

Consortium Meeting

Cliff Mass, University of Washington

Feb 1, 2018

High-Resolution (4-km) Ensemble is Operational

- 16 members
- 10 members are randomly selected by the GFS ensemble (GEFS)
- 6 members are from major national systems
 - UKMET (UK)
 - CMC (Canada)
 - JMA (Japan)
 - GASP (Australian)
 - TCWD (Taiwan)
 - NGPS (Navy)

High-Resolution Ensemble

- Just for 0000 UTC cycle
- Runs after high-resolution WRF is done.
- Is done before high-resolution WRF begins.
- Runs for 72 hr.
- A variety of graphics have been created.
- Very open to new graphics or changes.

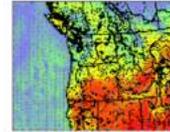
Pacific Northwest Environmental Forecasts and Observations

Supported by the [Northwest Modeling Consortium](#)

High Resolution Model Forecasts
[More Information](#)
[Forecast Graphics](#)
[Description](#)

WRF-GFS
[36km](#) [12km](#) [4km](#) [1.1/3km](#)
[Past Runs](#)
[Current Run](#)
Status
complete

MM5-NAM
[36km](#) [12km](#)
[Past Runs](#)
[Current Run](#)
Status
complete

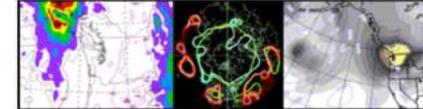


Extended WRF-GFS
[36km](#) [12km](#)
[Past Runs](#)
[Current Run](#)
Status
complete

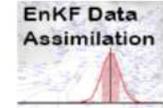
UW Ensemble Forecast System
[More Information](#)



[Experimental 4-km O₃ Ensembles](#)

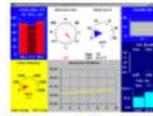


[Ensemble Forecasts](#)



[EnKF Analyses and Forecasts](#)

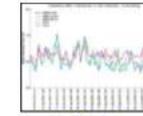
NW Regional Observations and Real Time Verification
[More Information](#)



[NW Regional Observations](#)



[Observation Quality Control](#)



[Verification](#)

Regional Applications
[More Information](#)



[Transportation](#)



[Air Quality](#)



[Fire Weather](#)
[Airfire Bluesky](#)
[Fire Watch](#)

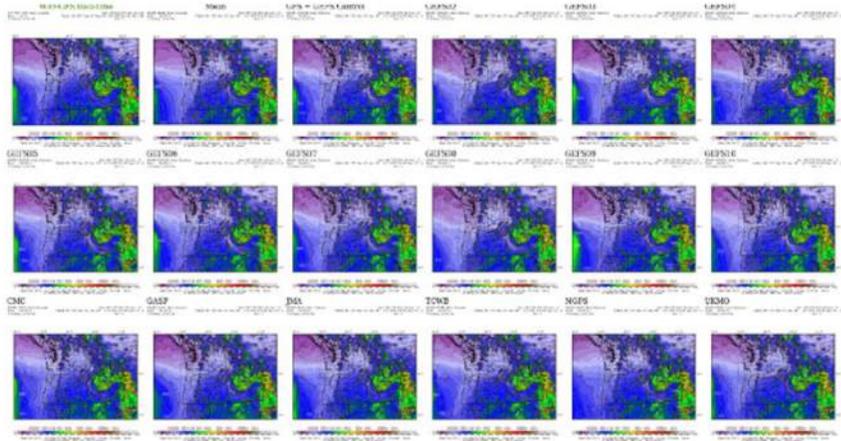


[Hydrology](#)

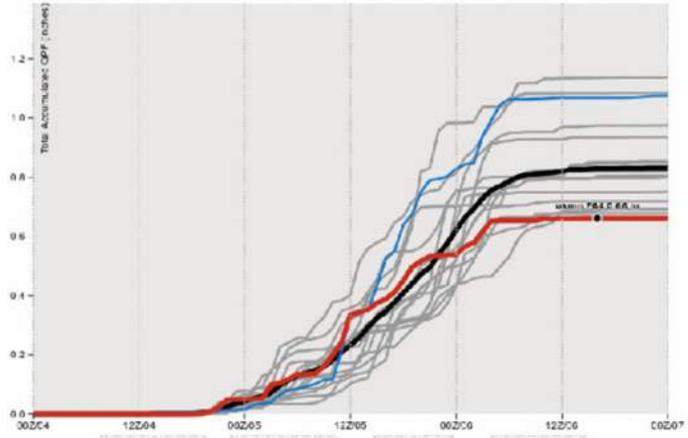
Updated: Sat Jan 27 17:44:03 PST 2018

UW High-Resolution Ensemble Forecasts

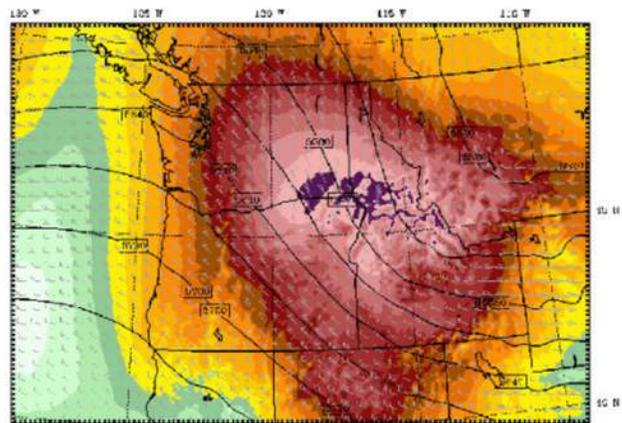
Supported by the [Northwest Modeling Consortium](#)



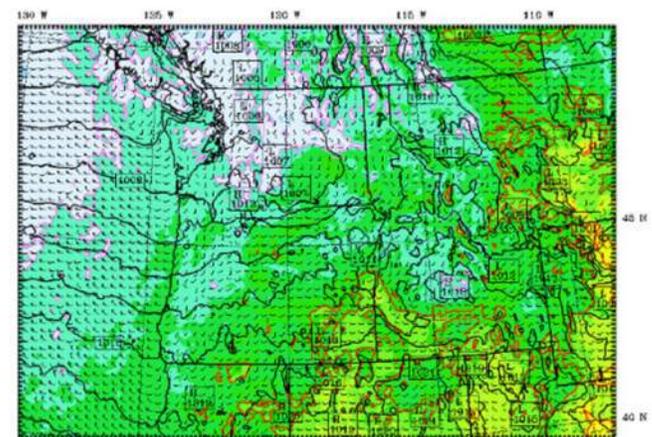
[Show All Plots](#)



[Plumes](#)



[Mean and Spread](#)

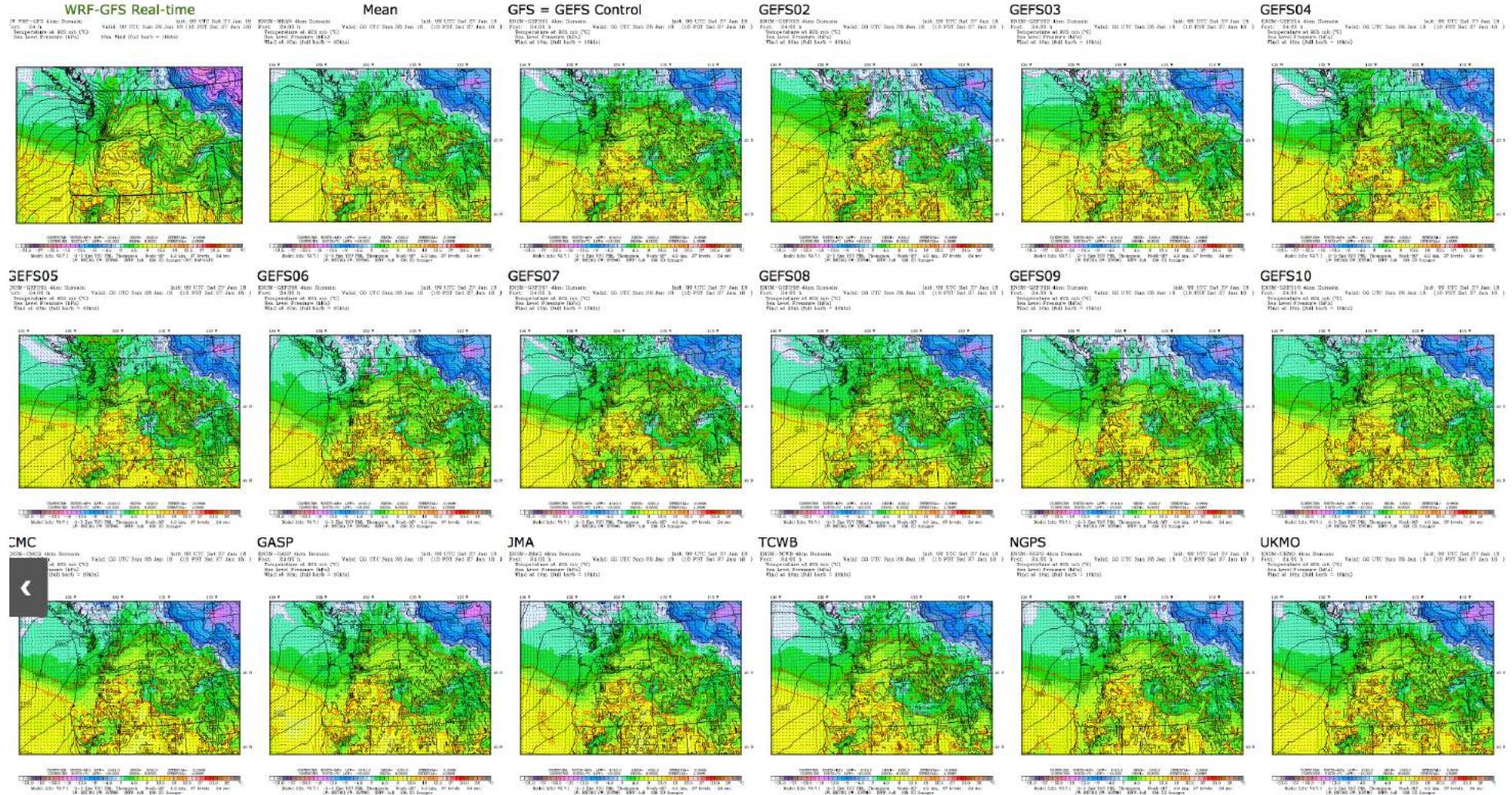


[Loop Individual Members](#)

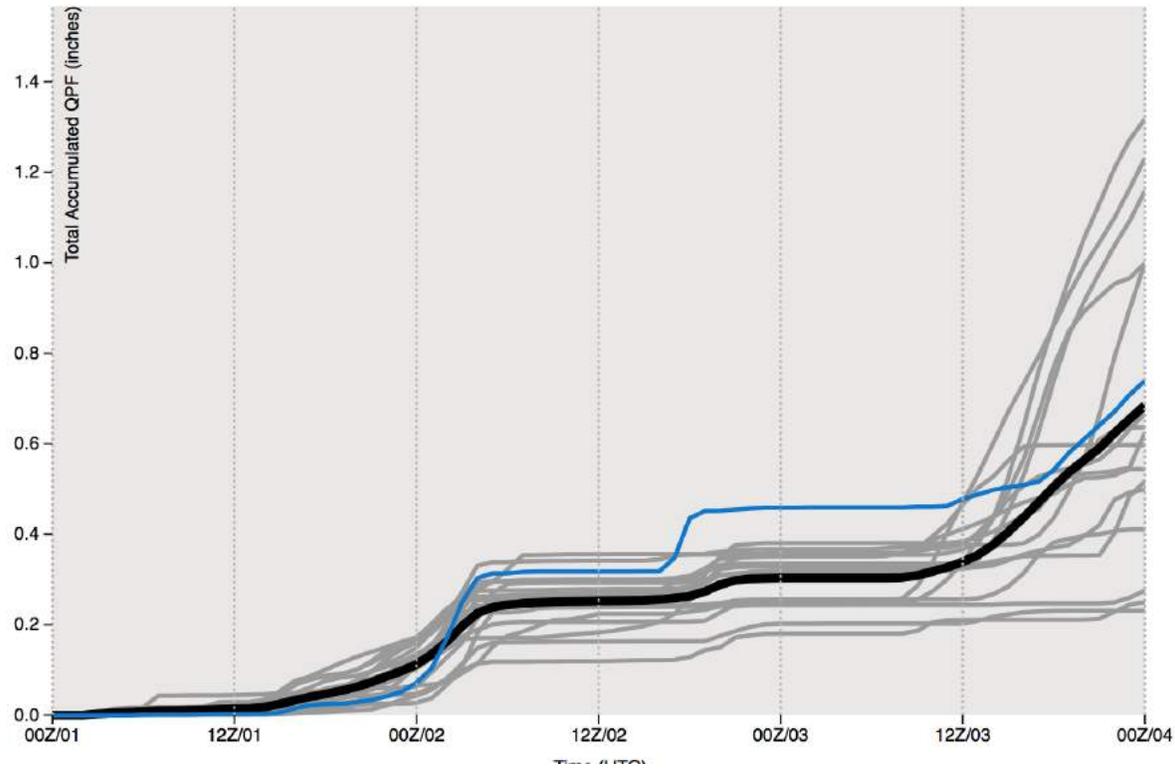
WRF Ensemble Member Plots

00Z Jan 27, 2018 4-km SLP

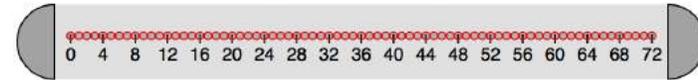
Hour 24 LOOP Big Plots Previous Next Main Page



