



MONTHLY AIR QUALITY REPORT FOR
MARCH 2012

AOI 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 March 2012*

*Preliminary data

SAMPLE POLLUTANT REPORTING BOX

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

| SUN | | | MON | | | TUES | | | WED | | | THU | | | FRI | | | SAT | | |
|-----|----|----|-----|----|----|------|----|----|-----|----|----|-----|----|----|-----|----|----|-----|----|----|
| | | | | | | | | | | | 1 | 47 | 10 | | 2 | 48 | 10 | 3 | 44 | 09 |
| | | | | | | | | | | | | 49 | 43 | | | 64 | 27 | | 35 | 31 |
| 4 | 41 | 18 | 5 | 40 | 20 | 6 | 42 | 13 | 7 | 46 | 08 | 8 | 47 | 07 | 9 | 48 | 15 | 10 | 47 | 05 |
| | 59 | 50 | | 63 | 70 | | 93 | 56 | | 73 | 41 | | 49 | 29 | | 51 | 32 | | 37 | 26 |
| 11 | 51 | 08 | 12 | 51 | 11 | 13 | 48 | 16 | 14 | 49 | 14 | 15 | 51 | 16 | 16 | 58 | 16 | 17 | 40 | 13 |
| | 72 | 32 | | 52 | 38 | | 53 | 48 | | 54 | 35 | | 59 | 42 | | 55 | 49 | | 56 | 39 |
| 18 | 41 | 03 | 19 | 44 | 07 | 20 | 45 | 09 | 21 | 47 | 08 | 22 | 50 | 09 | 23 | 58 | 11 | 24 | 58 | 09 |
| | 31 | 18 | | 24 | 23 | | 24 | 30 | | 31 | 34 | | 40 | 36 | | 31 | 22 | | 37 | 26 |
| 25 | 48 | 14 | 26 | 50 | 06 | 27 | 74 | 11 | 28 | 64 | 10 | 29 | 67 | 13 | 30 | 77 | 13 | 31 | 58 | 20 |
| | 38 | 32 | | 36 | 23 | | 48 | 37 | | 55 | 50 | | 52 | 43 | | 52 | 44 | | 45 | 28 |
| | | | | | | | | | | | | | | | | | | | | |

Calendar of High Pollution Advisories and Health Watches issued during March 2012

| SUN | | | MON | | | TUE | | | WED | | | THU | | | FRI | | | SAT | | |
|-----|--|--|-----|--|--|-----|---|--|-----|--|--|-----|--|---|-----|--|--|-----|--|--|
| | | | | | | | | | | | | 1 | | | 2 | | | 3 | | |
| 4 | | | 5 | | | 6 | A | | 7 | | | 8 | | | 9 | | | 10 | | |
| 11 | | | 12 | | | 13 | | | 14 | | | 15 | | | 16 | | | 17 | | |
| 18 | | | 19 | | | 20 | | | 21 | | | 22 | | | 23 | | | 24 | | |
| 25 | | | 26 | | | 27 | | | 28 | | | 29 | | F | 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 March 2012

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

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 MAR 2012-

| | | | | | |
|--------|---|-------------|----------------|------------------|---------------|
| Total= | 0 | <u>Date</u> | <u>Max AQI</u> | <u>Pollutant</u> | <u>Site/s</u> |
|--------|---|-------------|----------------|------------------|---------------|

