MONTHLY AIR QUALITY REPORT FOR JANUARY 2011

AQI COLOR SCALE

GOOD	MODERATE	UNHEALTHY FOR SENSITIVE GROUPS	UNHEALTHY
0-50	51-100	101-150	151-200

Calendar of maximum AQI values & their corresponding color for January 2011*

*Preliminary data

SAMPLE POLLUTANT REPORTING BOX

1 (day of month)	O3	CO
	PM10	PM2.5

SUN		MON		TUES		WED		THU		FRI		SAT	
												1	36
													66
2	37	3	34	4	36	5	34	6	34	7	33	8	28
	29		33		31		34		47		44		31
9	37	10	35	11	36	12	35	13	36	14	38	15	38
	29		45		49		50		52		44		33
16	35	17	28	18	29	19	33	20	38	21	37	22	35
	36		55		46		52		49		53		44
23	28	24	41	25	41	26	38	27	37	28	37	29	38
	36		44		52		55		46		51		51
30	39	31	36										
	41		30										

SUN		MON		TUES		WED		THU		FRI		SAT	
												1	22
													174
2	20	3	18	4	15	5	22	6	30	7	27	8	15
	79		81		75		73		78		68		81
9	16	10	18	11	13	12	17	13	18	14	19	15	18
	74		70		44		55		62		57		48
16	24	17	24	18	19	19	24	20	15	21	16	22	24
	67		65		72		63		46		55		70
23	18	24	15	25	16	26	20	27	15	28	22	29	27
	39		40		49		52		40		53		60
30	24	31	09										
	50		31										

Calendar of High Pollution Advisories and Health Watches issued during January 2011

SUN	MON	TUE	WED	THU	FRI	SAT
						1 B
2	4	4	5	6 E	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

LEGEND

HIGH POLLUTION ADVISORIES
A = PM-10 High Pollution Advisory
B = PM-2.5 High Pollution Advisory
C = Ozone High Pollution Advisory

HEALTH WATCHES
D = PM-10 Health Watch
E = PM-2.5 Health Watch
F = Ozone Health Watch

Calendar of Meteorological Conditions observed in Metro Phoenix during January 2011

SUN	MON	TUE	WED	THU	FRI	SAT
						1 E F
2	3 B	4 E	5	6	7 B E	8
9	10	11	12	13	14	15
16	17 E	18 E	19	20	21	22
23	24 E	25	26	27	28	29
30 B	31 B					

LEGEND

ELECTROMETEORS
A = Thunderstorm

HYDROMETEORS
B = Rain/Drizzle/Hail/Snow
C = Fog

LITHOMETEORS
D = Blowing Dust
E = Haze (vsby <10SM)
F = Smoke

Exceedance days during JAN 2011-

Total=	1	Date	Max AQI	Pollutant	Site/s
		01/01	174	PM-2.5	West Phoenix
			155	PM-2.5	Phoenix Supersite
			144	PM-2.5	South Phoenix

Health Watches issued during JAN 2011-

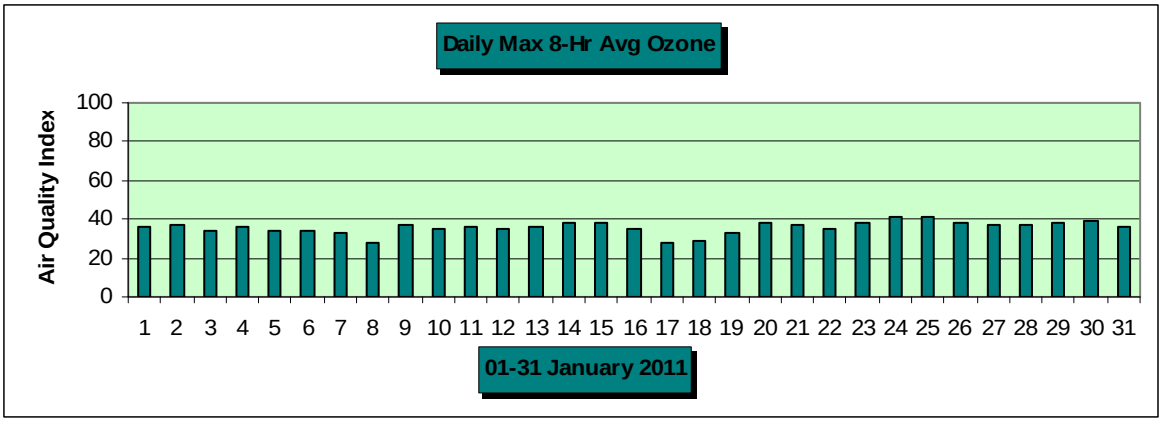
Total=	1	Date	Max AQI	Pollutant	Site/s
		01/06	78	PM-2.5	Phoenix Supersite

