Prineville and Burns

Creating a simple but effective Predictive advisory

20 Years of experience

- Local Governments can be trained
- Nov to Feb – Part time and other duties
- Old tool
  - Observed PM10, temperature, wind speed, barometric pressure across region
  - Worked well, historic data, not predictive
- Last 10 years – train mini-meteorologists
- Now, desire quick easy tool – predictive; more sophisticated

Objectives

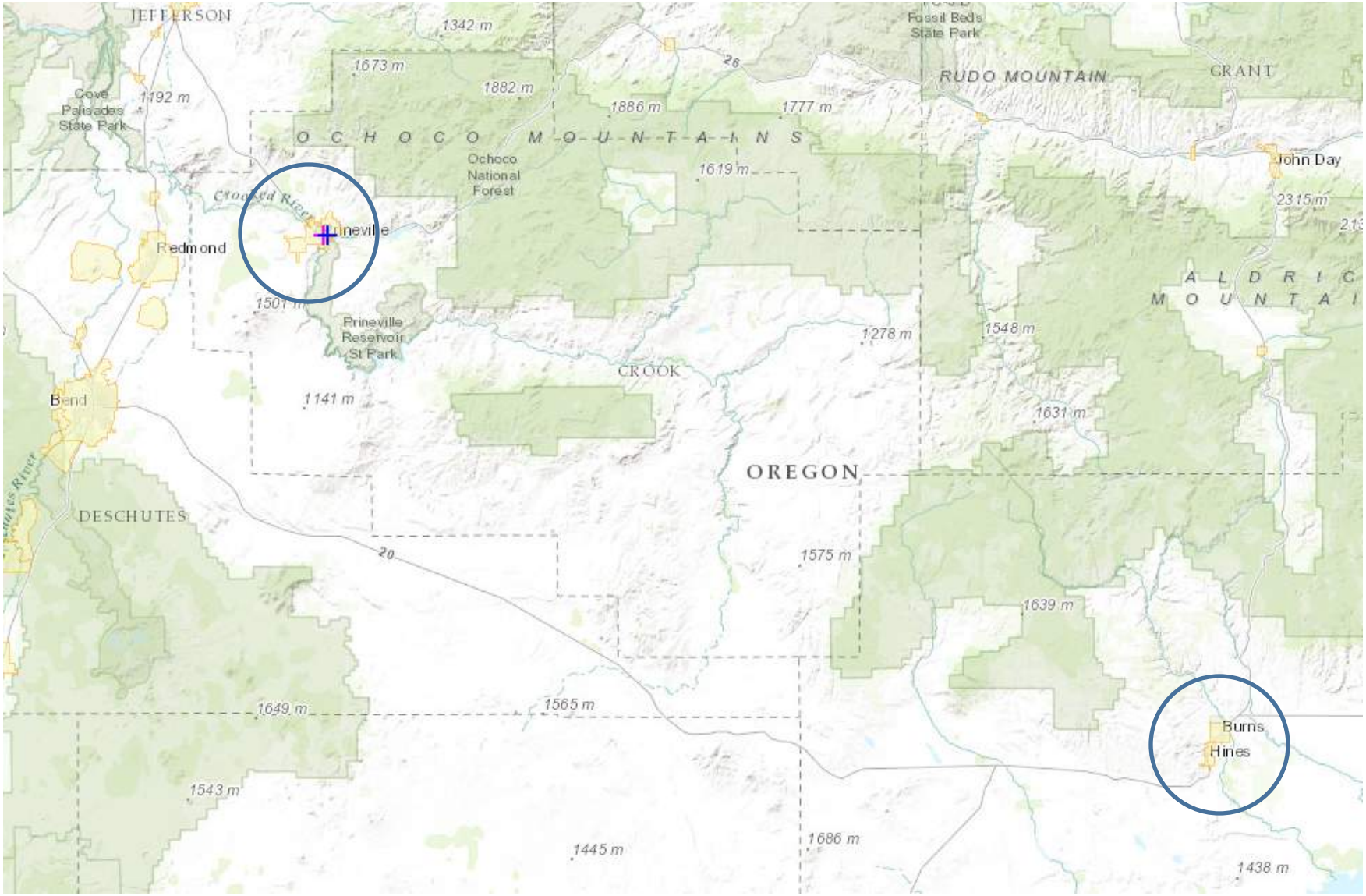
- Create a simple but effective Advisory for Local Governments to use to advise their community on when to burn and when not to burn.
- Tool needs to be predictive
- Tool must be easy to use
- If tool breaks, must be fixable with a small amount of understanding by locals