UW 4-km Ensemble plumes for: KSEA
00 UTC 01 February 2018 cycle



Choose forecast hours to span by adjusting gray box



Variable: QPF Domain: 4-km Cycle: 2018020100

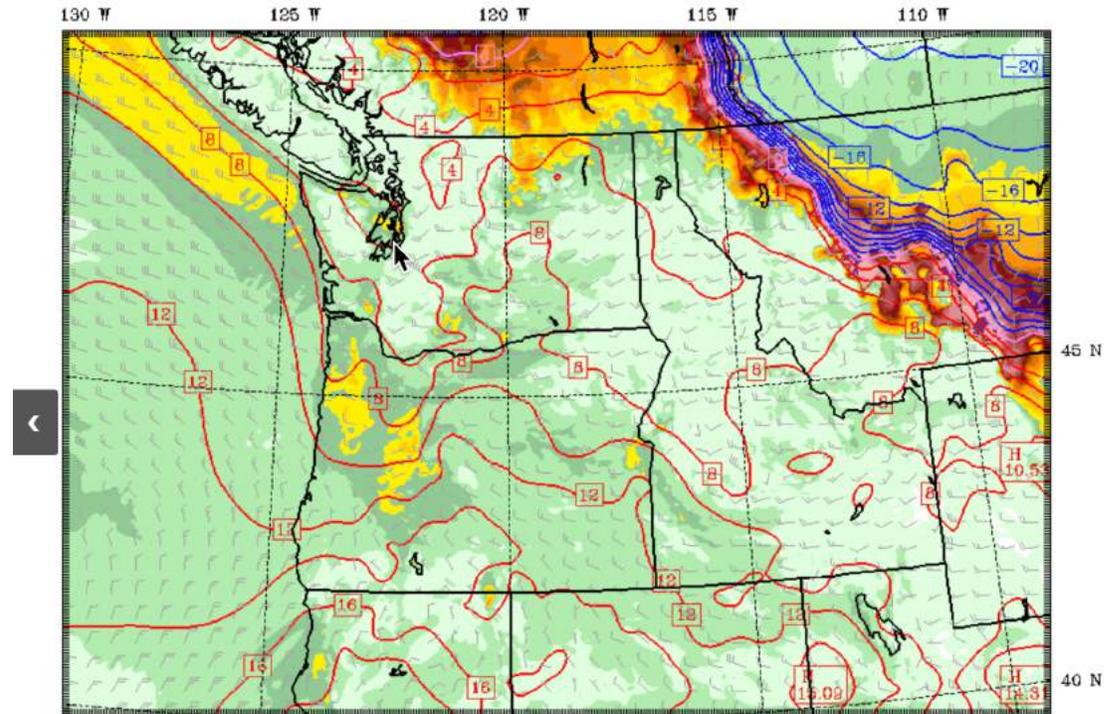
start total accumulated QPF and snowfall at 0 inches when adjusting forecast hours spanned

WRF Ensemble Mean and Spread Plots

00Z Feb 01, 2018 4-km 925 mb Temperature Mean and Spread [Return to Main Page](#)

Mouse over forecast hours or use arrow keys, dash and equals, or comma and period to advance frames.

ENSM-MEAN-SPREAD 41 00 03 06 09 12 15 18 21 24 27 30 33 36 39 42 45 48 51 54 57 60 63 66 69 72 01 Feb 18
Fcst: 72.00 h Valid: 00 UTC Sun 04 Feb 18 (16 PST Sat 03 Feb 18)
Mean Temperature at 925mb (C) and Spread (fill)
Horizontal wind vectors at pressure = 925 hPa



BARB VECTORS: FULL BARB = 10 kts
CONTOURS: UNITS=°C LOW= -20.000 HIGH= 18.000 INTERVAL= 2.0000
1 2 3 4 5 6 7 8 9 °C
Model Info: V3.7.1 G-D Ens YSU PBL Thompson Noah-MP 4.0 km, 37 levels, 24 sec
LW: RRTMG SW: RRTMG DIFF: full KM: 2D Smagor

WRF Ensemble Mean and Spread Plots

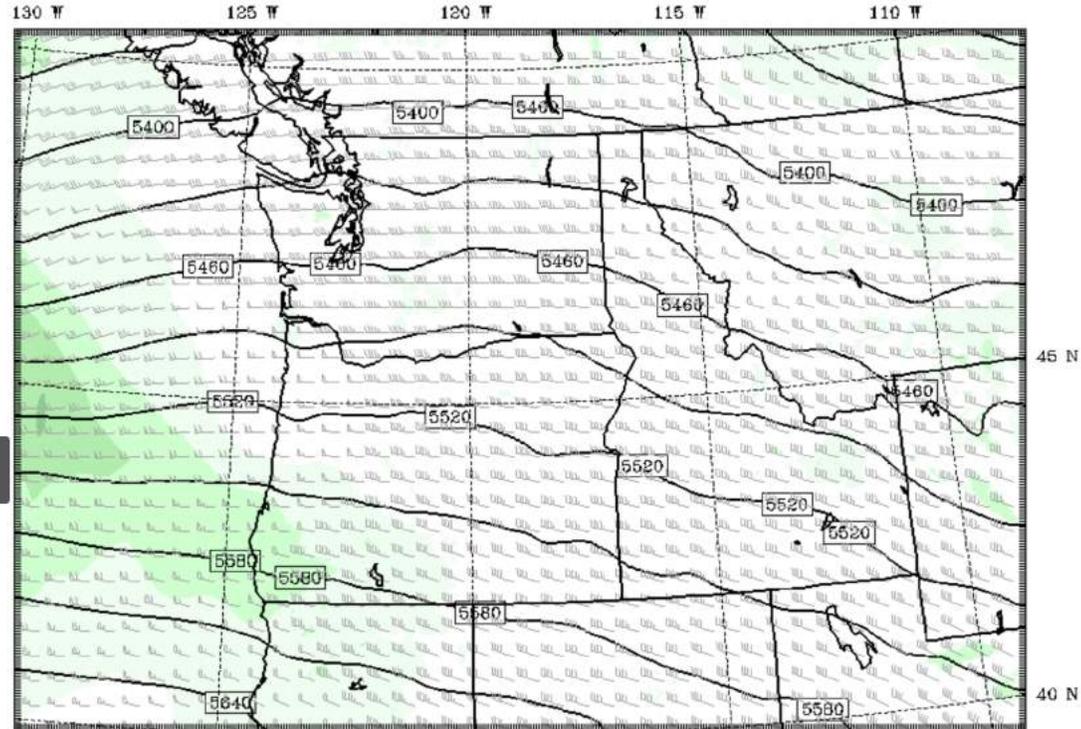
00Z Jan 27, 2018 4-km 500 mb Height Mean and Spread [Return to Main Page](#)

Mouse over forecast hours or use arrow keys, dash and equals, or comma and period to advance frames.

ENSM-MEAN-SPREAD 4km Domain

Fcst: 0.00 h Valid: 00 UTC Sat 27 Jan 18 (16 PST Fri 26 Jan 18)

Mean Geopotential Height at 500mb (m) and Spread (fill)
Horizontal wind vectors at pressure = 500 hPa



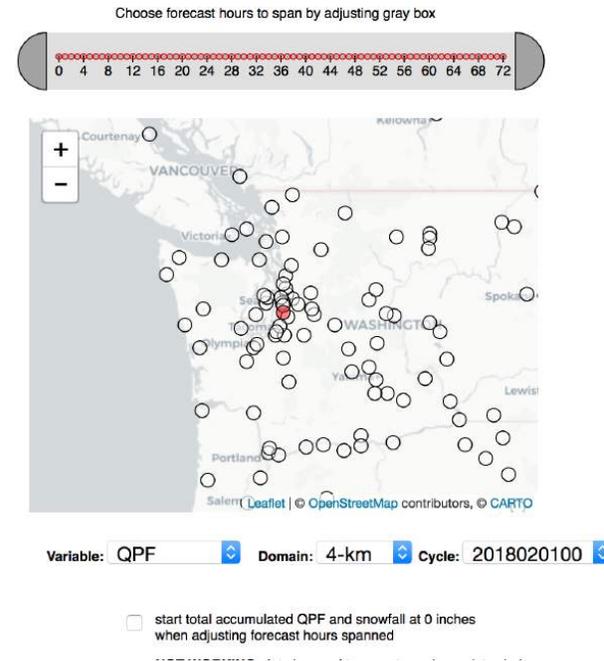
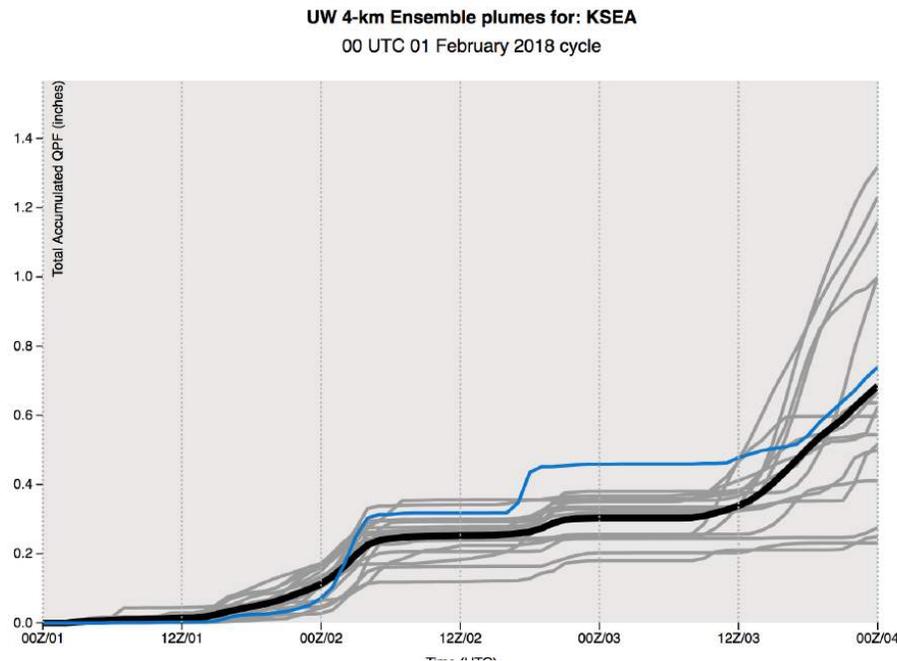
UW Experimental High Resolution Ensemble Forecasts

| Initialization | Domain | Product | Hour | Cases (control click to select multiple) |
|------------------|--------|---------|---------|--|
| 00Z Jan 27, 2018 | 4-km | SLP | Hour 24 | <ul style="list-style-type: none">All CasesMeanCMCGNGPSGASPTCWBJMAGUKMOGEFS01GEFS02GEFS03GEFS04GEFS05GEFS06GEFS07GEFS08GEFS09GEFS10 |

[LOOP](#) [Reset](#) [Main Page](#)