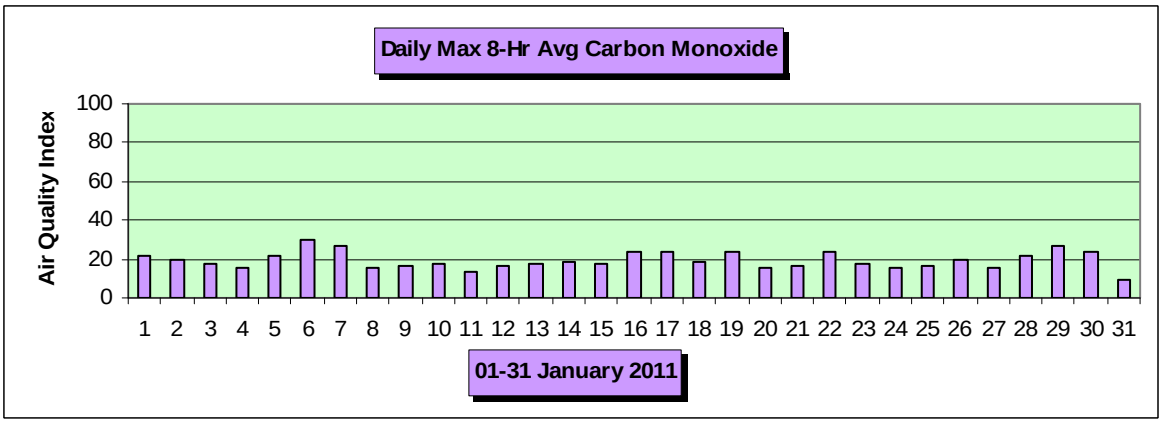
High Pollution Advisories issued during JAN 2011-

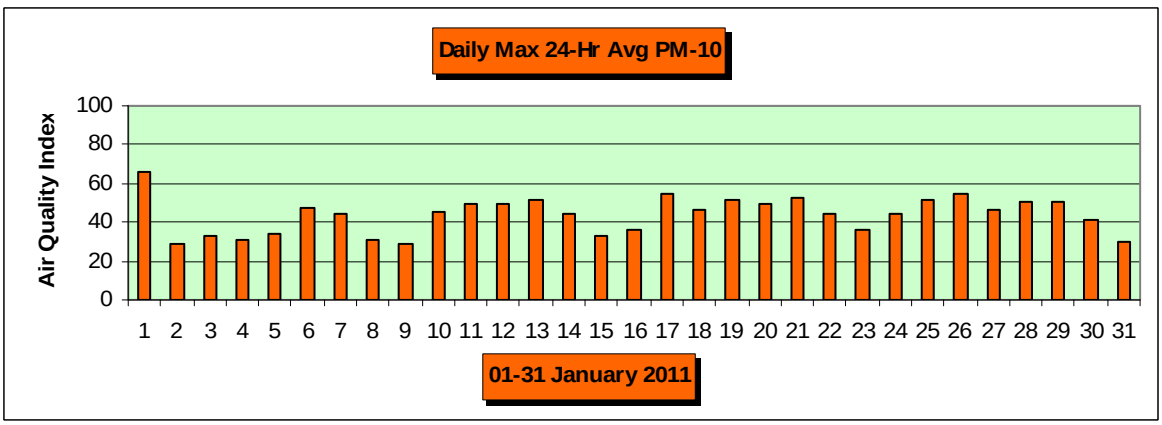
Total=	1	Date	Max AQI	Pollutant	Site/s
		01/01	174	PM-2.5	West Phoenix