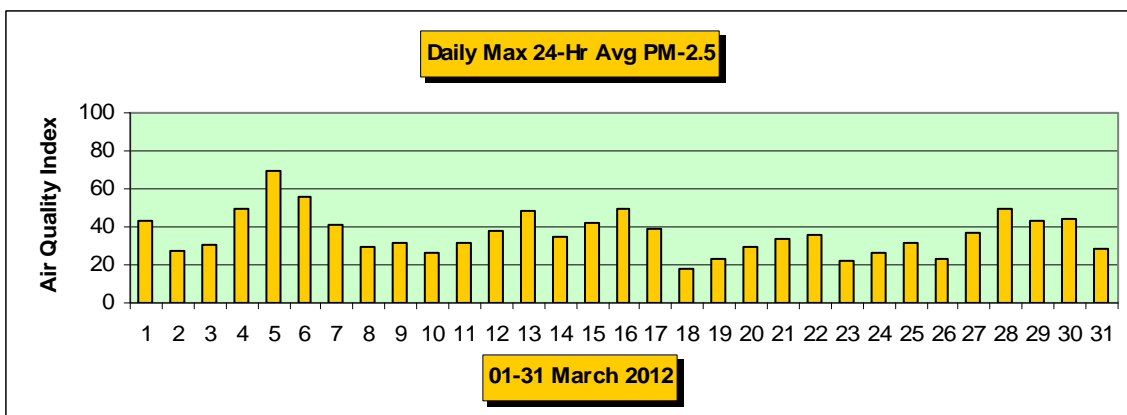
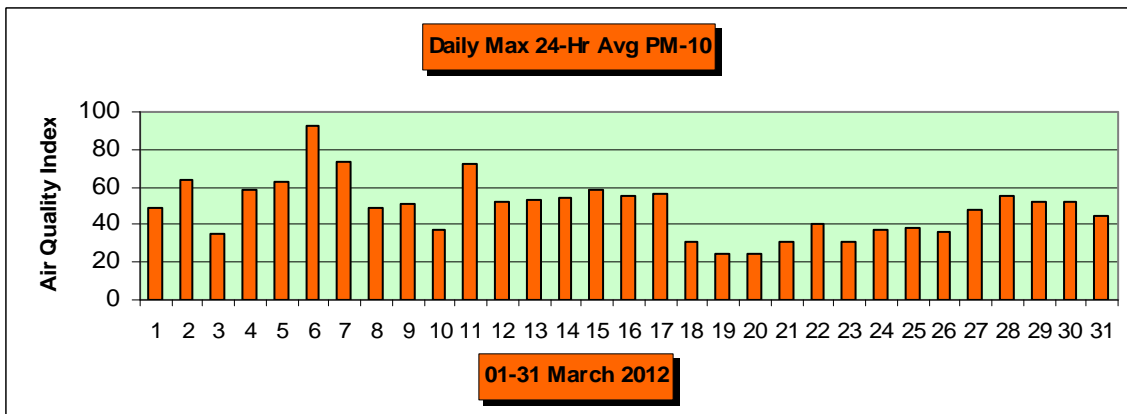