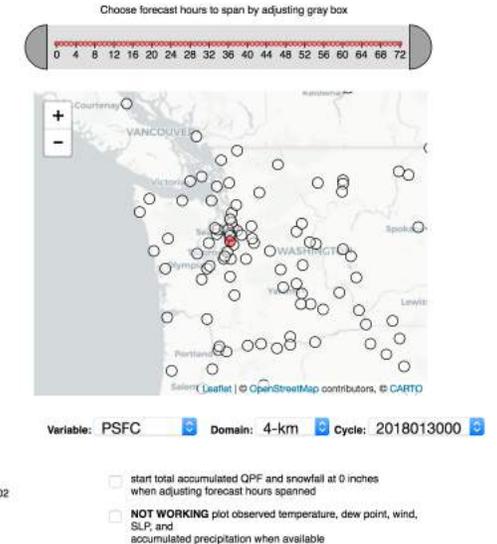
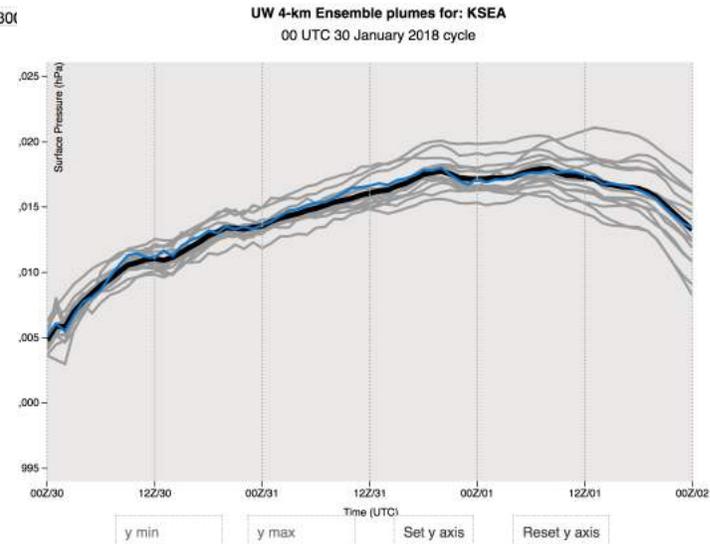
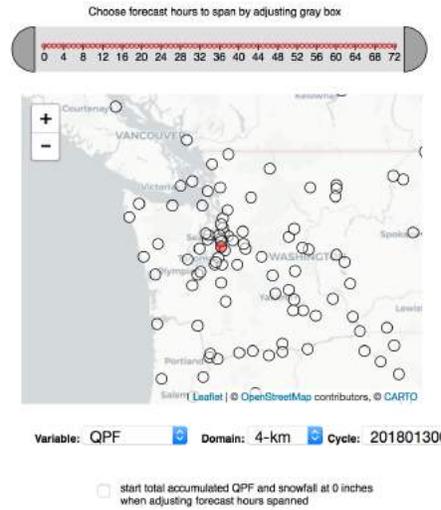
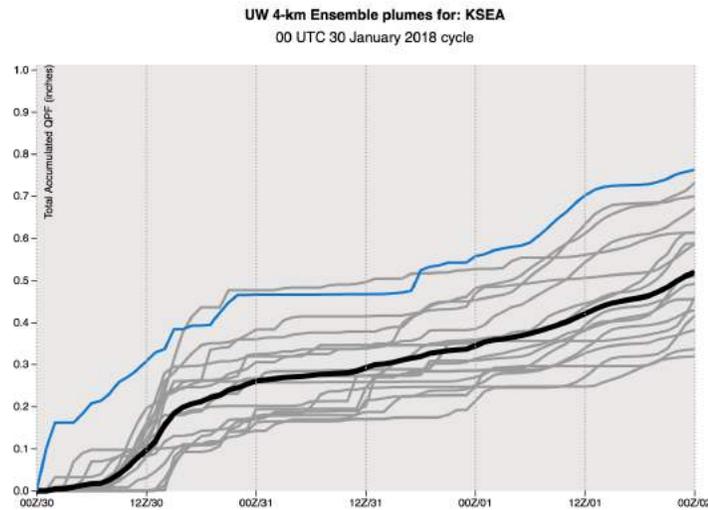
Suggestion

- It is very useful to compare the high-resolution run with the ensembles to see if it is an outlier.



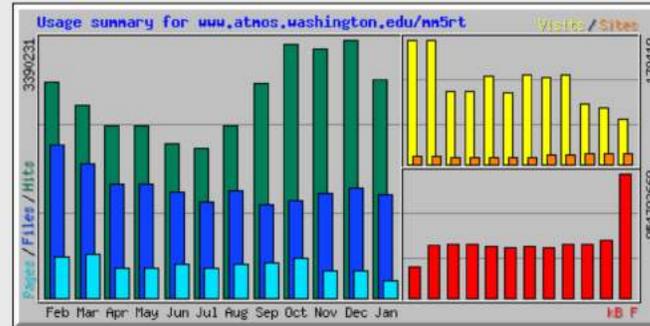
Caution: More Resolution Can Make the Real-time an outlier, when its synoptic evolution is the same

[Ensemble Main Page](#)



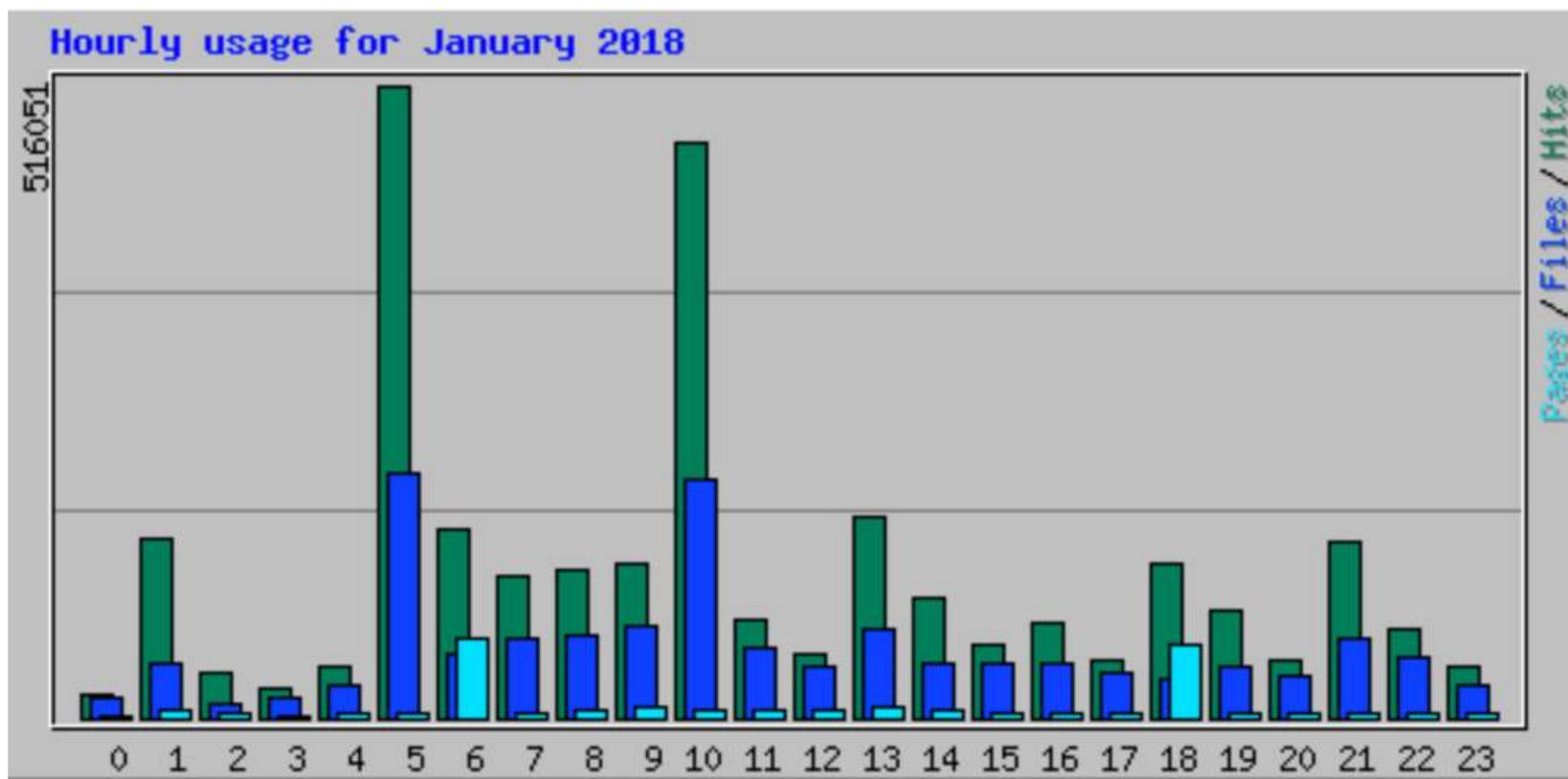
Comments or Suggestions?
New products/graphics?

Hit Stats



| Summary by Month | | | | | | | | | | |
|--------------------------|-----------|-------|-------|--------|----------------|-------------------|----------------|----------------|-----------------|-----------------|
| Month | Daily Avg | | | | Monthly Totals | | | | | |
| | Hits | Files | Pages | Visits | Sites | kB F | Visits | Pages | Files | Hits |
| Jan 2018 | 106186 | 50316 | 8580 | 2429 | 14717 | 954792669 | 65603 | 231664 | 1358547 | 2867045 |
| Dec 2017 | 109362 | 46656 | 11612 | 2604 | 16275 | 447265936 | 80728 | 359984 | 1446364 | 3390231 |
| Nov 2017 | 109019 | 45873 | 12243 | 2872 | 16381 | 416019995 | 86177 | 367319 | 1376203 | 3270594 |
| Oct 2017 | 107736 | 41281 | 17176 | 4181 | 14244 | 409260399 | 129619 | 532463 | 1279723 | 3339843 |
| Sep 2017 | 93576 | 41184 | 15064 | 4173 | 13592 | 385292420 | 125197 | 451945 | 1235540 | 2807293 |
| Aug 2017 | 73095 | 45655 | 14411 | 4162 | 10622 | 396036365 | 129050 | 446765 | 1415316 | 2265951 |
| Jul 2017 | 63506 | 40630 | 12558 | 3350 | 9468 | 383253502 | 103858 | 389325 | 1259537 | 1968686 |
| Jun 2017 | 67598 | 46510 | 14951 | 4231 | 9778 | 399376694 | 126936 | 448530 | 1395320 | 2027941 |
| May 2017 | 73089 | 48082 | 12759 | 3419 | 10272 | 416434297 | 106007 | 395555 | 1490560 | 2265778 |
| Apr 2017 | 75525 | 49685 | 13185 | 3533 | 10272 | 416434297 | 106007 | 395555 | 1490560 | 2265778 |
| Mar 2017 | 81434 | 56613 | 18360 | 5787 | 11199 | 408306290 | 179419 | 569166 | 1755027 | 2524461 |
| Feb 2017 | 101161 | 71984 | 19572 | 6351 | 12660 | 237683981 | 177854 | 548019 | 2015556 | 2832517 |
| Totals | | | | | | 5270156845 | 1416455 | 5136290 | 17518253 | 31826118 |

When do folks look at our graphics?



Big Improvement in March

- New server room in department
- Upgrade of bandwidth: 10 times more (from 1 to 10 GBs⁻¹)
- Occasionally we bog down when there are too many requests (e.g., snowstorm, windstorm)

Some other activities for Dave

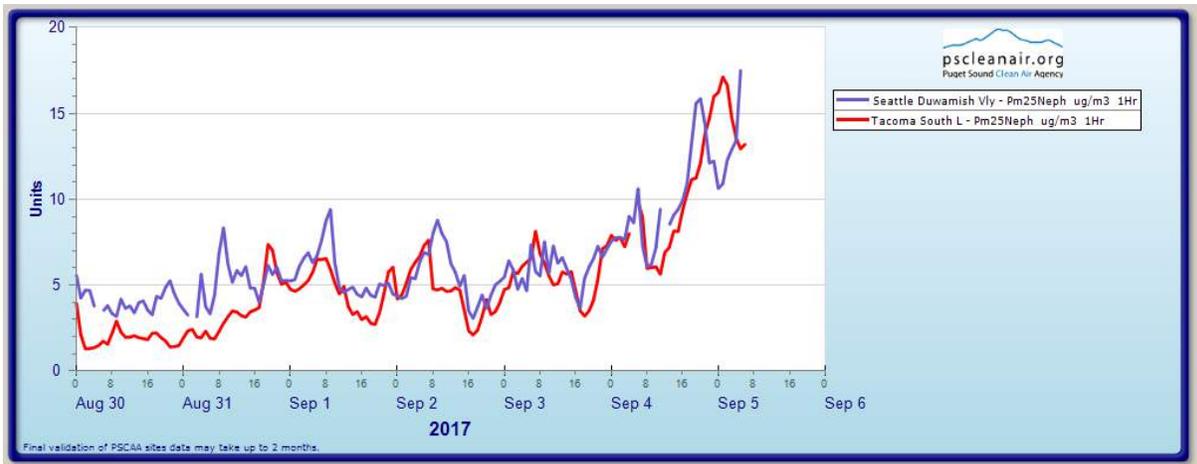
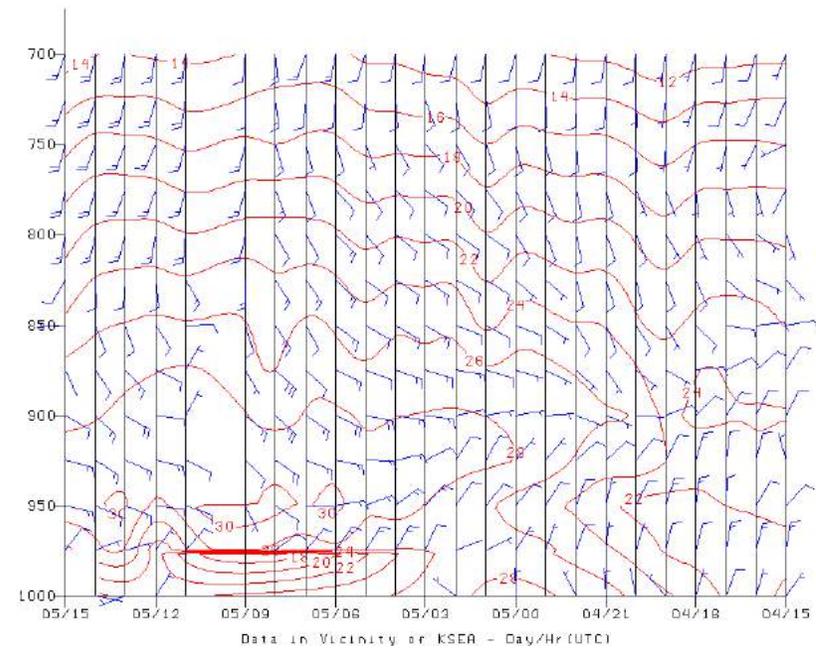
- Diagnosing more problems with n60 (a node on the sage cluster, ongoing)
- Running some past cases for Ranil at Ecology
- Fixing the on_the_fly plots