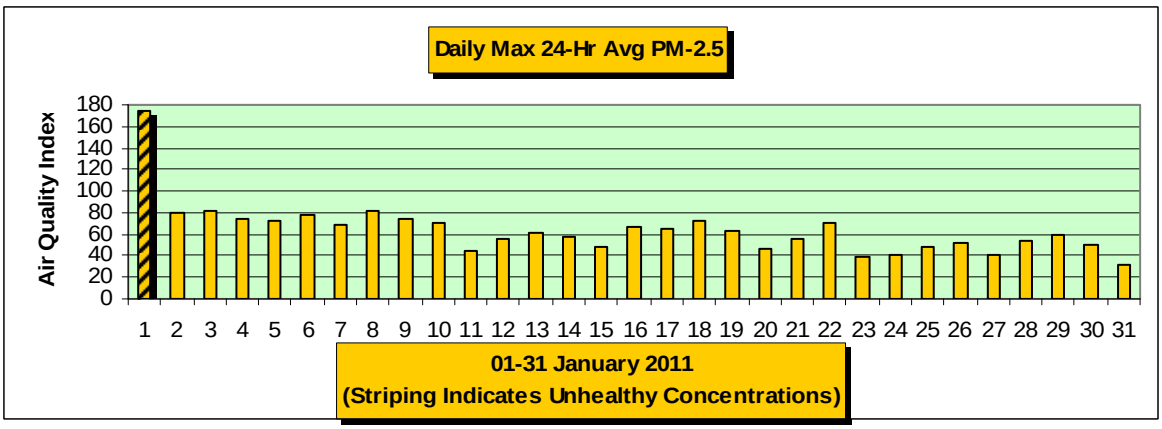
Concentration Recap:

Days in the Good category:	8
Days in the Moderate category:	22
Days in the Unhealthy for Sensitive Groups category:	0
Days in the Unhealthy category:	1
Total Forecast Days:	31


Daily Max 8-Hr Avg Ozone
Air Quality Index
100
80
60
40
20
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
01-31 January 2011


Daily Max 8-Hr Avg Carbon Monoxide
Air Quality Index
100
80
60
40
20
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
01-31 January 2011


Daily Max 24-Hr Avg PM-10
Air Quality Index
100
80
60
40
20
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
01-31 January 2011


Daily Max 24-Hr Avg PM-2.5
Air Quality Index
180
160
140
120
100
80
60
40
20
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
01-31 January 2011
(Striping Indicates Unhealthy Concentrations)

Narrative: For the fourth time in six years fine particle (PM-2.5) levels on January 1 in the Phoenix metro area were in the unhealthy range of the Air Quality Index (see Figure 1). And for the fourth time in six years this was due to widespread smoke from overnight wood-burning fireplace use under a stagnant air mass situation.

Figure 1

RECENT VALLEY PM-2.5 MAX AQI CLIMATOLOGY						
Date	2006	2007	2008	2009	2010	2011
1-Jan	97	167	70	167	152	174
HIGHEST HOURLY PM-2.5 CONCENTRATIONS						
(UG/M3)/time & 24-hour Average AQI color						
Date	2006	2007	2008	2009	2010	2011
1-Jan	105.5/0100	180.1/2400	66.3/1900	249.1/0200	191.1/0100	377.0/0100

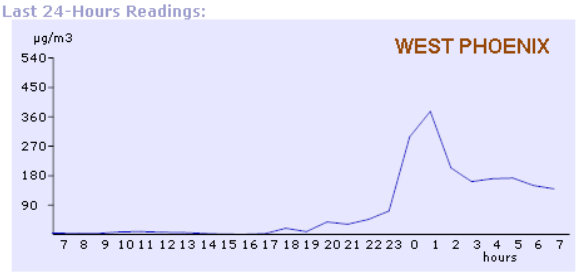
Despite the issuance of an ADEQ PM-2.5 High Pollution Advisory and a Maricopa County No Burn Day declaration, residential burning produced vast amounts of smoke that resulted in a peak hourly PM-2.5 concentration of 377.0ug/m3 at the West Phoenix monitoring site and 213.0ug/m3 & 176.2ug/m3 at two others between midnight and 1:00 a.m. Figure 2 shows the PM-2.5 time series graphs for West Phoenix and South Phoenix:

Figure 2

Particulate Matter 2.5 micrometers (PM 2.5)

Date & Time: 1-1-2011 7 AM

Last 24-Hours Readings:



Current Readings

AQI*: 160

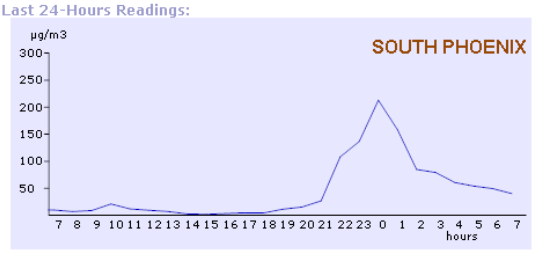
Units: µg/m3

Time	Interval	Readings
7:00 AM	24 Hour Average	N/A
7:00 AM	Hourly Average	N/A
7:00 AM	24 Hour Average	80.8292
7:00 AM	Hourly Average	140.0000

Particulate Matter 2.5 micrometers (PM 2.5)

Date & Time: 1-1-2011 7 AM

Last 24-Hours Readings:



Current Readings

AQI*: 120

Units: µg/m3

Time	Interval	Readings
7:00 AM	24 Hour Average	N/A
7:00 AM	Hourly Average	N/A
7:00 AM	24 Hour Average	46.7833
7:00 AM	Hourly Average	40.3000

Figures 3-6 are images from the local VISNET display and show to great effect the smoke impacts the morning of January 1 2011:

Figure 3

Figure 4

Figure 5

Figure 6

Unfortunately, the mid-latitude storm track was rather inactive over Arizona the entire month with a handful of weak trough and frontal passages that managed to only produce mostly trace amounts of rainfall on the 3rd, 7th, 30th, and 31st. The remainder of the month was characterized by a strong ridge aloft that was either overhead or nearby. The result was an abundance of days that could be characterized as stagnant with warm air aloft, shallow mixing depths, moderate to strong surface-based inversions (on 22 days) and poor to marginal dispersion (on 18 days). Although coarse particle (PM-10) levels remained relatively low, fine particle (PM-2.5) levels were elevated to high on most days during the month. Figures 7-11 illustrate the effects of these air mass conditions during January 4, 5, and 18:

Figure 7

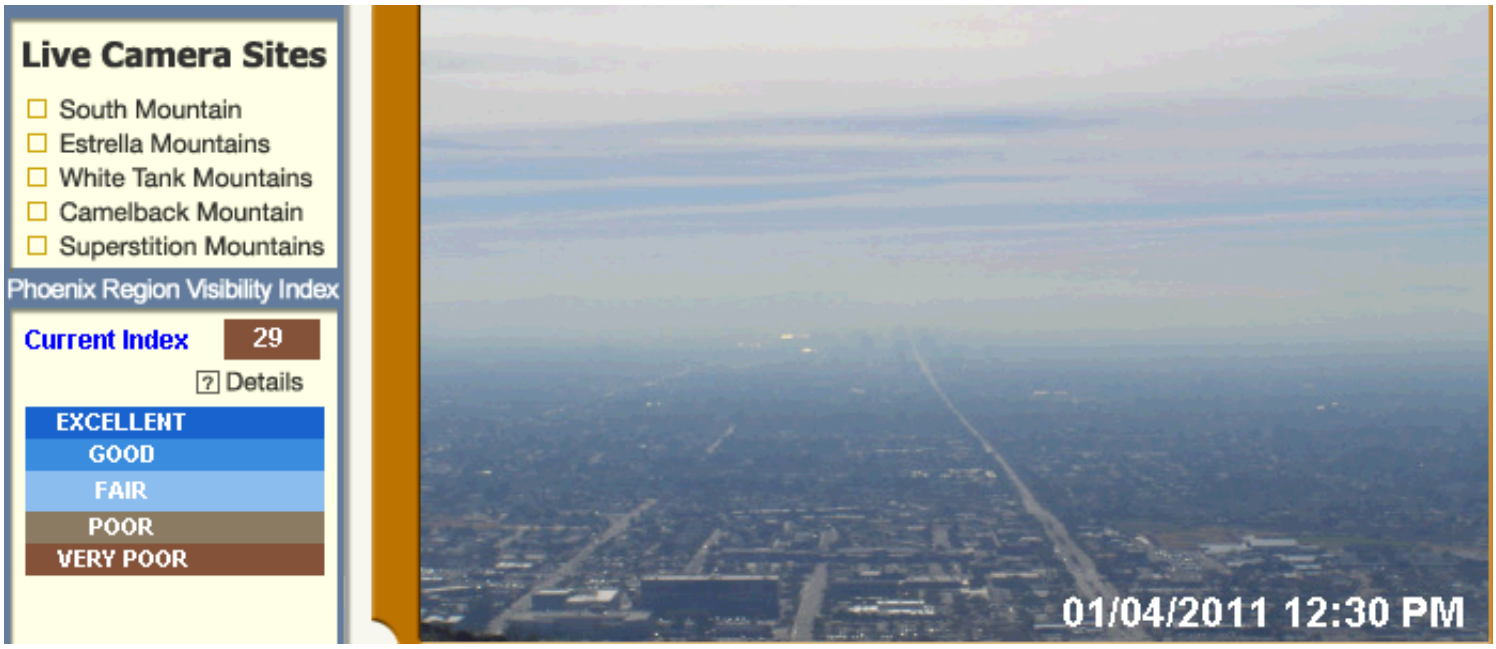


Figure 8