Excel Workbook

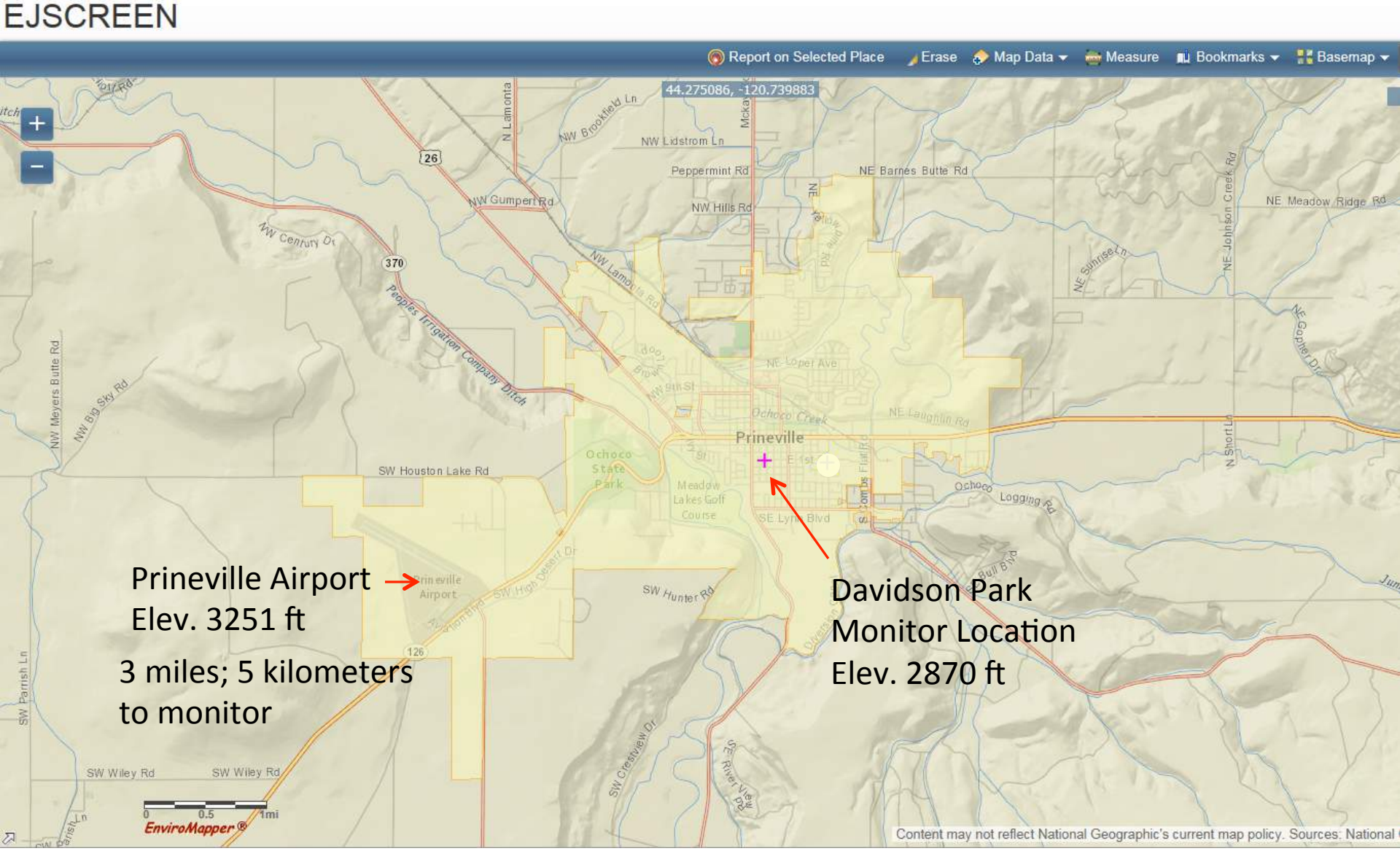
- Parameters
  - Barometric Pressure
  - Temperature
  - Wind Speed
  - Buildup of PM2.5
  - Vertical mixing component