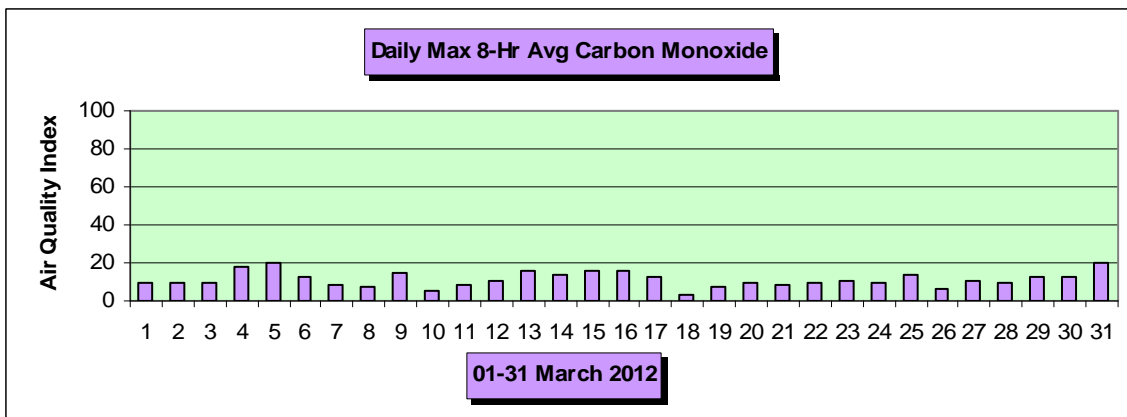
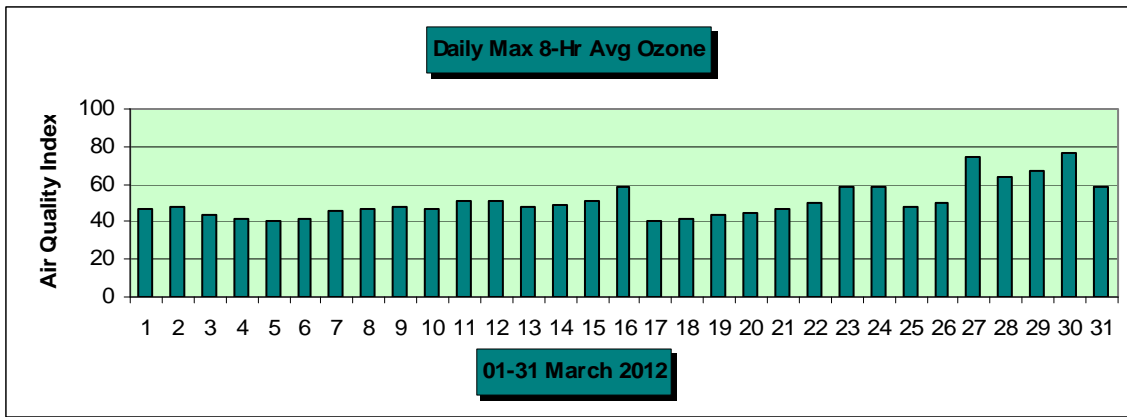
Health Watches issued during MAR 2012-