High Resolution Modeling and Wildfires

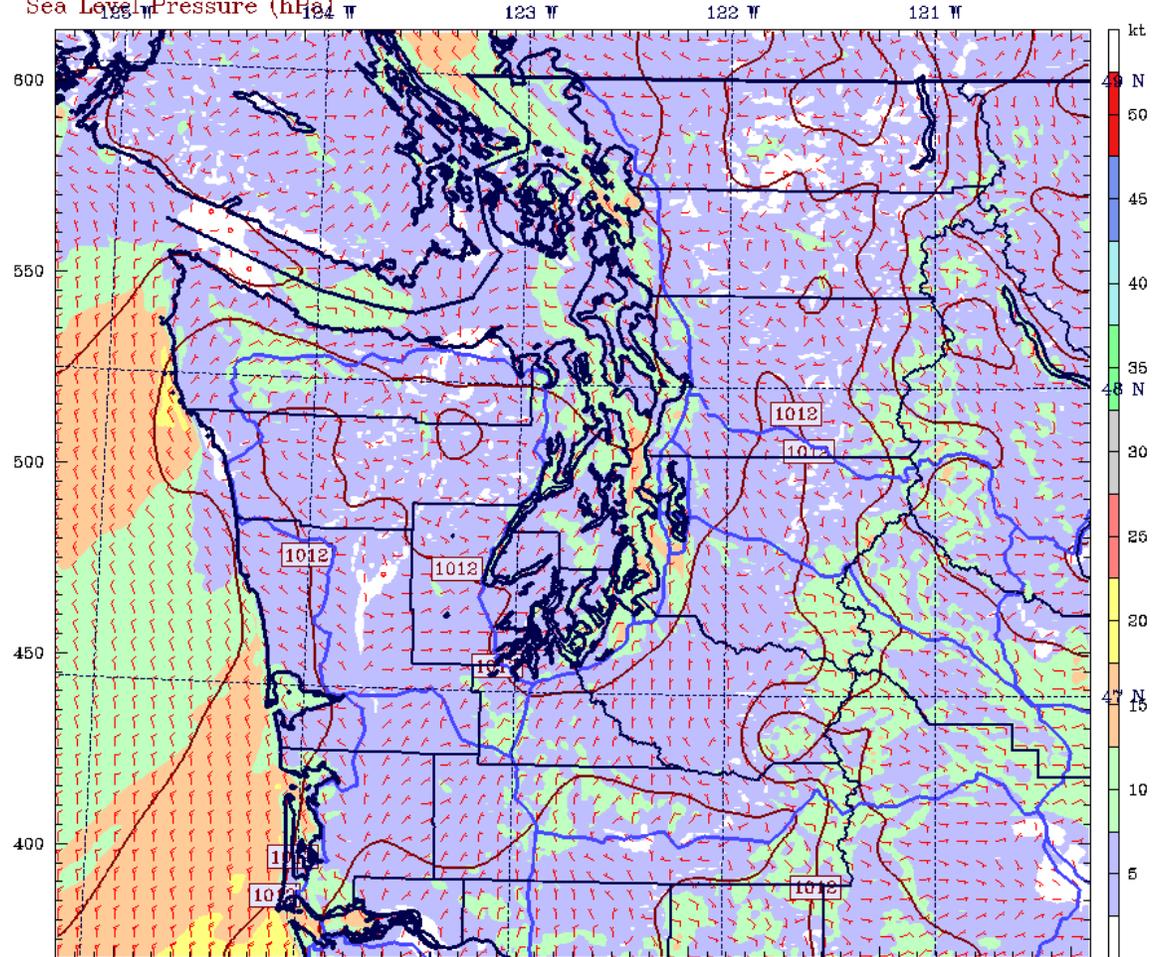
- The last summer wildfires have been widespread and have had huge impacts on air quality throughout the West Coast.
- Mesoscale model forecasts have been stunningly good.
- It is apparent that there is a new world of enhanced AQ and wildfire forecasting possible.



WRF run of Sept. 4 showed the potential for ash and AQ degradation

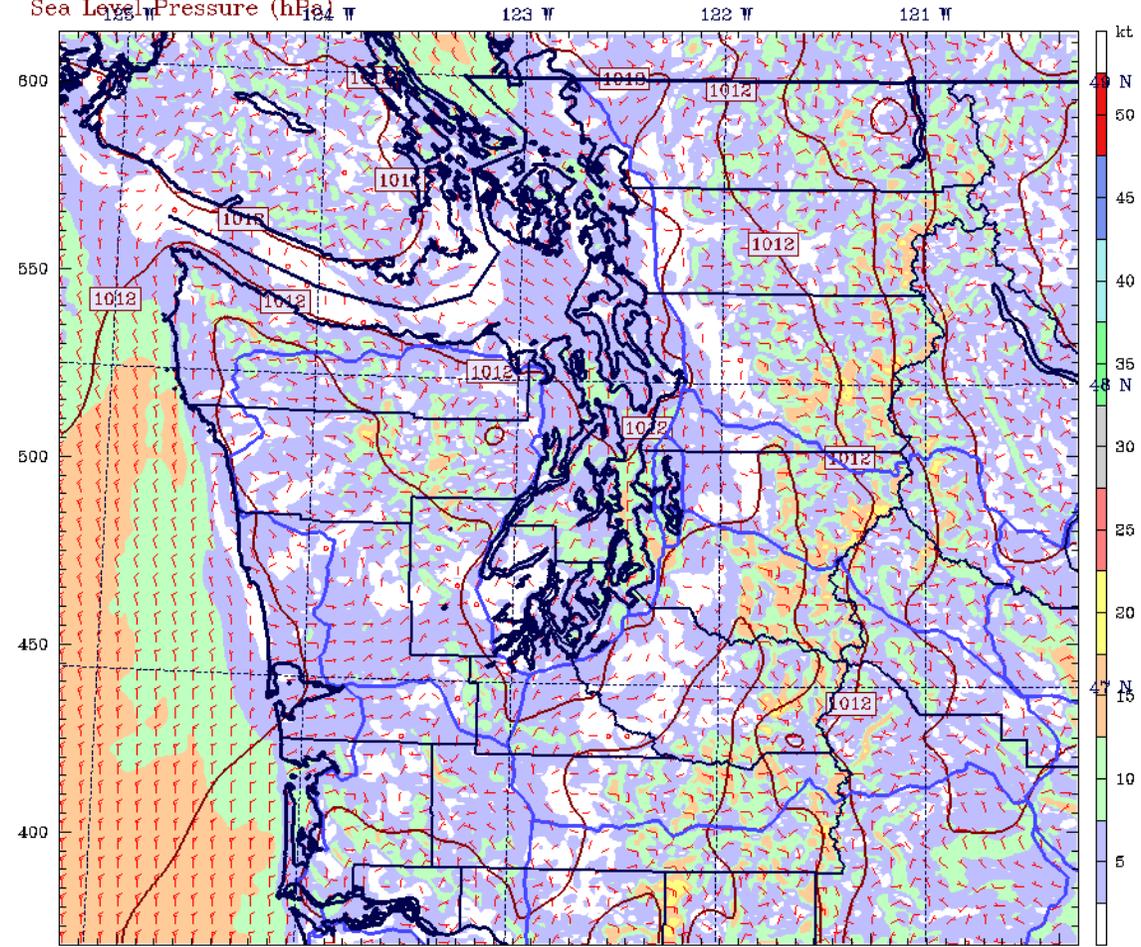


UW WRF-GFS 1.33km Domain Init: 12 UTC Mon 04 Sep 17
 Fcst: 12.00 h Valid: 00 UTC Tue 05 Sep 17 (17 PDT Mon 04 Sep 17)
 10m Wind Speed (knots)
 Wind at 10m (full barb = 10kts)
 Sea Level Pressure (hPa)



100 CONTOURS: 1000 hPa LOW= 1000.0 HIGH= 1015.0 INTERVAL= 300.000 350
 BARB VECTORS: FULL BARB = 10 kts
 Model Info: V3.7.1 No Cu YSU PBL Thompson Noah-MP 1.3 km, 37 levels, 6 sec
 LW: RRTMG SW: RRTMG DIFF: full KM: 2D Smagor INIT: RAP+GFS

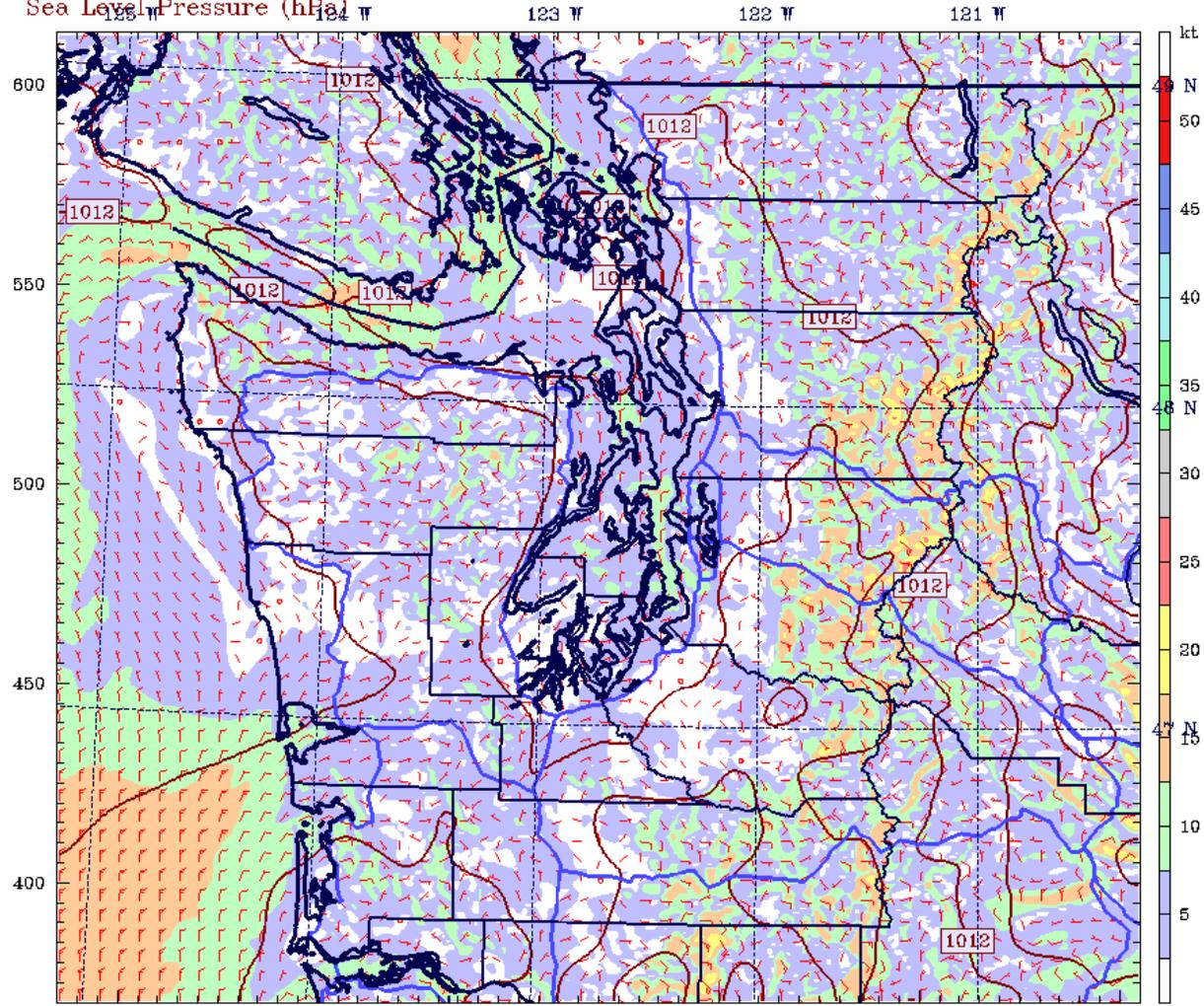
UW WRF-GFS 1.33km Domain
 Fcst: 18.00 h Valid: 06 UTC Tue 05 Sep 17 (23 PDT Mon 04 Sep 17)
 Init: 12 UTC Mon 04 Sep 17
 10m Wind Speed (knots)
 Wind at 10m (full barb = 10kts)
 Sea Level Pressure (hPa)