- Used limits on parameters to determine future air quality

Central Oregon – High Desert
Prineville and Burns



Prineville Area

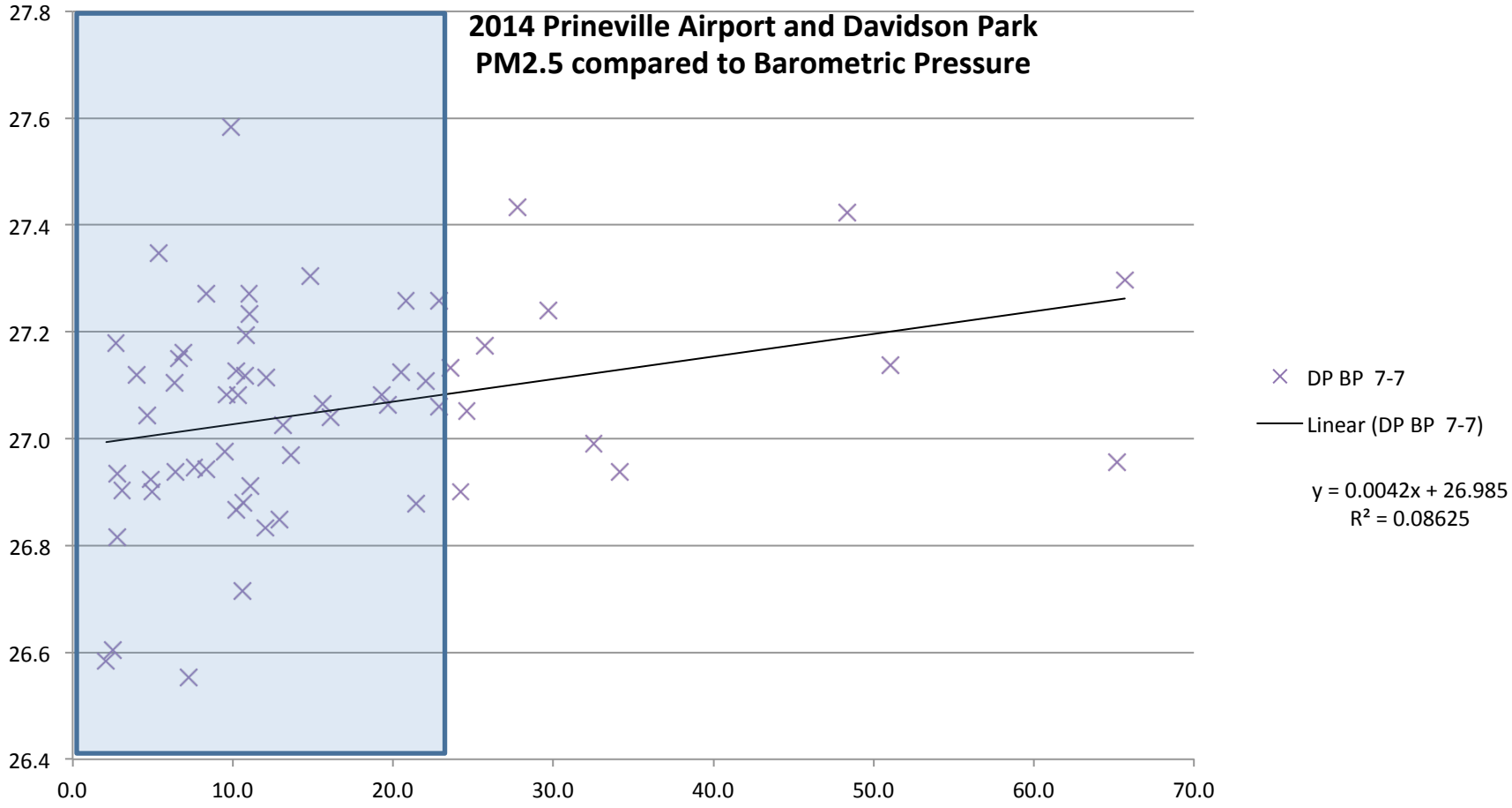


