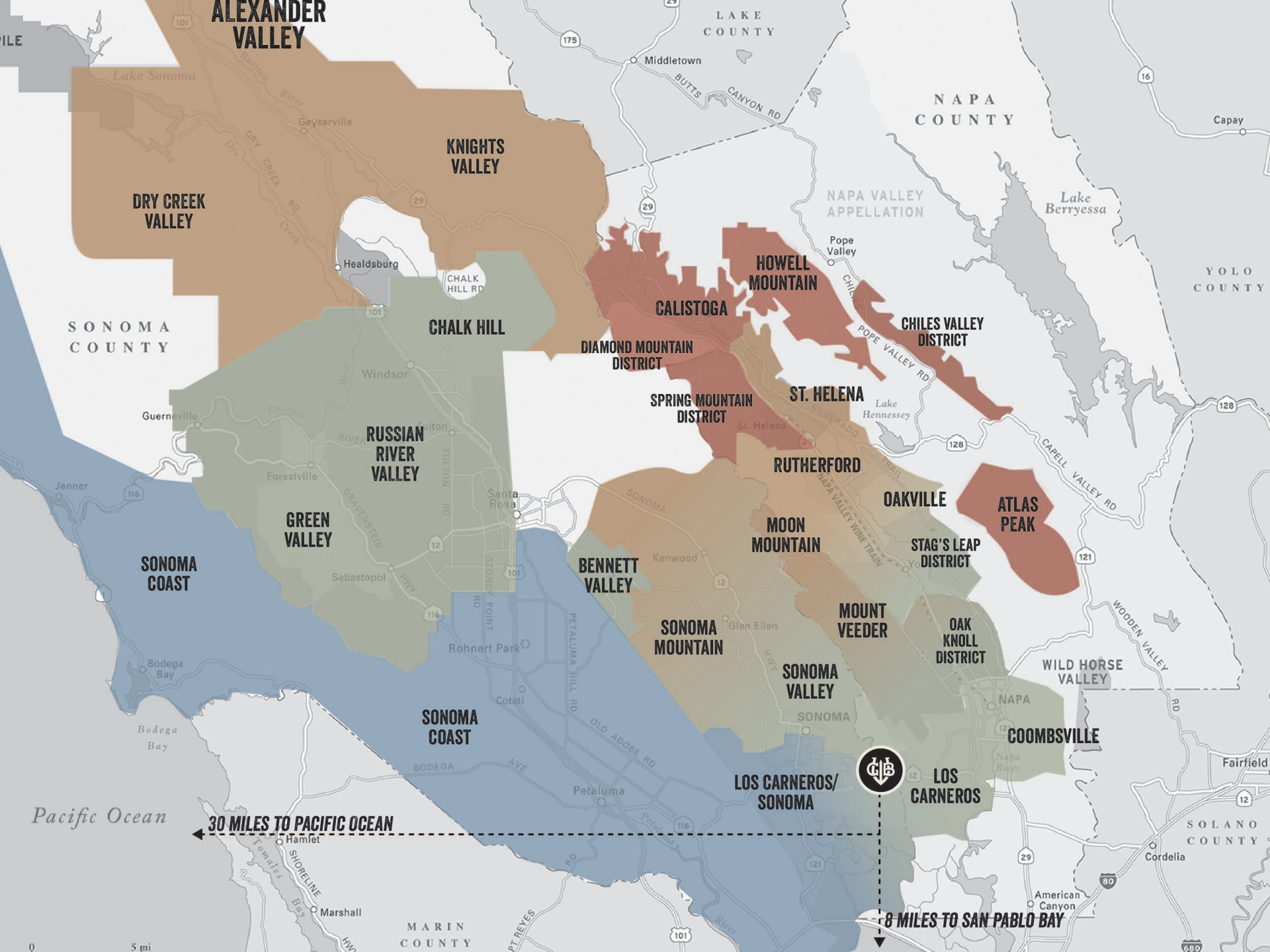
Napa

- **Climate:**
 - Mediterranean climate– mild, wet winter, hot, dry summers, hot, sunny autumn.
- **Winkler Region I:** Carneros
- **Winkler Region II:** Oak Knoll, Coombsville
- **Winkler Region III:** Oakville, Stags Leap, and north
- **By AVA:**
 - **Coombsville:** 10 degrees cooler in July than valley; 650mm rainfall. **Soil:** volcanic and alluvial
 - **Mount Veeder:** Cooler than valley floor with 85 degree mid summer highs; 875mm rainfall. **Soil:** sedimentary, former seabed, shallow, well drained with sandy or sandy-loam texture
 - **Oakville:** 3,300 degree days; 71 degrees in July; 875mm rainfall. **Soil:** sedimentary gravelly alluvial loams to volcanic soils with low to moderate fertility, good water retention
 - **Rutherford:** warmer than Oakville; 950mm rainfall. **Soil:** sedimentary, gravelly-sandy and alluvial in west/benchland, volcanic, deep, and fertile in east.
 - **Stags Leap District:** 100 degree mid-summer temps moderated by wind; 750mm rainfall. **Soil:** volcanic gravel-loams on floor, rocky hillsides with hard clay subsoils