100 CONTOURS: 1hPa=hPa LOW= 1010.0 HIGH= 1018.0 INTERVAL= 1.00000 350
 BARB VECTORS: FULL BARB = 10 kts
 Model Info: V3.7.1 No Cu YSU PBL Thompson Noah-MP 1.3 km, 37 levels, 8 sec
 LW: RRTMG SW: RRTMG DIFF: full KM: ZD Smagor INIT: RAP+GFS

UW WRF-GFS 1.33km Domain
Fcast: 24.00 h Init: 12 UTC Mon 04 Sep 17
Valid: 12 UTC Tue 05 Sep 17 (05 PDT Tue 05 Sep 17)

10m Wind Speed (knots)
Wind at 10m (full barb = 10kts)
Sea Level Pressure (hPa)

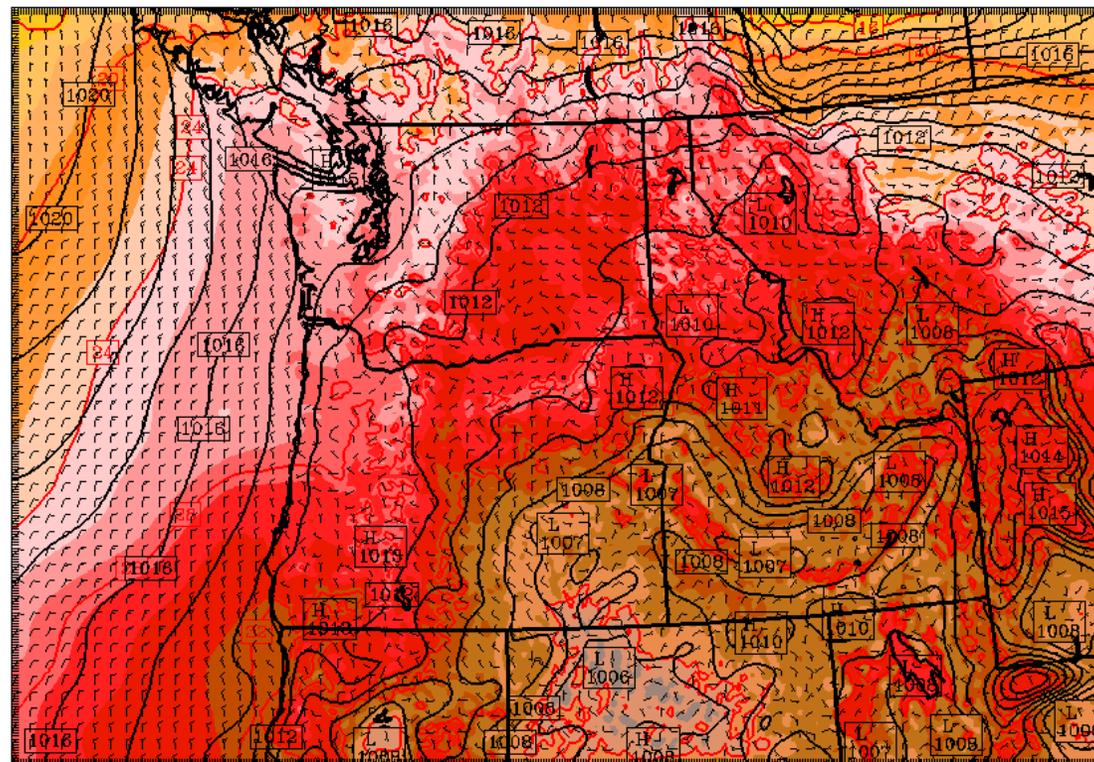


100 CONTOURS: 1000 hPa LOW= 1009.0 HIGH= 1015.0 INTERVAL= 300000 350

Model Info: V3.7.1 No Cu YSU PBL Thompson Noah-MP 1.3 km, 37 levels, 8 sec
LW: RRTMG SW: RRTMG DIFF: full KM: 2D Smagor INIT: RAP+GFS

UW WRF-GFS 4km Domain
Fest: 3 h
Temperature at 925 mb (°C)
Sea Level Pressure (hPa)

Init: 00 UTC Mon 04 Sep 17
Valid: 03 UTC Mon 04 Sep 17 (20 PDT Sun 03 Sep 17)
10m Wind (full barb = 10kts)



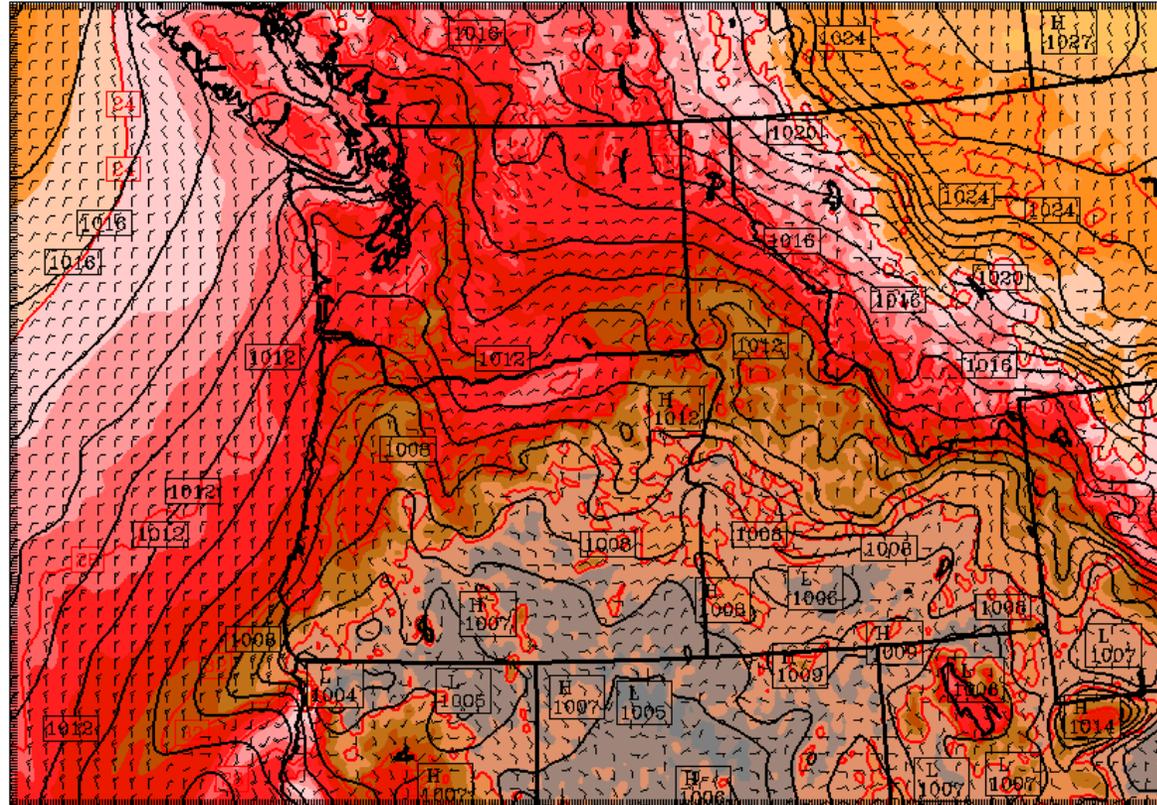
CONTOURS: UNITS=hPa LOW= 1007.0 HIGH= 1020.0 INTERVAL= 1.0000
CONTOURS: UNITS=°C LOW= 18.000 HIGH= 36.000 INTERVAL= 4.0000

| | | | | | | | | | | | | | | | | |
|-------|-----|-------|-----|-------|----|------|---|-----|---|------|----|------|----|------|----|----|
| -31.5 | -27 | -22.5 | -18 | -13.5 | -9 | -4.5 | 0 | 4.5 | 9 | 13.5 | 18 | 22.5 | 27 | 31.5 | 36 | °C |
|-------|-----|-------|-----|-------|----|------|---|-----|---|------|----|------|----|------|----|----|

Model Info: V3.7.1 G-D Ens YSU PBL Thompson Noah-MP 4.0 km, 37 levels, 24 sec
LW: RRTMG SW: RRTMG DIFF: full KM: 2D Smagor INIT: RAP+GFS

UW WRF-GFS 4km Domain
Fest: 24 h
Temperature at 925 mb (°C)
Sea Level Pressure (hPa)

Init: 00 UTC Mon 04 Sep 17
Valid: 00 UTC Tue 05 Sep 17 (17 PDT Mon 04 Sep 17)
10m Wind (full barb = 10kts)



CONTOURS: UNITS=hPa LOW= 1005.0 HIGH= 1026.0 INTERVAL= 1.0000
CONTOURS: UNITS=°C LOW= 20.000 HIGH= 36.000 INTERVAL= 4.0000

-31.5 -27 -22.5 -18 -13.5 -9 -4.5 0 4.5 9 13.5 18 22.5 27 31.5 36 °C

Model Info: V3.7.1 G-D Ens YSU PBL Thompson Noah-MP 4.0 km, 37 levels, 24 sec
LW: RRTMG SW: RRTMG DIFF: full KM: 2D Smagor INIT: RAP+GFS

UW WRF-GFS 4km Domain

Init: 00 UTC Mon 04 Sep 17

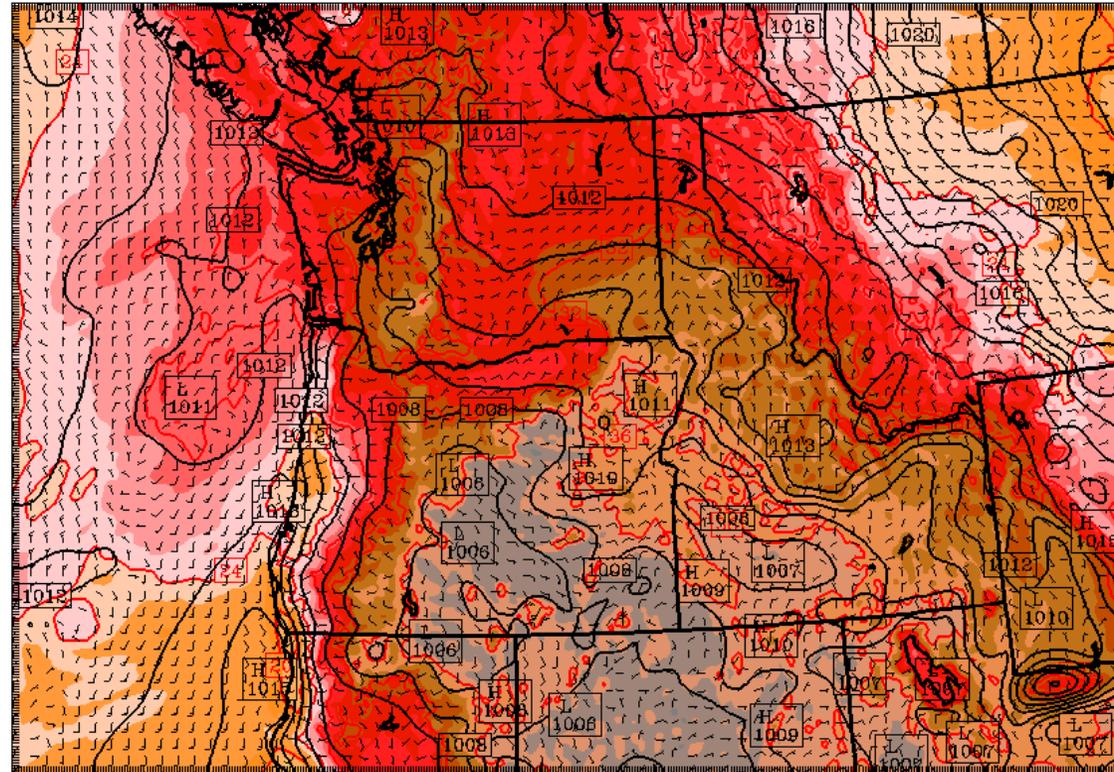
Fcst: 48 h

Valid: 00 UTC Wed 06 Sep 17 (17 PDT Tue 05 Sep 17)