Prineville Airport
Elev. 3251 ft

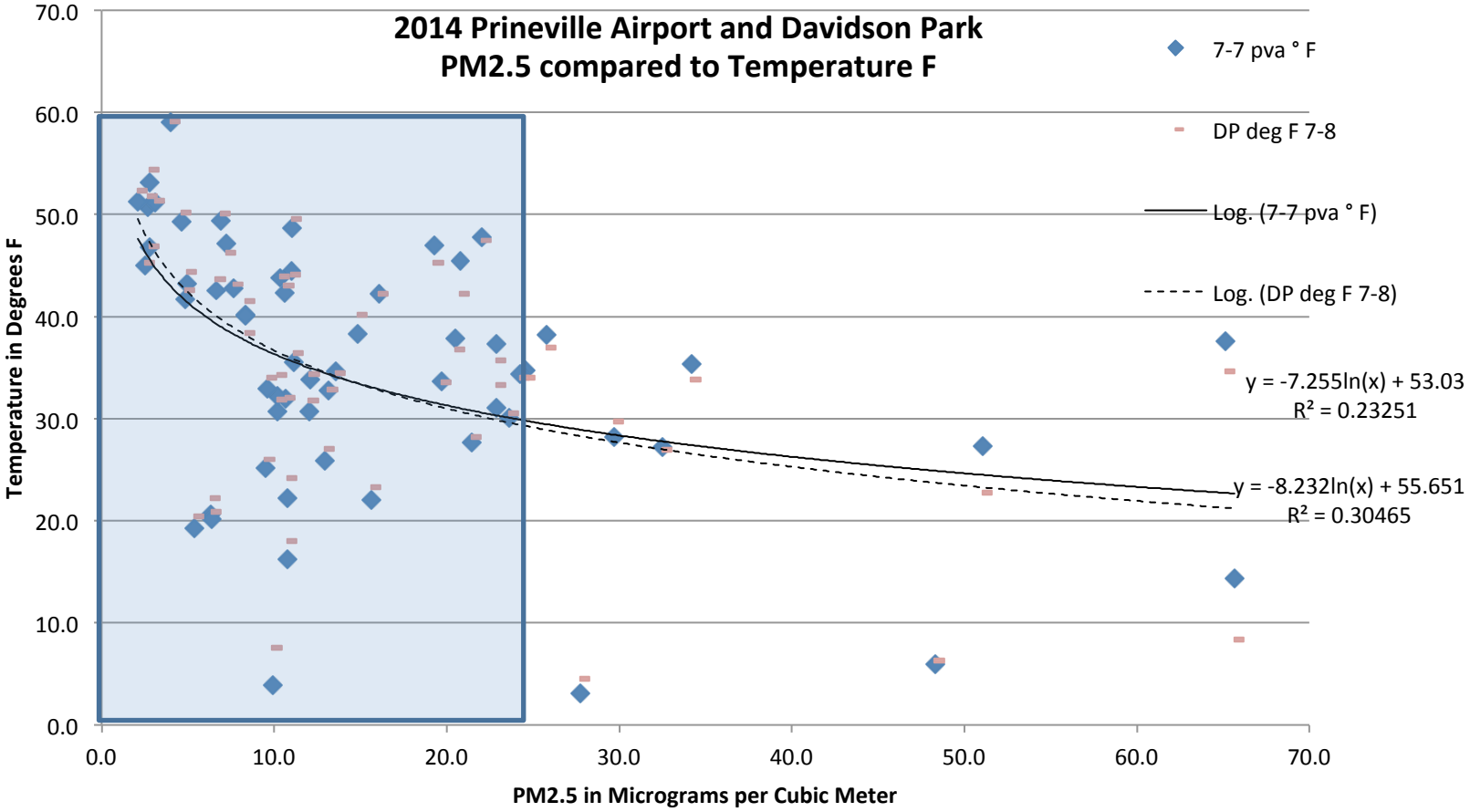
3 miles; 5 kilometers
to monitor

Davidson Park
Monitor Location
Elev. 2870 ft

