

# Developing Data Tools and Products in Support of Research to Applications

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### Outline

- Share and Share Alike
  - Where to go for access to PSD's Hydrometeorology Testbed (HMT) observations
- Two examples of specialized data displays that add value to PSD and NOAA baseline observations/models
  - The award-winning Water Vapor Flux tool gets a face lift
  - Chardonnay anyone? An automated frost/heat forecast tool for viniculture applications
- Summary



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no data received in the last three nours
no data received in the last twelve hours

- Access to PSD's real-time and archived HMT observations: http://www.esrl.noaa.gov/psd/ data/obs/datadisplay/
- Data also available through MADIS
- Data also shared with NWS Western Region using NWSspecified formats and with the California Data Exchange Center



HMT Real-time Water Vapor Flux Tool Display <u>Now uses HRRR</u> <u>and RAP forecast</u> <u>models</u>

Providing forecasters with the critical integrated observations to determine how Atmospheric Rivers (ARs) are impacting the area and how model forecasts are portraying the AR conditions and orographic precipitation enhancement.

Neiman et al. 2009 Proc. Inst. Civ. Eng. Water Manage. White et al. 2012 (BAMS)



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Coming for winter of 2015-16: PSD is installing a "picket fence" of coastal Atmospheric River Observatories along the West Coast for weather and wind energy applications. Funding for the network was provided by the California Dept. of Water Resources and the U.S. Dept. of Energy.



Photo by Clark King, PSD





Photos by Florence Low, CA-DWR



- Current 2.5-km resolution NWS gridded forecasts are too coarse to resolve vineyard microclimates
- NWS developed a bias correction algorithm using currently available surface obs. to "adjust" numerical guidance to the obs. in their Grid Forecast Editor (GFE)
- PSD Frost Forecast Tool uses an ensemble of NCEP model forecasts downscaled to 0.5-km grid resolution with bias correction using real-time vineyard data made available through private sector participation





for Statistics

4/29/2010

Thu

(What actually happened)

4/25/2010

Sun

4/24/2010

4/23/2010

Forecast

4/26/2010

Mon

4/27/2010

Tue

ote: Timescale is in UTC Date, UTC

4/28/2010

Wed

Model Standard Deviation: 4.9

Time Range (Local Time)

From: 05:00 PM PDT Thu 04

Number of Models

- Current 2.5-km resolution NWS gridded forecasts are too coarse to resolve vineyard microclimates
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Click here

KJ Le Crema Station

4/11/2015

Min RH

Sat

NU VIEL NAVILLE FILM STREET

**Remove 30 Day Bias Correction** 

4/12/2015

Sun

PoP OPF

Date, UTC

SiteID

Wet Bulb

KJ Knights Valley Upper 945 Station KJ Knights Valley Lower 914 Station KJ Le Crema Station KJ Piner Station

4/13/2015

Mon

Show Data Point

Wind St

How to Read this Graph

Highest Ranked MinT Model as of Mon. Apr 6 03Z: MOSGuideBC

Low Model Spread

High Model Spread

4/16/2015

Thu

Sky

NWS Forecast

**Bias-corrected model** 

FzLevel

4/15/2015

Wed

Wind Dir

Observed Value

Highest Ranked MaxT Model as of Mon, Apr 6 15Z: SREF

4/14/2015

Tue

WESTERN V EATHER ADDRESSING WEATHER RISKS BY PROVIDING PRODUCT SOLUTIONS SONO VINEGROWERS WEATHER FORECAST & DATA Weather Station Data WWG Weather Forecasts Regional Airport Observations North State - Last Hour (all) onoma County Forecast as pdf Weather Database Tutorial ma County Frost Forecast as Sonoma County Station Info & Data Sacramento Valley MesoWest Weather Summary, ETo & PM **Quick Click Summaries** Regional 24 Hour Rainfall Latest Hour Yesterday 7 Day Northern California 30/90 Day Outlook 48 hour Weather Trend North Bay Forecast Archive Other Weather Data Season to Date (table) Powdery Mildew Stress Special Weather Statements 2014 Status (March 1 to date) Archive 2013 2012 2011 2010 Sonoma Co Forecast Sponsors Miscellanous Info Climatological Data CIMIS Reports General Info **Climate Summaries** North Coast 🗊 FarmAssist' Sonoma County Viticulture Beyond Sunburn Other Newsletters Bay Area Frost Protection Info More Frost Info Other Aori Daily Climo Santa Rosa Napa Monthly Climo Santa Rosa Napa NOAA Enhanced Frost Forecast Info Moderate Model Spread Man MaxT MinT MinTw All Sunrise & Sunset, Santa Rosa Model Animation Static 24hr trend City Climatography Santa Sodar Data Gevserville **Colors Represent** Low Uncertainty 50% of Model Data Median Value Uncertainty Moderate Uncertainty Points Fall Inside (Gray Line in Inner Box) High Uncertainty Inner Box NWS Forecast Observed Value NWS Forecast: aximum Model Model Range: 4/17/2015 Forecast Model Mean (Average): Hover Over Fri Observation Model Median 43 Blue Dot Minimum Mode (What actually happened) for Statistics Model Standard Deviation: 4.9 Forecast Number of Models 4/23/2010 4/24/2010 4/25/2010 4/26/2010 4/27/2010 4/28/2010 4/29/2010 Time Range (Local Time) Sat Tue Wed Thu Sun Mon ote: Timescale is in UTC Date, UTC From: 05:00 PM PDT Thu 04

http://www.esrl.noaa.gov/psd/data/obs/nwspqr/ms/model spectrum v2 2.php?

Data is 6 hours, 46 minutes old

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Minimum Temperature,

4/7/2015

Tue

Forecast Valid at: 04/07/2015 05:55 AM

4/8/2015

Wed

Max Tem

4/9/2015

Thu

Min Temp

4/10/2015

Fri

Max RH

## Summary

- PSD shares their observational data and specialized data products with NWS forecasters and the public via the internet and other end user-driven methods
- PSD works with NWS staff and other stakeholders to develop new observation and model forecast tools to aid with NWS and external user decision making
- PSD is in the process of developing in-house AWIPS-2 capability to help expedite the development, testing, and transition of new data and products into NWS operations