Temperature at 925 mb (°C)

Sea Level Pressure (hPa)

10m Wind (full barb = 10kts)



UW WRF-GFS 1.33km Domain

Init: 12 UTC Mon 04 Sep 17

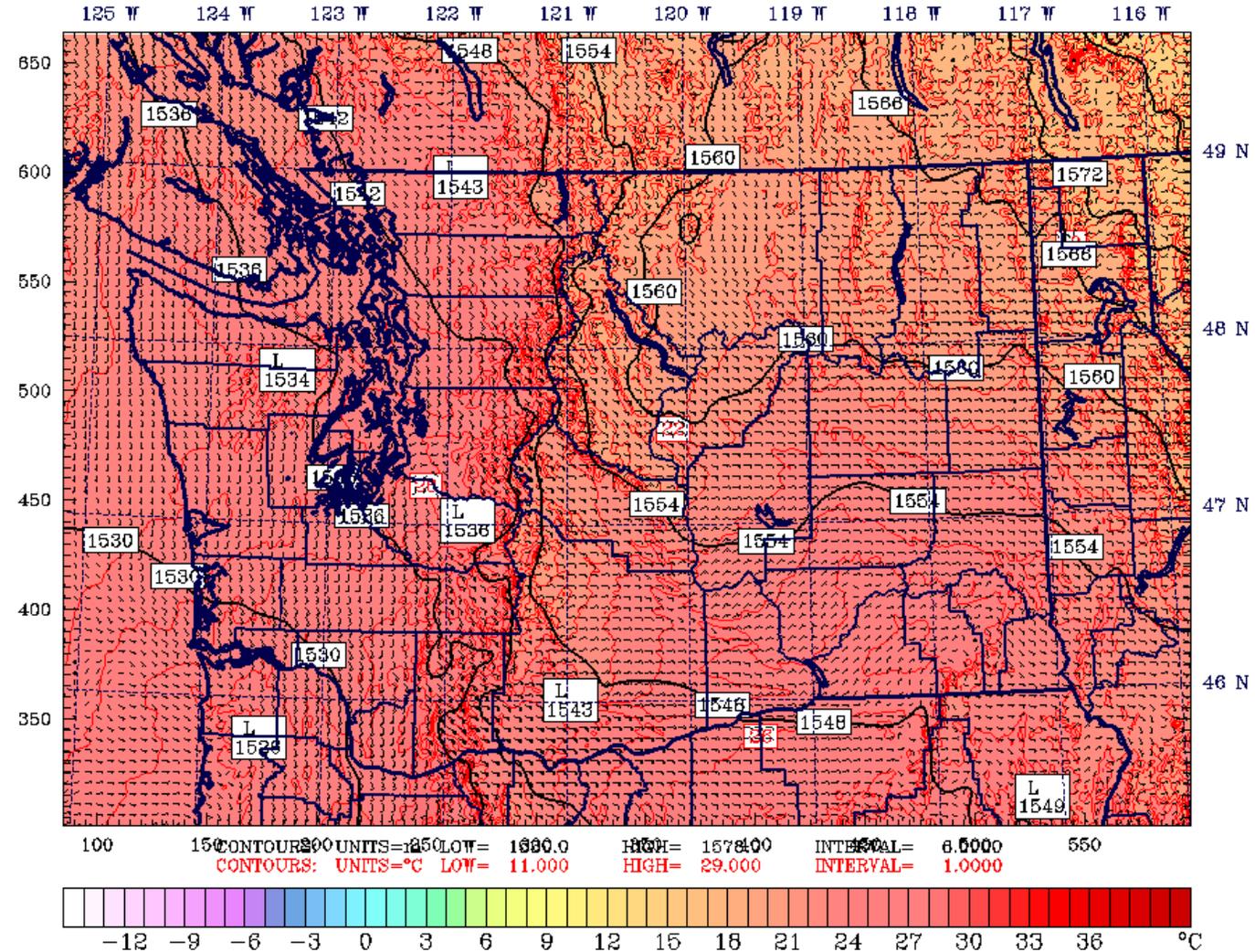
Fest: 24.00 h

Valid: 12 UTC Tue 05 Sep 17 (05 PDT Tue 05 Sep 17)

Temperature at 850mb (°C)

Wind at 850mb (full barb = 10kts)

Geopotential Height at 850mb (m)



Model Info: V3.7.1 No Cu YSU PBL Thompson Noah-MP 1.3 km, 37 levels, 8 sec
 LW: RRTMG SW: RRTMG DIFF: full KM: 2D Smagor INIT: RAP+GFS

An Example of Great Success: the Northern
California Wildfire on Oct 8/9 2017

Serious Air Quality Impacts

- Many Bay Area AQ sites had their worst air quality on record
- Air quality declined to extremely unhealthy levels for millions of people
- Remained unhealthy for days.
- Sickened thousands of people.
- Hundreds of people ended up in Bay Area hospitals from the effects of smoke



Northern Zone

| Stations | Tuesday, October 10, 2017 | | | | | | | | | | | | | | | | | | |
|--|---------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Hourly PST | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | |
| Napa | 268 | 285 | 343 | 383 | 405 | 404 | 407 | 388 | 382 | | | | 283 | 197 | 173 | 161 | 137 | 101 | |
| Napa - Napa Valley College | 241 | 320 | 418 | 437 | 458 | 475 | 0 | 0 | 486 | 446 | | | 322 | 220 | | 176 | 157 | 121 | |
| San Rafael | 43 | 55 | 65 | 84 | 118 | 138 | 164 | 178 | 235 | 256 | 246 | 203 | 193 | 162 | 120 | 87 | 72 | 78 | |
| Sebastopol | 83 | 91 | 107 | 121 | 136 | 157 | 163 | 171 | | 186 | 196 | 222 | 277 | 228 | 190 | 175 | 162 | 151 | |
| Vallejo | 72 | 65 | 73 | 119 | 152 | 152 | 157 | 178 | 196 | 238 | 235 | 212 | 223 | 194 | 167 | 145 | 107 | 87 | |

Coast & Central Bay

| Stations | Tuesday, October 10, 2017 | | | | | | | | | | | | | | | | | | |
|--|---------------------------|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|--|
| Hourly PST | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | |
| Berkeley Aquatic Park | 56 | 51 | 52 | 49 | 52 | 53 | 77 | 119 | 165 | 176 | 191 | 193 | 162 | 133 | 110 | 98 | 98 | 89 | |
| Laney College | 54 | 55 | 58 | 58 | 58 | 65 | 78 | 87 | 83 | 122 | 162 | 160 | 155 | 125 | 113 | 97 | 94 | 94 | |
| Oakland East | 55 | 50 | 48 | 42 | 51 | 48 | 67 | 72 | 76 | 79 | 81 | 98 | 95 | 88 | 77 | 76 | 71 | 78 | |
| Oakland West | 69 | 68 | 67 | 71 | 73 | 72 | 78 | 98 | 115 | 153 | 165 | 164 | 156 | 121 | 109 | 95 | 94 | 91 | |
| San Francisco - Arkansas St. | 59 | 59 | 60 | 63 | 123 | 183 | 189 | 170 | 154 | 164 | 171 | 161 | 124 | 99 | 94 | 90 | 94 | 92 | |
| San Pablo - Rumrill | 56 | 51 | 53 | 66 | 154 | 153 | 137 | 165 | 206 | 235 | 246 | 254 | 216 | 177 | 155 | 122 | 95 | 82 | |

| AQI Key | |
|--------------------------------|--------------------------------|
| Air Quality Index (AQI) Values | Levels of Health Concern |
| 0-50 | Good |
| 51-100 | Moderate |
| 101-150 | Unhealthy for Sensitive Groups |
| 151-200 | Unhealthy |
| 201-300 | Very Unhealthy |

October 10

Northern Zone

| Stations | Friday, October 13, 2017 | | | | | | | | | | | | | | | | | |
|--|--------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Hourly PST | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| Napa | 189 | 186 | 191 | 198 | 206 | 221 | 230 | 285 | 296 | 272 | 240 | 266 | 312 | 303 | | | 296 | 25 |
| Napa - Napa Valley College | 243 | 220 | 211 | 211 | 230 | 257 | 253 | 262 | 269 | 259 | 241 | 238 | 231 | 215 | 237 | 274 | 267 | 24 |
| San Rafael | 64 | 72 | 88 | 83 | 76 | 70 | 64 | 61 | 61 | 84 | 127 | 155 | 164 | 163 | 158 | 164 | 167 | 151 |
| Sebastopol | 38 | 33 | 25 | 25 | 58 | 58 | 55 | 60 | 65 | 85 | 77 | 128 | 165 | 163 | 171 | 176 | 167 | 131 |
| Vallejo | 123 | 121 | 118 | 122 | 131 | 133 | 149 | 168 | 195 | 212 | 234 | 222 | 211 | 191 | 182 | 195 | 215 | 20 |

Coast & Central Bay

| Stations | Friday, October 13, 2017 | | | | | | | | | | | | | | | | | |
|--|--------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Hourly PST | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| Berkeley Aquatic Park | 88 | 81 | 81 | 97 | 98 | 80 | 88 | 117 | 155 | 166 | 174 | 177 | 177 | 164 | 154 | 151 | 152 | 121 |
| Laney College | 132 | 117 | 131 | 153 | 159 | 159 | 163 | 163 | 164 | 176 | 179 | 175 | 174 | 169 | 159 | 156 | 166 | 161 |
| Oakland East | 151 | 140 | 126 | 123 | 123 | 134 | 137 | 144 | 144 | 153 | 165 | 169 | 166 | 167 | 167 | 159 | 159 | 161 |
| Oakland West | 88 | 88 | 93 | 111 | 126 | 132 | 132 | 126 | 158 | 171 | 169 | 172 | 177 | 166 | 156 | 155 | 170 | 16 |
| San Francisco - Arkansas St. | 59 | 63 | 56 | 61 | 75 | 89 | 91 | 91 | 87 | 116 | 159 | 162 | | 146 | 114 | 153 | 152 | 111 |
| San Pablo - Rumrill | 113 | 101 | 89 | 78 | 75 | 80 | 81 | 99 | 130 | 153 | 176 | 189 | 188 | 172 | 166 | 175 | 178 | 16 |

This Week's Air Quality Is Worst On Record For San Francisco Bay Area

October 12, 2017 · 5:31 PM ET
 Heard on All Things Considered

October 13

Northern Zone

| Stations | October, 2017 | | | | | | | | | | | | | | | | | |
|--|---------------|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Days | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| Napa | 29 | 24 | 26 | 38 | 40 | 44 | 41 | 79 | 157 | 221 | 178 | 175 | 249 | 109 | 153 | 122 | 158 | 100 |
| Napa - Napa Valley College | 31 | 27 | 35 | 32 | 35 | 35 | 40 | 73 | 171 | 281 | 191 | 181 | 237 | 85 | 82 | 94 | 162 | 52 |
| San Rafael | 32 | 24 | 35 | 33 | 29 | 37 | 52 | 40 | 161 | 156 | 87 | 151 | 111 | 80 | 40 | 56 | 83 | 51 |
| Sebastopol | 20 | 30 | 24 | 22 | 18 | 21 | 32 | 18 | 152 | 165 | 80 | 67 | 96 | 64 | 67 | 136 | 67 | 28 |
| Vallejo | 31 | 26 | 35 | 32 | 35 | 39 | 53 | 45 | 97 | 160 | 156 | 164 | 175 | 63 | 44 | 61 | 99 | 55 |