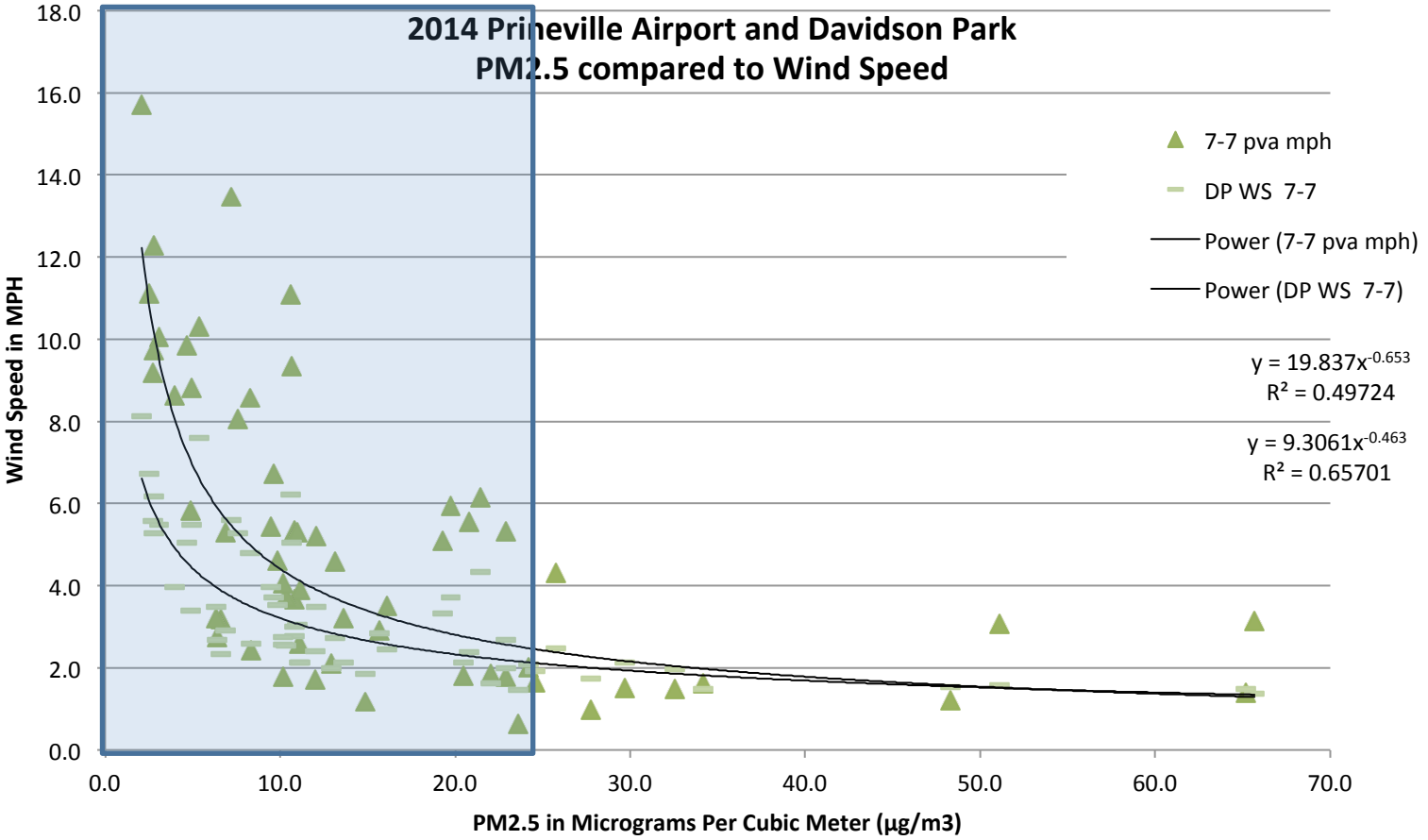
Barometric Thresholds



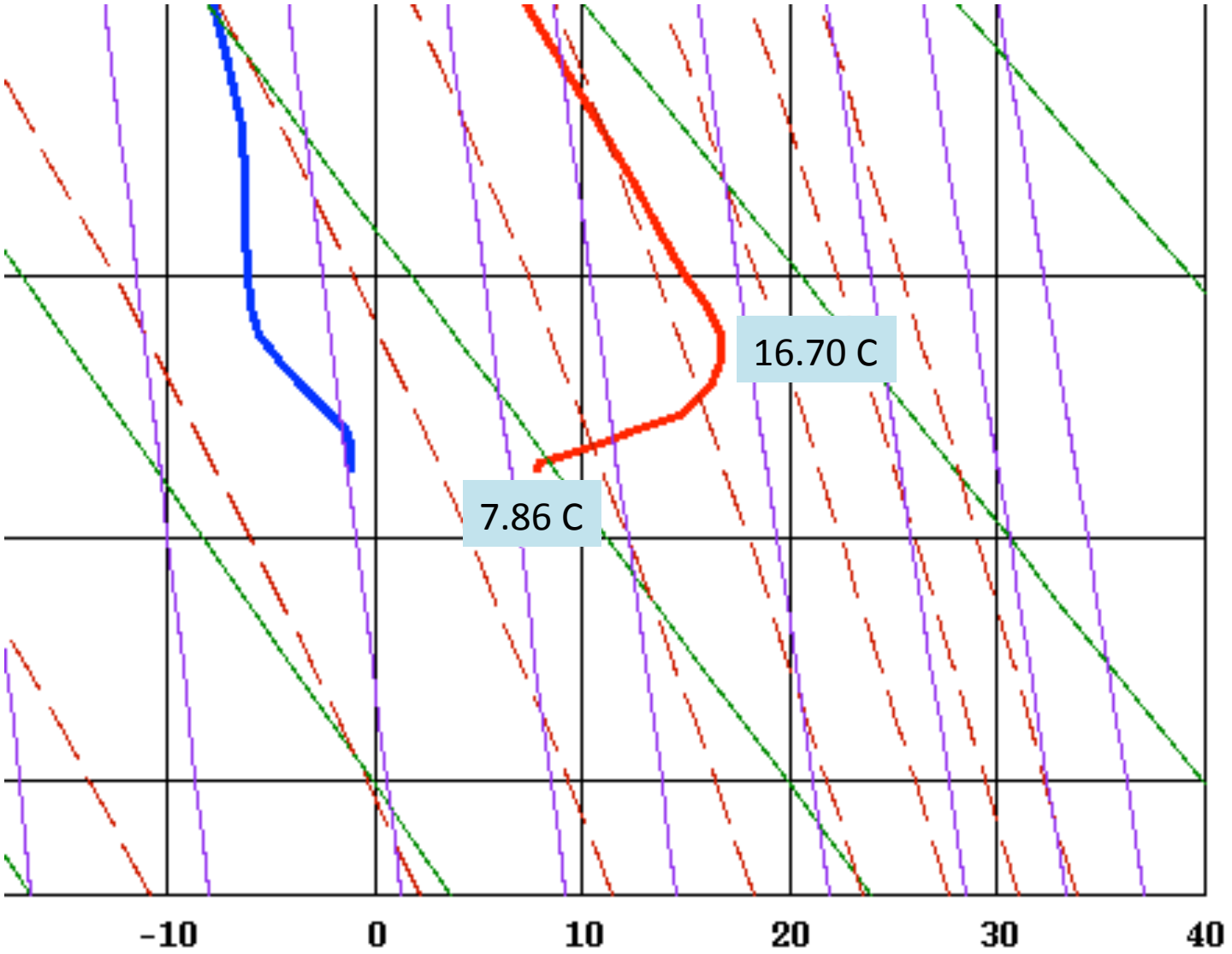
How do you know the Temperature Thresholds?



Wind Tresholds?