| | | | | | |
|--------|---|-------------|----------------|------------------|---------------|
| Total= | 1 | <u>Date</u> | <u>Max AQI</u> | <u>Pollutant</u> | <u>Site/s</u> |
| | | 3/29 | 67 | Ozone | Humboldt Mtn. |

High Pollution Advisories issued during MAR 2012-

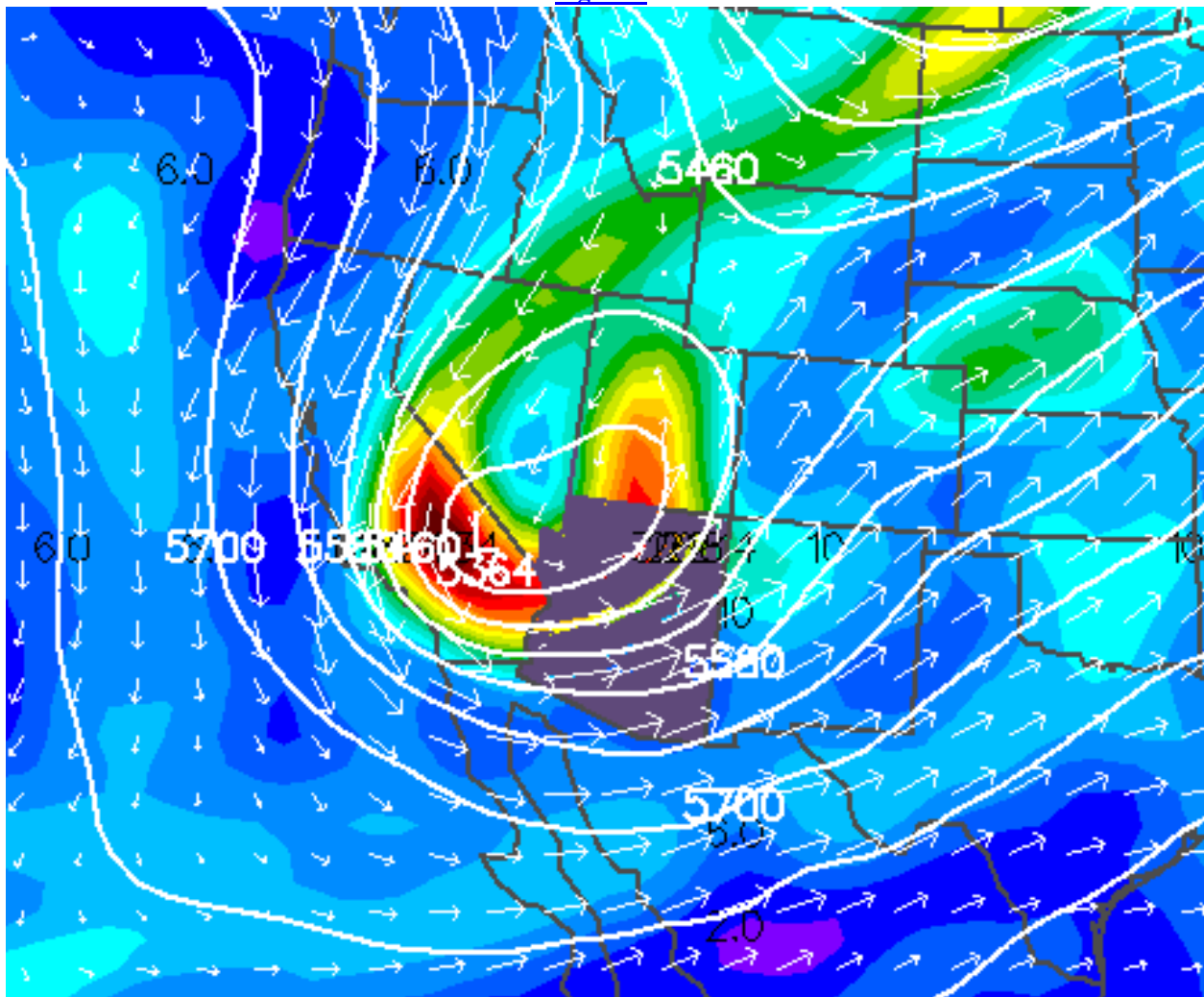
| | | | | | |
|--------|---|-------------|----------------|------------------|------------------|
| Total= | 1 | <u>Date</u> | <u>Max AQI</u> | <u>Pollutant</u> | <u>Site/s</u> |
| | | 3/06 | 93 | PM-10 | West Forty Third |

| | | |
|------------------------------------|---|----|
| <u>Concentration Recap:</u> | Days in the Good category: | 11 |
| | Days in the Moderate category: | 20 |
| | Days in the Unhealthy for Sensitive Groups category: | 0 |
| | Days in the Unhealthy category: | 0 |
| | Days in the Very Unhealthy category: | 0 |
| | Days in the Hazardous category: | 0 |
| | Total Forecast Days: | 31 |



Narrative: The month of March 2012 was the first since June 2011 to not have at least one site exceedance of either the PM-2.5 (fine particle), PM-10 (coarse particle), or O₃ (ozone) air pollution standard within or bordering the Phoenix metro area. Although this was much appreciated by residents, local air quality was nonetheless far from pollution-free during the month. The mid-latitude storm track brought a pair of vigorous but dry weather disturbances to the area. An upper level trough and surface frontal passage that occurred on March 2 was accompanied by winds that gusted up to 39 mph and dense blowing dust was reported over the west Valley where the visibility dropped to as low as 11/4 miles at Luke Air Force Base just after 10:00 a.m. Fortunately, the highest monitored PM-10 level was only in the mid-moderate range of the Air Quality Index. The second system that approached on March 6 and arrived on March 7 was much stronger as the 500mb chart from March 7 shows (Figure 1). The lack of significant rainfall since mid-December – along with lots of dry and disturbed soils – had resulted in a situation where just about any wind event was capable of generating blowing dust. The National Weather Service in Phoenix issued a Wind Advisory for March 6 since a lengthy period of strong gradient winds was anticipated. The Arizona Department of Environmental Quality responded by the issuance of a PM-10 High Pollution Advisory.