Coast & Central Bay

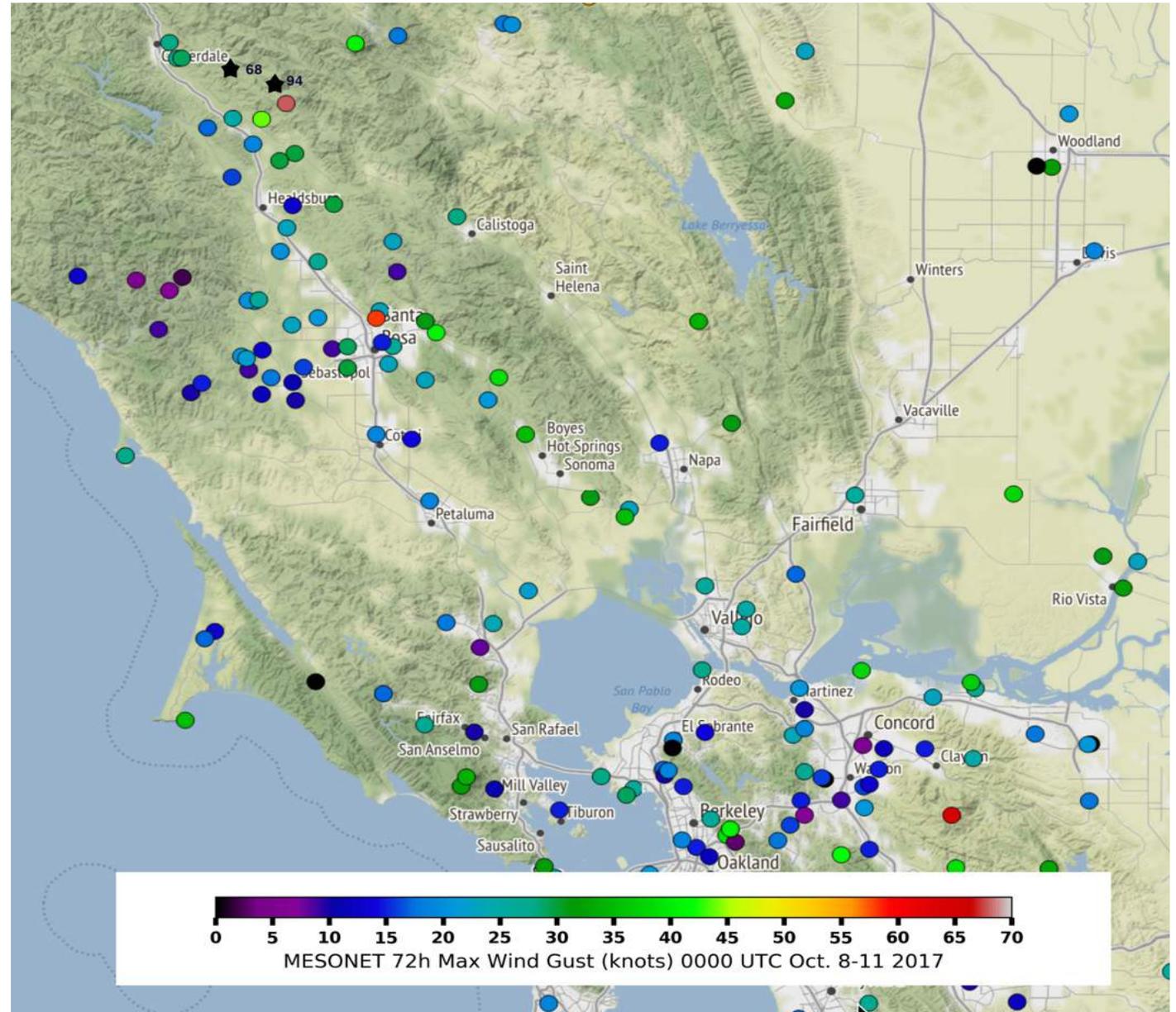
| Stations | October, 2017 | | | | | | | | | | | | | | | | | |
|--|---------------|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|----|----|----|-----|----|
| Days | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| Berkeley Aquatic Park | 32 | 24 | 38 | 29 | 41 | 44 | 52 | 35 | 76 | 116 | 88 | 130 | 133 | 70 | 48 | 76 | 83 | 45 |
| Laney College | 55 | 41 | 55 | 49 | 52 | 54 | 58 | 56 | 84 | 95 | 106 | 155 | 159 | 79 | 60 | 84 | 95 | 65 |
| Oakland East | 36 | 32 | 43 | 38 | 36 | 31 | 41 | 45 | 66 | 70 | 123 | 152 | 159 | 84 | 44 | 65 | 80 | 56 |
| Oakland West | 59 | 46 | 54 | 45 | 40 | 53 | 61 | 51 | 87 | 99 | 96 | 150 | 151 | 74 | 53 | 91 | 91 | 60 |
| San Francisco - Arkansas St. | 52 | 45 | 42 | 34 | 31 | 50 | 56 | 57 | 100 | 127 | 78 | 136 | 98 | 69 | 40 | 74 | 91 | 34 |
| San Pablo - Rumrill | 37 | 32 | 44 | 36 | 33 | 38 | 54 | 49 | 119 | 158 | 95 | 153 | 159 | 79 | 44 | 95 | 101 | 53 |

Daily View

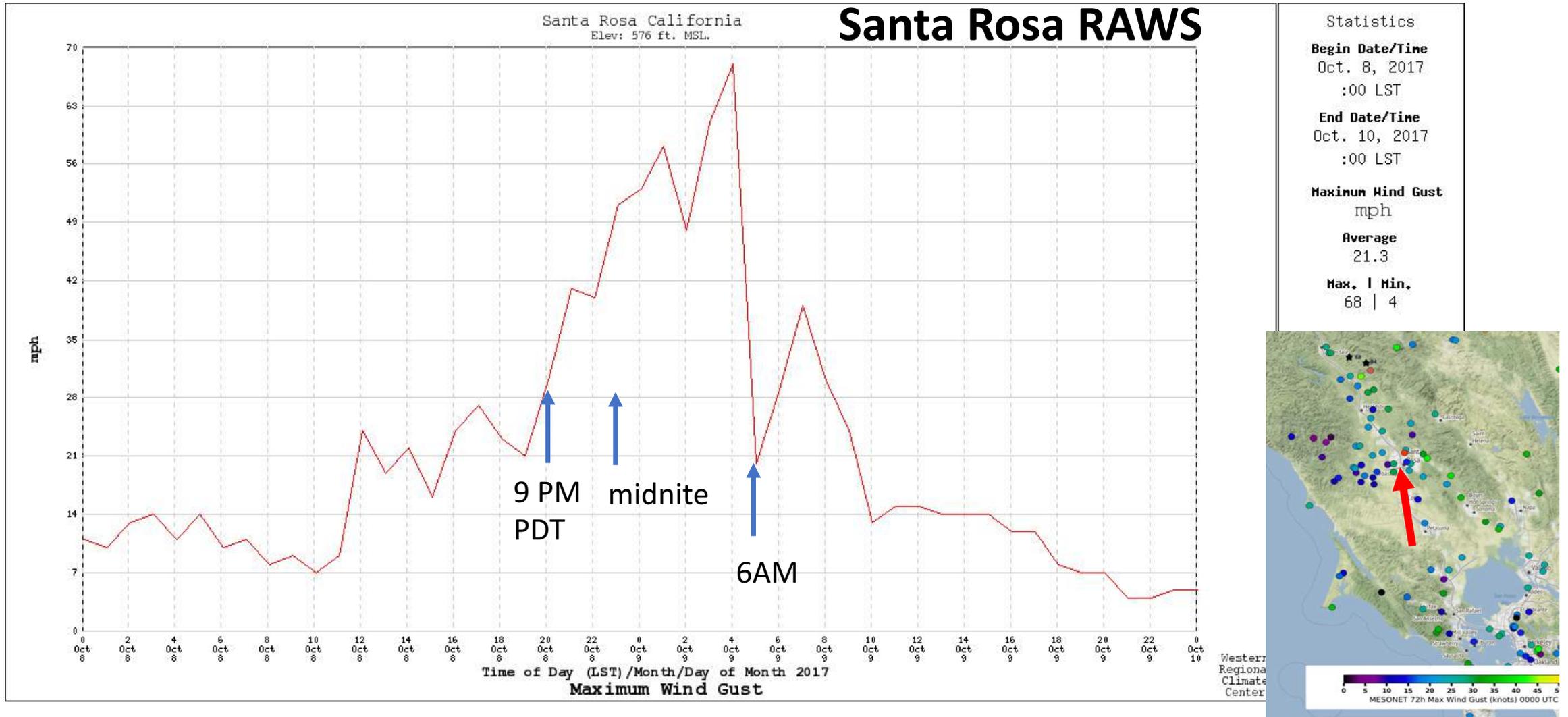
Bad air quality last days

Max Gusts During the Event (knots):

Big spatial
variation with
strongest winds
(60-95 knots)
on lee (SW)
slopes of terrain



Temporal Variation: Rapid Increase and Decline



CalFires STD 1.33km Domain

Init: 12 UTC Sun 08 Oct 17

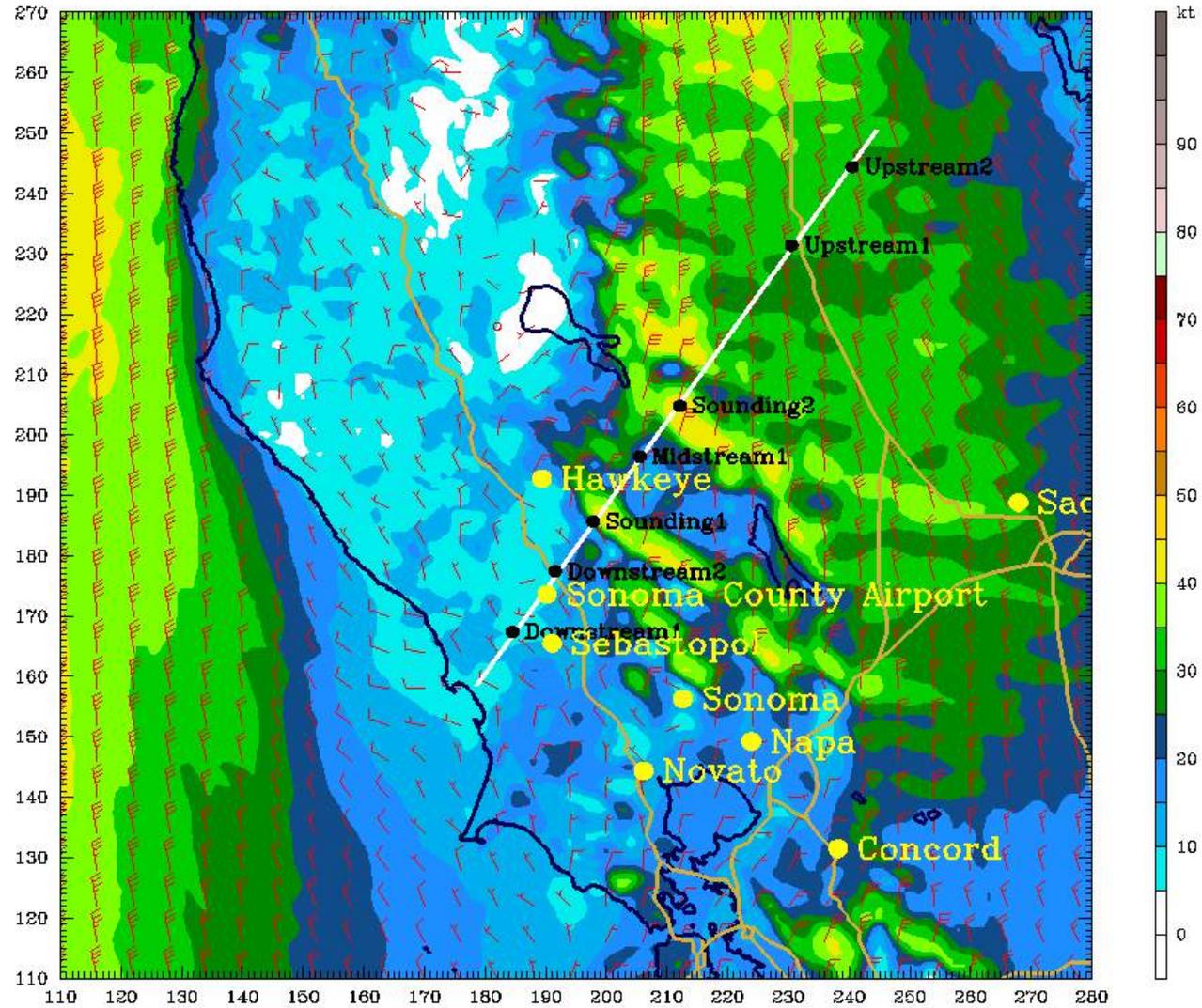
Fcst: 6.00 h

Valid: 18 UTC Sun 08 Oct 17 (11 PDT Sun 08 Oct 17)