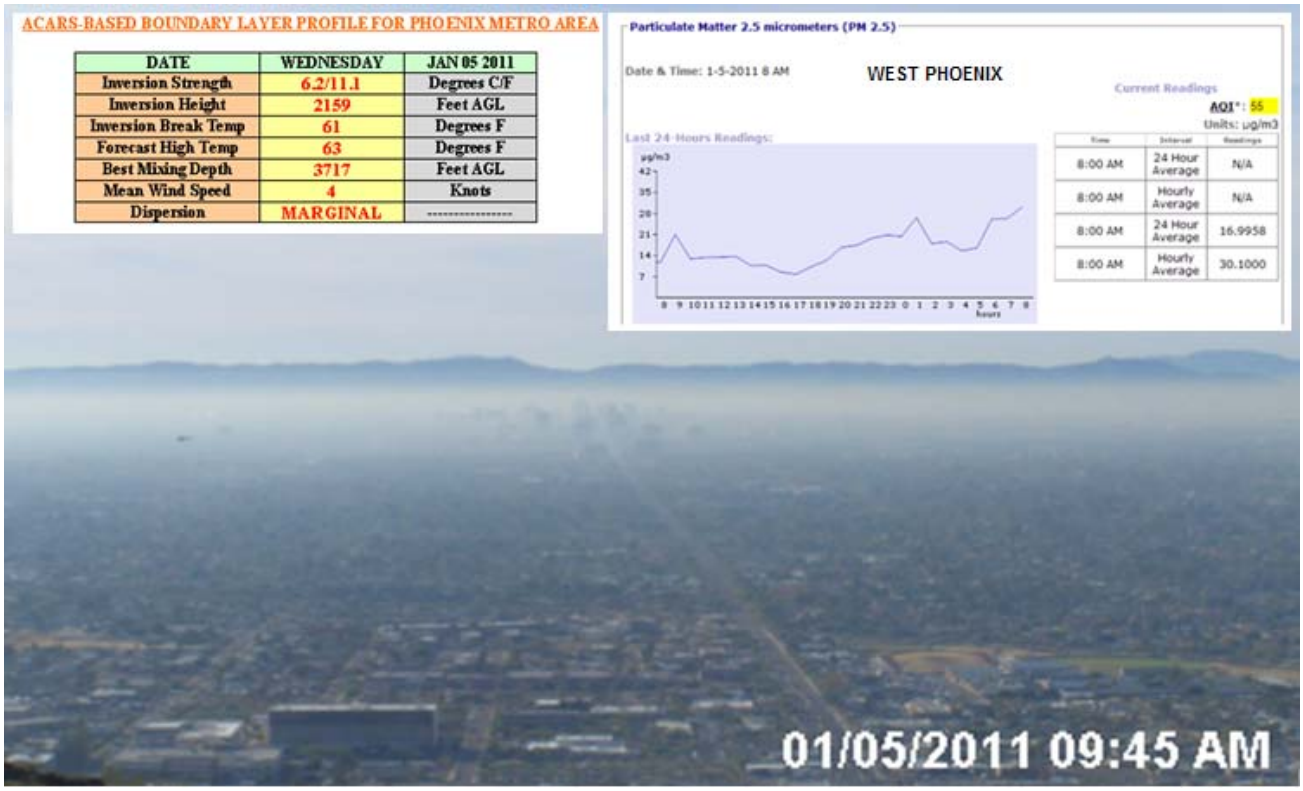


Figure 9