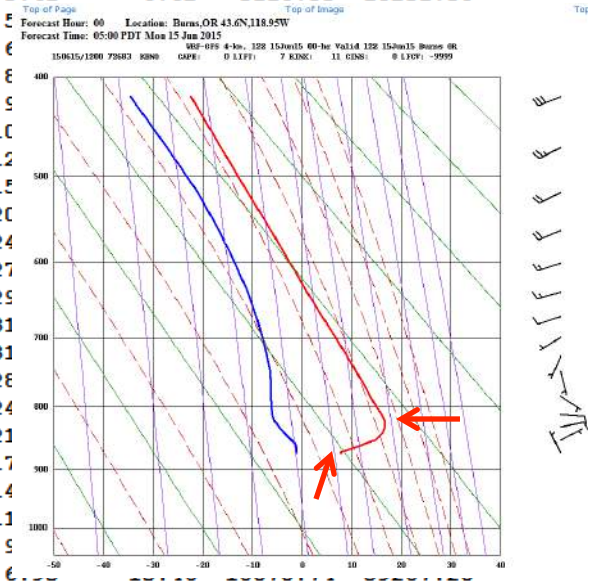
Inversion



Inversion

STID = KBNO STNM = 72683 TIME = 150615/1200
SLAT = 43.5807 SLON = -118.9438 SELV = 1263.4

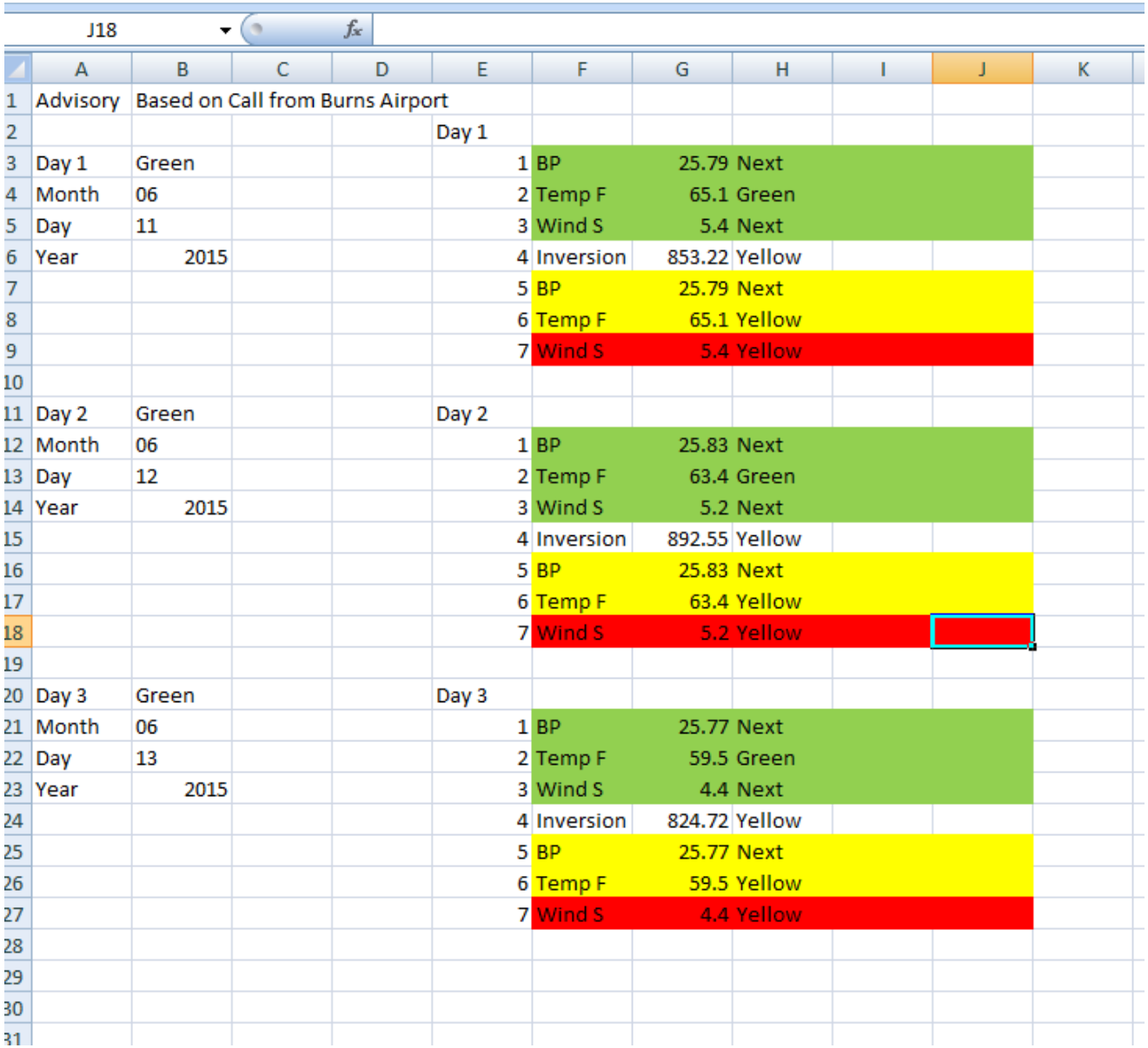
PRES	TMPC	DWPC	TMPF	DWPF	DRCT	SPED	SKNT	HGTM	HGTFT
872.33	7.86	-1.20	46.15	29.84	333.99	1.36	2.64	1263.45	4145.18
870.31	7.91	-1.22	46.25	29.80	341.97	1.43	2.78	1282.54	4207.82
866.34	9.31	-1.14	48.76	29.95	7.62	1.44	2.79	1320.32	4331.74
862.00	10.86	-1.19	51.54	29.86	35.17	1.82	3.54	1362.13	4468.94
856.92	12.66	-1.48	54.79	29.34	52.82	2.59	5.04	1411.46	4630.79
851.45	14.58	-2.11	58.24	28.20	62.23	3.55	6.90	1465.32	4807.49
845.51	15.65	-2.88	60.18	26.81	68.15	4.04	7.86	1524.56	5001.84
838.61	16.32	-3.77	61.37	25.22	73.42	4.32	8.39	1594.00	5229.67
830.61	16.70	-4.72	62.06	23.50	78.85	4.45	8.64	1675.45	5496.88
821.26	16.66	-5.58	61.99	21.95	85.30	4.36	8.48	1771.61	5812.37
810.41	15.94	-6.07	60.69	21.08	94.70	3.95	7.68	1884.55	6182.91
797.82	14.73	-6.19	58.52	20.87	108.91	3.44	6.69	2016.92	6617.19
783.23	13.69	-6.27	56.64	20.72	124.52	3.18	6.19	2172.39	7127.27
766.37	12.50	-6.31	54.50	20.64	142.08	2.99	5.82	2355.07	7726.61
746.90	10.92	-6.48	51.65	20.34	165.87	2.65	5.16	2569.99	8431.73
724.53	8.99	-7.07	48.19	19.27	203.03	2.48	4.82	2822.42	9259.92
698.95	6.69	-8.00	44.04	17.59	238.82	3.41	6.62	3118.53	10231.38
669.93	3.99	-9.20	39.18	15.44	252.14				
637.40	0.94	-11.02	33.70	12.16	254.46				
601.32	-2.46	-13.56	27.58	7.59	252.28				
561.46	-6.33	-16.70	20.60	1.93	247.72				
517.56	-10.96	-21.03	12.28	-5.86	243.70				
469.58	-16.36	-27.22	2.54	-16.99	243.30				
418.56	-22.34	-34.60	-8.22	-30.29	248.38				
368.39	-28.77	-41.43	-19.78	-42.58	255.46				
322.59	-35.88	-46.49	-32.59	-51.68	257.95				
281.55	-43.80	-50.60	-46.84	-59.08	256.23				
245.02	-51.04	-55.71	-59.88	-68.29	252.66				
213.16	-55.69	-61.66	-68.23	-78.99	249.74				
186.10	-57.13	-66.66	-70.83	-87.99	248.84				
163.45	-56.40	-71.42	-69.53	-96.56	249.78				
144.40	-55.61	-77.93	-68.10	-108.28	251.57				
128.20	-56.71	-81.92	-70.07	-115.45	253.11				
114.50	-57.91	-83.00	-72.24	-117.40	254.80				
103.05	-58.94	-83.23	-74.09	-117.82	256.65				
93.36	-59.76	-82.40	-75.57	-116.32	258.76				
84.98	-59.86	-82.93	-75.74	-117.27	260.21				
77.65	-59.77	-83.25	-75.59	-117.85	261.63				