Cool Climate Cabernet

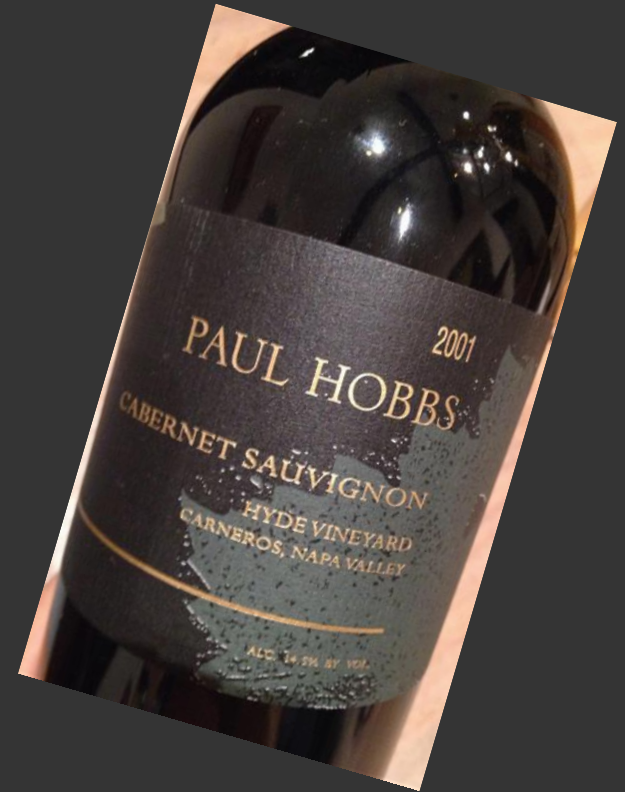
Client	Ranch	Calculation Method	Date Range	Year	Growing Degree Days (Base 50 F and max 95 F)
Oakville Research Station	CIMIS 77	Hourly Integration Model	March 15th - October 15th	2015	3329
Oakville Research Station	CIMIS 77	Hourly Integration Model	March 15th - October 15th	2014	3038
Oakville Research Station	CIMIS 77	Hourly Integration Model	March 15th - October 15th	2013	2985
Gundlach Bundschu	La Paz	Hourly Integration Model	March 15th - October 15th	2015	2939
Gundlach Bundschu	La Paz	Hourly Integration Model	March 15th - October 15th	2014	2979
Gundlach Bundschu	La Paz	Hourly Integration Model	March 15th - October 15th	2013	2886
Carneros	CIMIS 109	Hourly Integration Model	March 15th - October 15th	2015	2631
Carneros	CIMIS 109	Hourly Integration Model	March 15th - October 15th	2014	2623
Carneros	CIMIS 109	Hourly Integration Model	March 15th - October 15th	2013	2523

2,500 degree days or less: Region I
 2,501–3,000 degree days: Region II
 3,001–3,500 degree days: Region III
 3,501–4,000 degree days: Region IV
 Greater than 4,000 degree days: Region V



Rhinefarm's Neighbors

- Hudson Vineyard
- Hyde Vineyard
- Sangiacomo Vineyards
- Durell Vineyard



Rhinefarm



Rhinefarm

- Above 150 feet, the terrain is dominated by rocky, shallow soils consisting of rhyolitic volcanic ash and alluvial wash.
 - **Great drainage/low water capacity**
 - **Can't over-irrigate**
 - **Drought resistant (only use 20% of available water in any given year)**
 - **Low nutrient content but right proportion for great balance in grapes**
 - **Fog “sweet-spot” here – occurs in Napa, but less frequent**

Rhinefarm

And finally, our not-so-secret weapon:



Winemaker, Keith Emerson

Keith Emerson

- What's it like to work with our fruit vs. other Napa and Sonoma BDX? Why does Keith think we're so damn special?

Keith works with over 40 Cab Sauv vineyards in Napa and Sonoma. Rhinefarm is special to him because of the naturally great acid and tannin balance. Fruit, particularly CS, has “verve and energy”. Similar to Mt. Veeder but Veeder generally greener and more herbaceous. Longer growing season for optimal development– e.g. later harvest despite same bud break as Vineyard 29 (St. Helena) because cooler here.