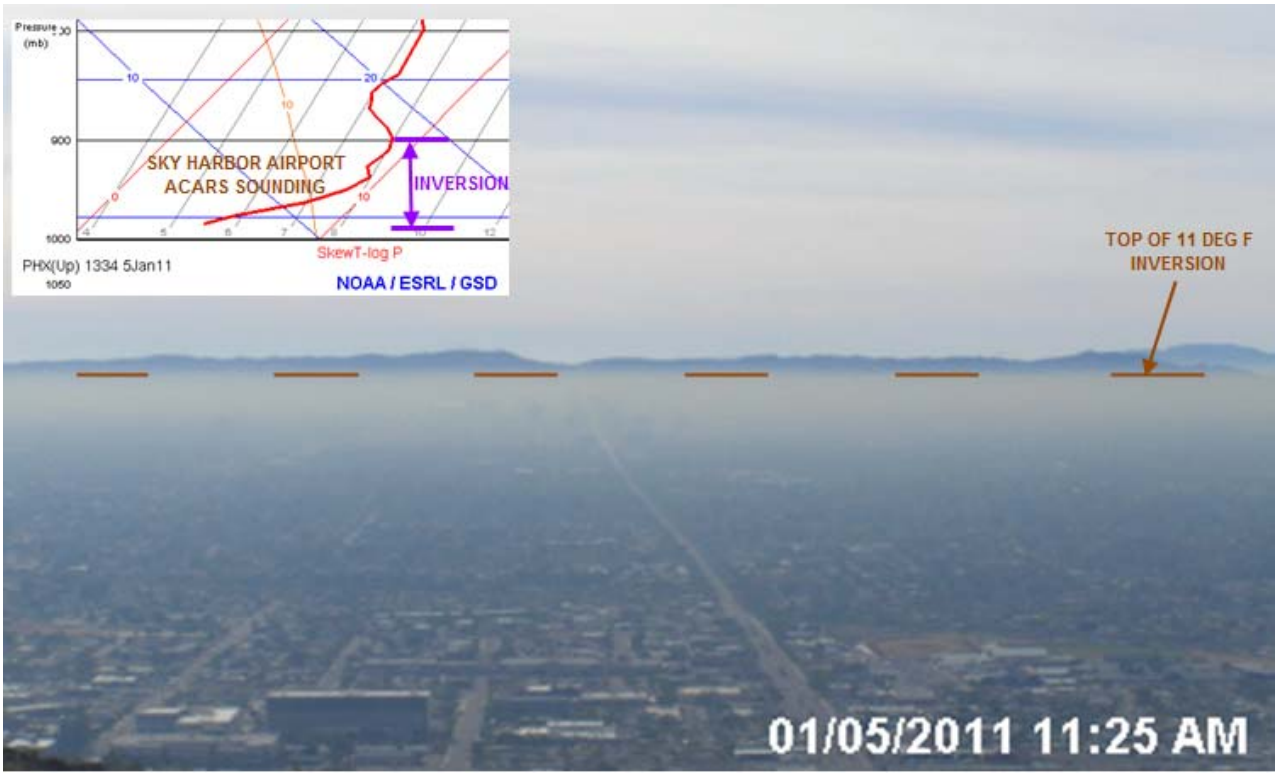
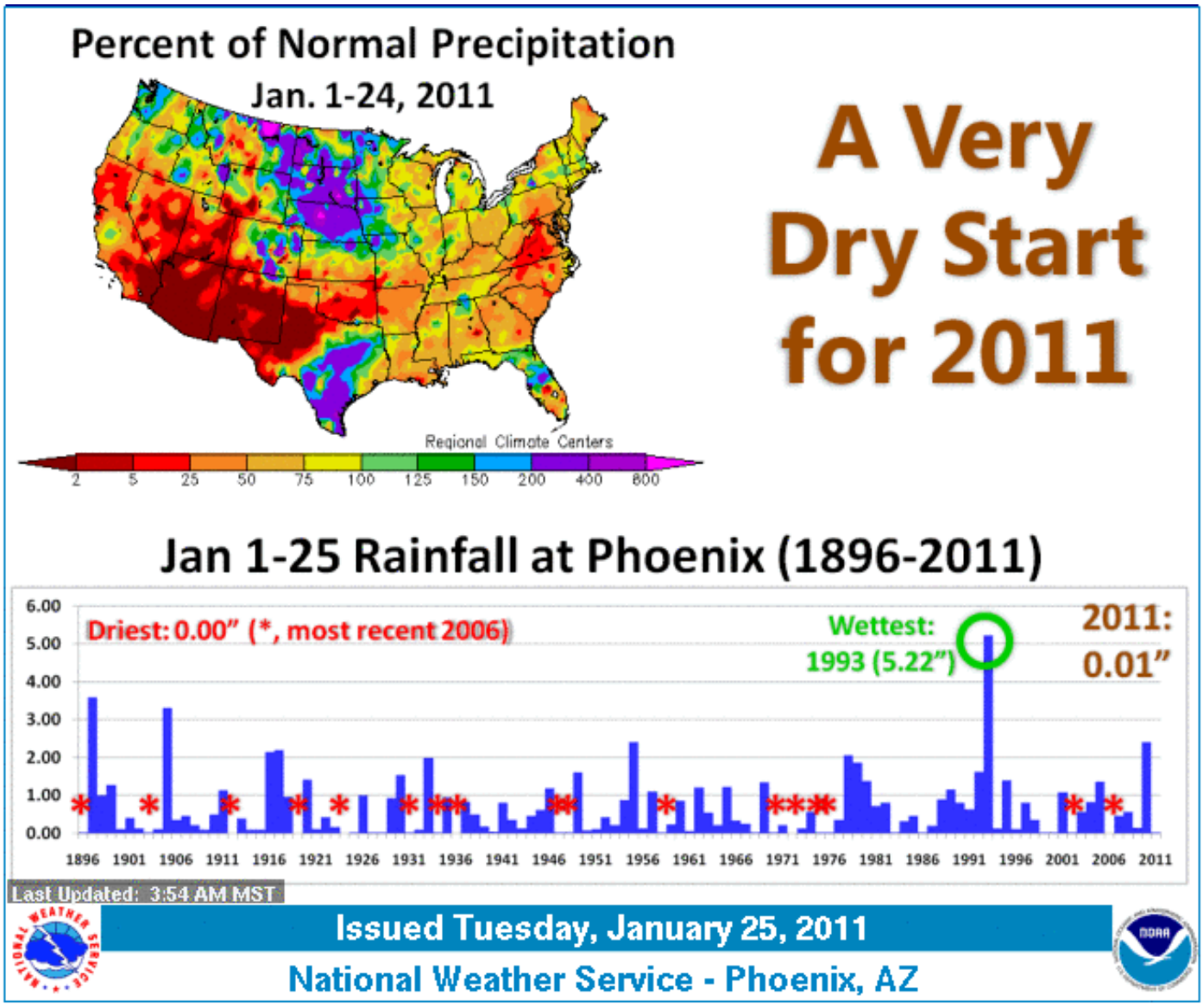