Simple – Efficient for Prineville

Advisory	Based on Call from Prineville Airport						
			Day 1				
Day 1	Burn		1	BP	26.88	Burn	
Month	06		2	Temp F	66.2	Burn	
Day	15		3	Wind S	6.6	Next	
Year	2015		4	Cur PM2.5	1.9	Next	
			5	Inversion	926	Burn	
			6	Mx WS >20	14.6	Previous	
Day 2	Burn		Day 2				
Month	06		1	BP	26.95	Next	
Day	16		2	Temp F	66.7	Burn	
Year	2015		3	Wind S	5.4	Next	
			4	Inversion	665	No-Burn	
			5	Mx WS >20	13.1	Previous	
Day 3	Burn		Day 3				
Month	06		1	BP	26.93	Next	
Day	17		2	Temp F	68.1	Burn	
Year	2015		3	Wind S	6.1	Next	
			4	Inversion	665	No-Burn	
			5	Mx WS >20	11.1	Previous	

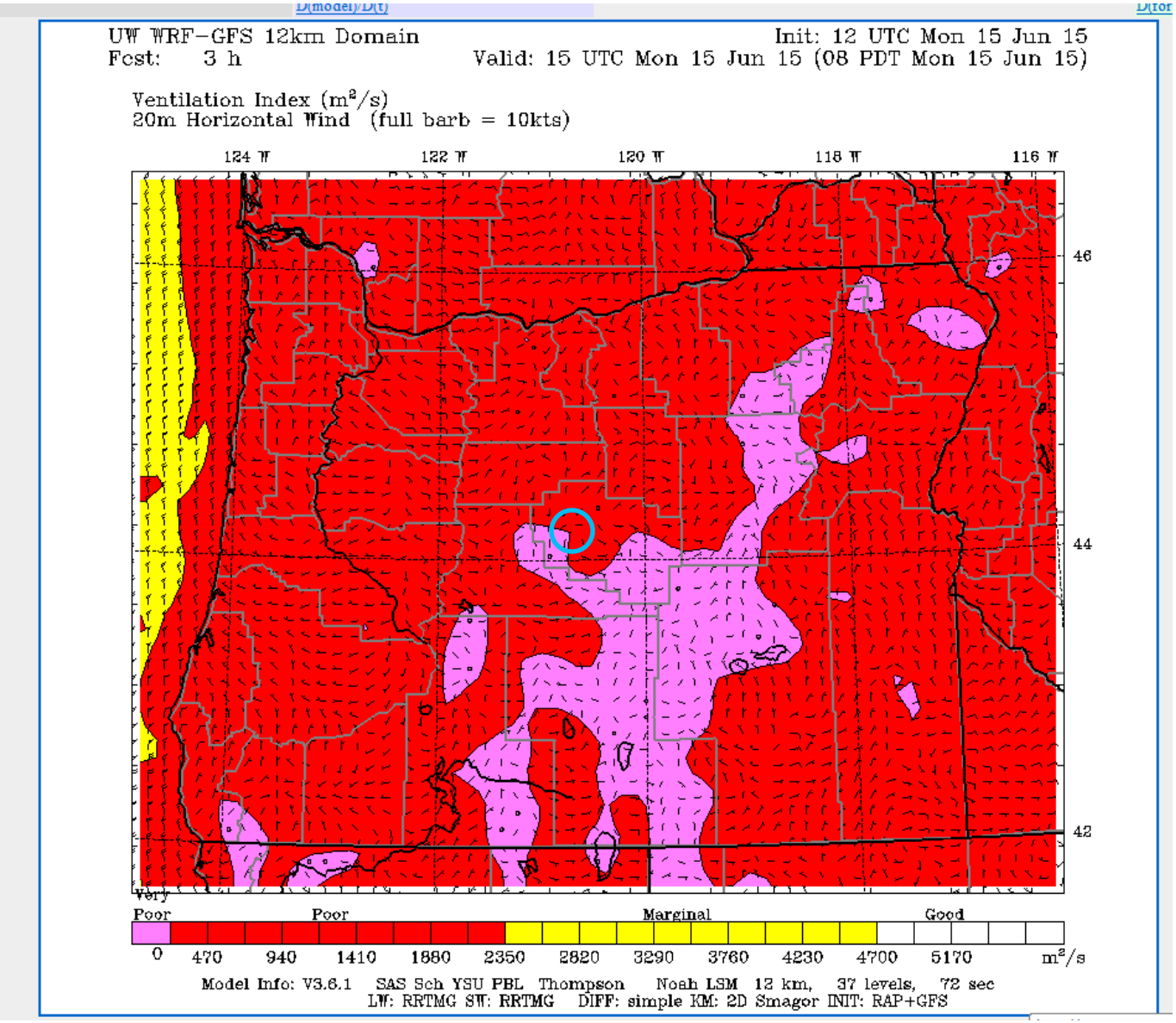
Burns – A little more complicated



J18

	A	B	C	D	E	F	G	H	I	J	K
1	Advisory	Based on Call from Burns Airport									
2					Day 1						
3	Day 1	Green			1	BP	25.79	Next			
4	Month	06			2	Temp F	65.1	Green			
5	Day	11			3	Wind S	5.4	Next			
6	Year	2015			4	Inversion	853.22	Yellow			
7					5	BP	25.79	Next			
8					6	Temp F	65.1	Yellow			
9					7	Wind S	5.4	Yellow			
10											
11	Day 2	Green			Day 2						
12	Month	06			1	BP	25.83	Next			
13	Day	12			2	Temp F	63.4	Green			
14	Year	2015			3	Wind S	5.2	Next			
15					4	Inversion	892.55	Yellow			
16					5	BP	25.83	Next			
17					6	Temp F	63.4	Yellow			
18					7	Wind S	5.2	Yellow			
19											
20	Day 3	Green			Day 3						
21	Month	06			1	BP	25.77	Next			
22	Day	13			2	Temp F	59.5	Green			
23	Year	2015			3	Wind S	4.4	Next			
24					4	Inversion	824.72	Yellow			
25					5	BP	25.77	Next			
26					6	Temp F	59.5	Yellow			
27					7	Wind S	4.4	Yellow			
28											
29											
30											
31											