Max Wind Speed below 500. m AGL

Horizontal wind vectors

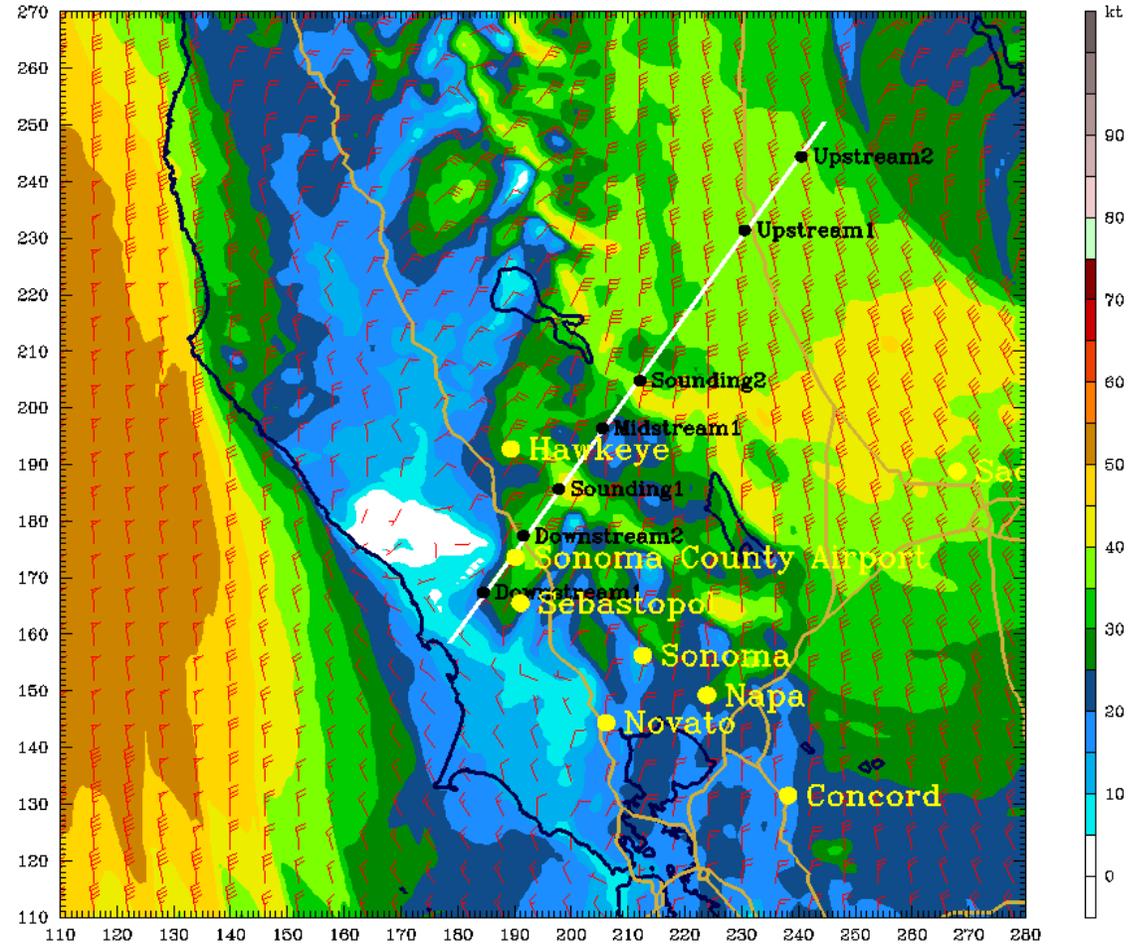
at k-index = 32



BARB VECTORS: FULL BARB = 10 kts

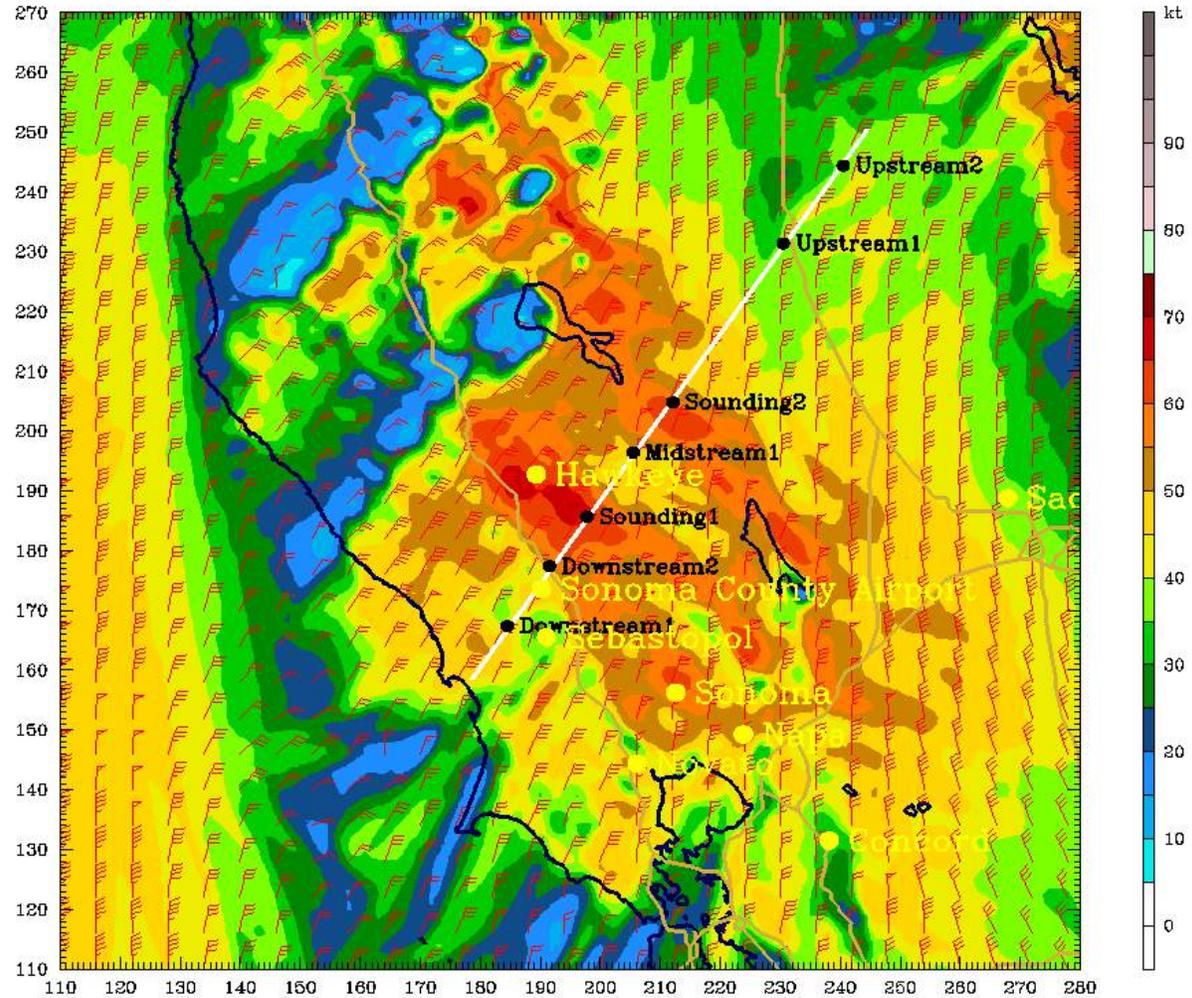
Model Info: V3.7.1 No Cu YSU PBL Thompson Noah-MP 1.3 km, 37 levels, 6 sec
LW: RRTMG SW: RRTMG DIFF: full KM: 2D Smagor

CalFires STD 1.33km Domain
Init: 12 UTC Sun 08 Oct 17
Fest: 12.00 h Valid: 00 UTC Mon 09 Oct 17 (17 PDT Sun 08 Oct 17)
Max Wind Speed below 500. m AGL
Horizontal wind vectors at k-index = 32



BARB VECTORS: FULL BARB = 10 kts
Model Info: V3.7.1 No Cu YSU PBL Thompson Noah-MP 1.3 km, 37 levels, 8 sec
LW: RRTMG SW: RRTMG DIFF: full KM: 2D Smagor

CalFires STD 1.33km Domain Init: 12 UTC Sun 08 Oct 17
 Fcst: 15.00 h Valid: 03 UTC Mon 09 Oct 17 (20 PDT Sun 08 Oct 17)
 Max Wind Speed below 500. m AGL
 Horizontal wind vectors at k-index = 32



BARB VECTORS: FULL BARB = 10 kts
 Model Info: V3.7.1 No Cu YSU PBL Thompson Noah-MP 1.3 km, 37 levels, 8 sec
 LW: RRTMG SW: RRTMG DIFF: full KM: 2D Smagor

CalFires STD 1.33km Domain

Init: 12 UTC Sun 08 Oct 17

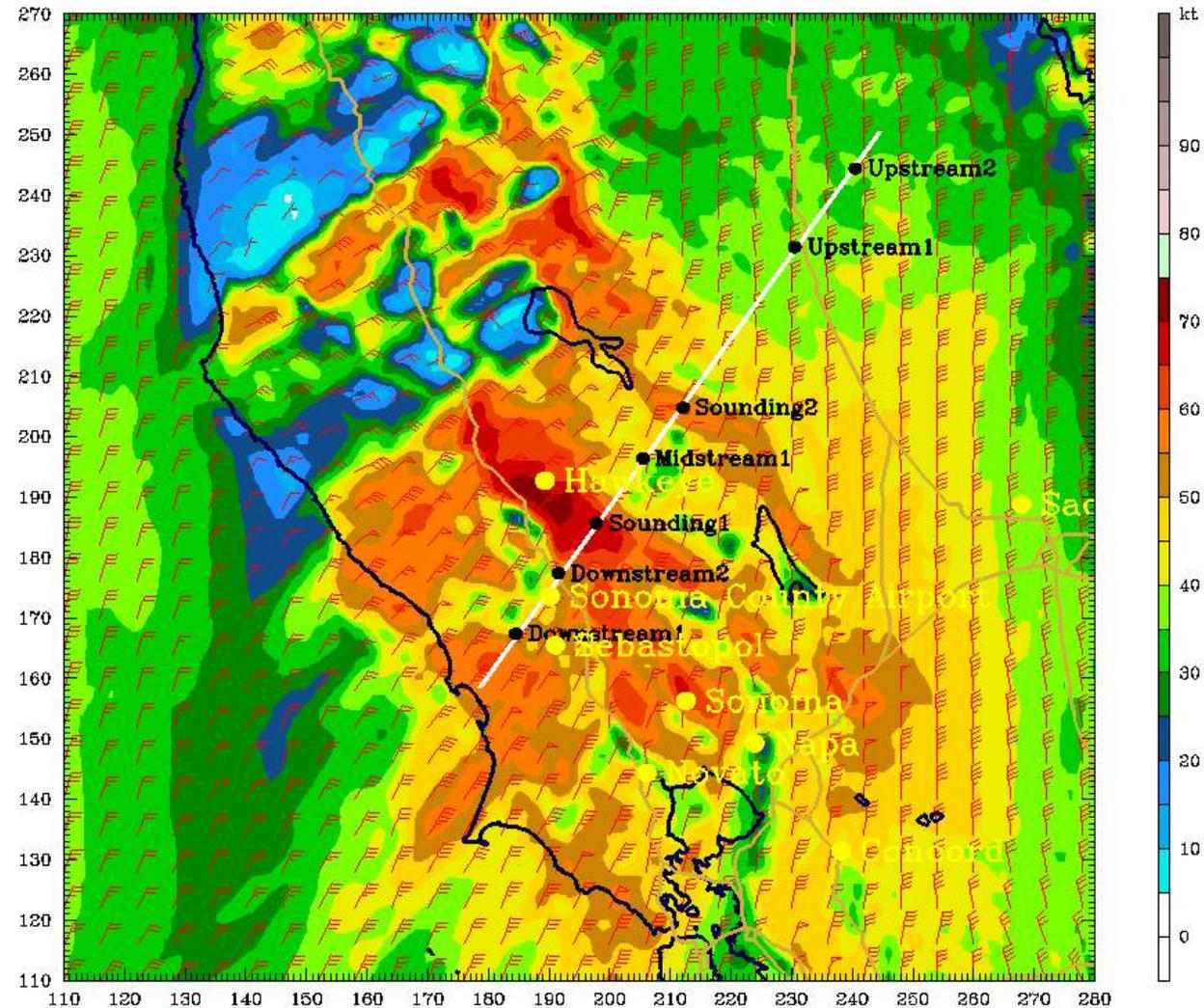
Fest: 17.00 h

Valid: 05 UTC Mon 09 Oct 17 (22 PDT Sun 08 Oct 17)

Max Wind Speed below 500. m AGL

Horizontal wind vectors

at k-index = 32



BARB VECTORS: FULL BARB = 10 kts

Model Info: V3.7.1 No Cu YSU PBL Thompson Noah-MP 1.3 km, 37 levels, 6 sec
LW: RRTMG SW: RRTMG DIFF: full KM: 2D Smagor

The end

The Toxic Air in California Is a Public Health Crisis

They may be far away from the flames, but millions of residents are inhaling deadly pollution from the devastating wildfires.