Figure 10

Figure 11

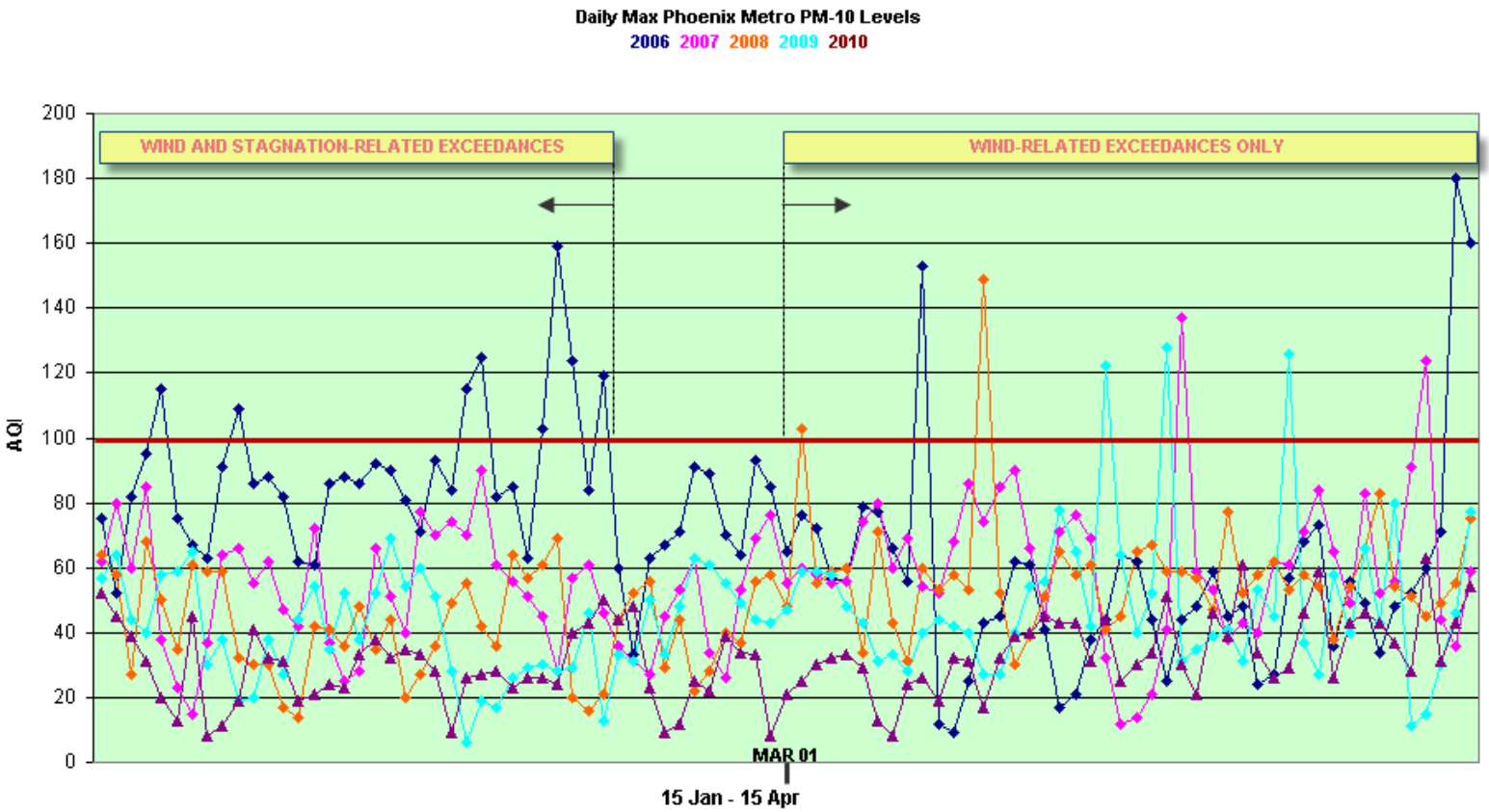
The dry and stable conditions were addressed in the following graph (Figure 12) that was issued by the National Weather Service office in Phoenix. The lack of significant rainfall could be problematic for the Valley within a few months. Strong and prolonged wind events during the late winter and spring – associated with dry trough and frontal passages – can generate dense blowing dust and contribute to PM-10 exceedances as can be seen in Figure 13. -Reith

Figure 12



Through the 25th, only a hundredth (0.01") of rain has fallen officially in Phoenix. The story is much the same across the southwest quarter of the United States. This is due to a persistent weather pattern featuring a strong ridge of high pressure off the West Coast which pushes storm system further inland where they quickly lose their moisture. Historically, there have been many years with no rain observed at this point in January, most recently in 2006.

Figure 13


Daily Max Phoenix Metro PM-10 Levels
2006 2007 2008 2009 2010
WIND AND STAGNATION-RELATED EXCEEDANCES
WIND-RELATED EXCEEDANCES ONLY
AQI
200
180
160
140
120
100
80
60
40
20
0
MAR 01
15 Jan - 15 Apr