Other Ideas from MM5

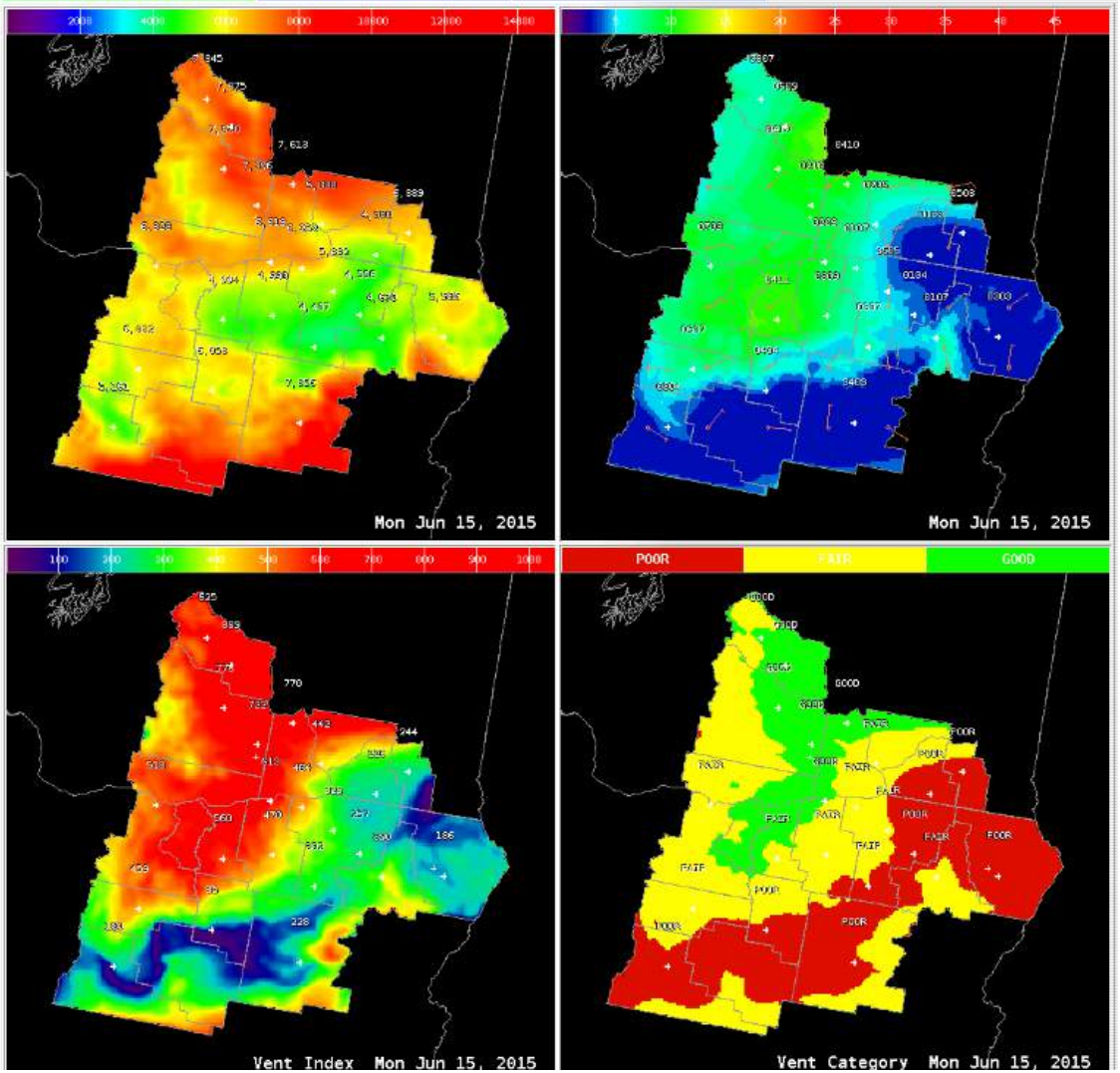


NWS Products - Pendleton

The Ventilation Index (also known as the Clearing Index) is defined as the Mixing Height (depth of the mixed layer in 100's of feet above ground level) multiplied by the Transport Wind (average wind in the mixed layer in knots) and is represented by the following equation VI= (Mix Hght/100) x Trans Wind. Values between 0 and 300 generally represent poor dispersion, 300 and 600 fair dispersion, and 600-1000 good dispersion. However, smoke management agencies are encouraged to develop criteria that are suitable and representative of dispersion conditions in their local area.

If you have any questions about this product please contact the National Weather Service Office in Pendleton, Oregon at 541-276-7832.

Mon, Jun 15, 2015 | Tue, Jun 16, 2015 | Wed, Jun 17, 2015



Questions for You

- Historic vertical data for winter?
- Timing important. Call at 7AM Prineville; 5:30AM Burns (night before)
- Differences between Monitor - Airport?
- 4 Km grid?