Figure 1



On March 6 winds gusted up to 39 mph and blowing dust was reported between 2:00 and 9:00 p.m. with visibilities as low as five miles at times. [Figures 2 & 3](#) are images from the local VISNET camera array and show the extent of the blowing dust between 5:00 and 6:00 p.m.

[Figure 2](#)



[Figure 3](#)



While the blowing dust episode was underway, another irritant in the form of smoke (PM-2.5) from a sizeable wildfire (Figures 4 & 5) located in the southwest Valley was drawn northeast over portions of the far western metro area and may have impacted the PM-2.5 monitor at the Durango site for the second consecutive day. This smoke plume even showed up on the local Doppler weather radar as seen in Figure 6 and in addition to the dust could also be observed visually over the west Valley in Figure 7.

Figure 4

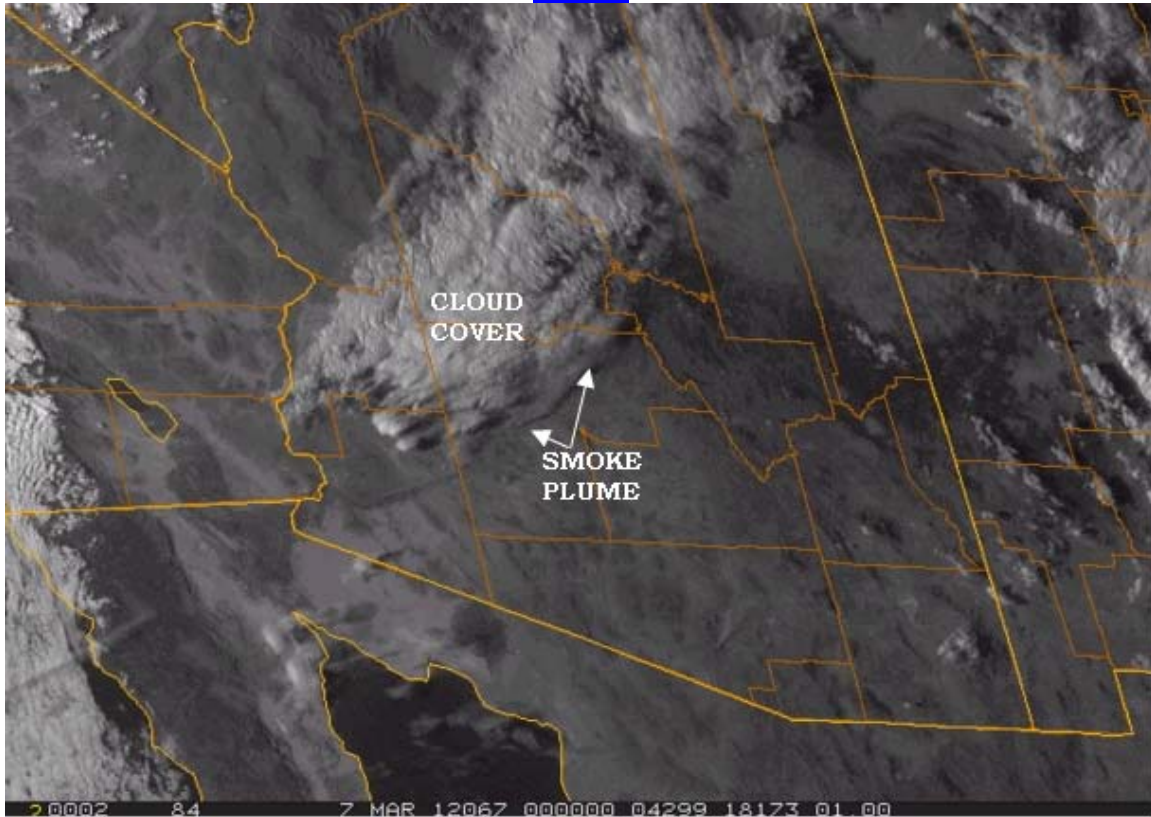


Figure 5

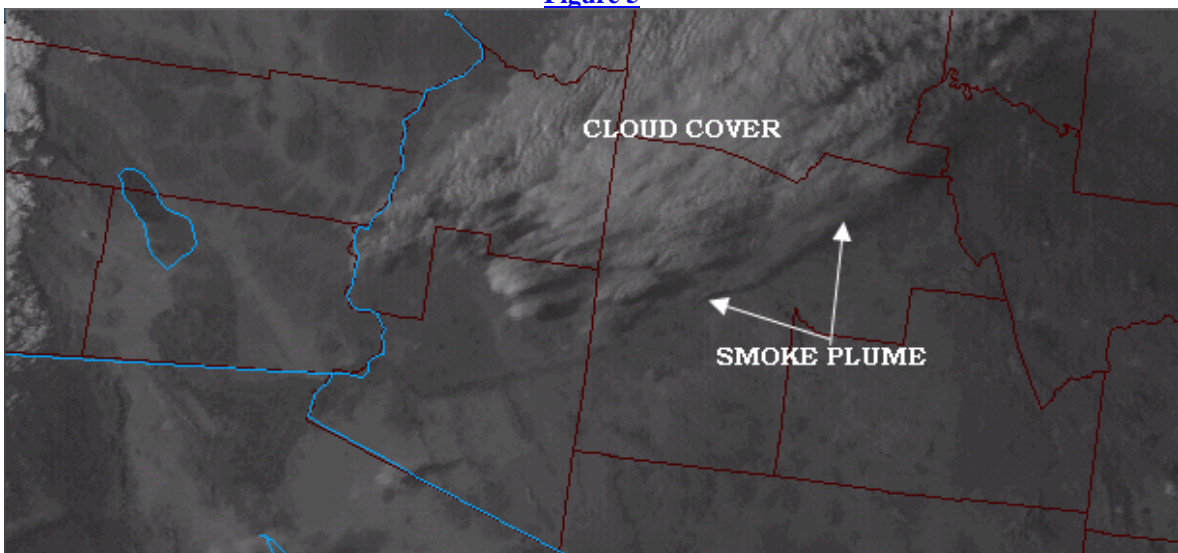


Figure 6

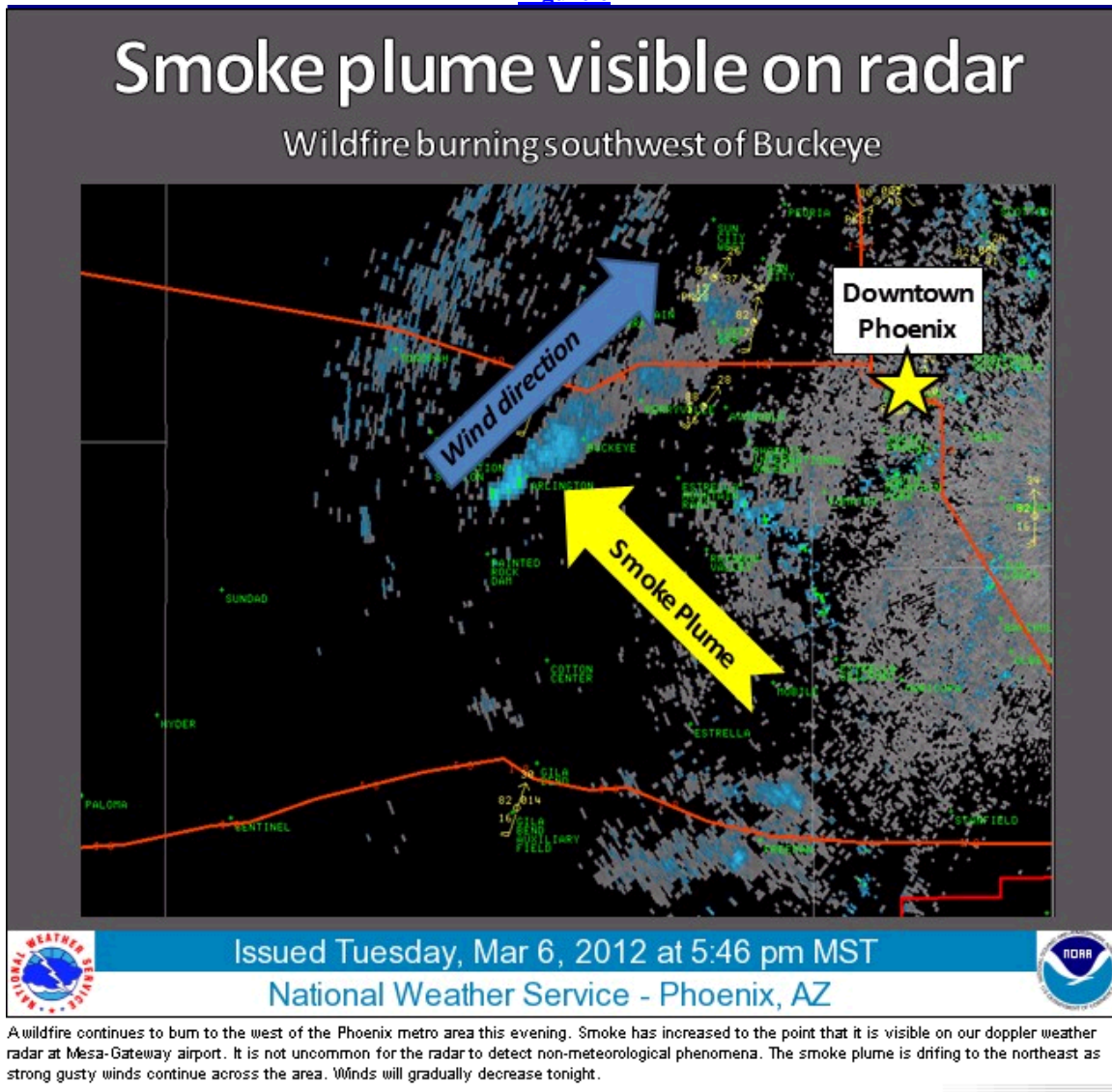
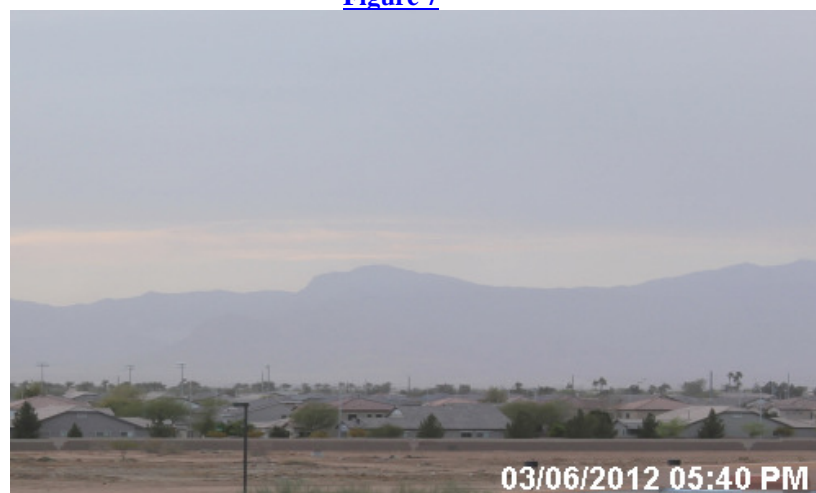


Figure 7



Highest concentrations of PM-10 reached the upper-moderate range of the Air Quality Index on March 6 but remained elevated on March 7 due to lingering suspended dust as well as additional blowing dust during the afternoon hours as winds gusted up to 30 mph. Figures 8 & 9 show the dust and degraded visibility situation that existed during the morning hours.

Figure 8



Figure 9



During the following ten days PM-10 levels in the metro area remained elevated. What the parched desert areas in and around the Phoenix area needed most was a major rainfall event and on March 18 Mother Nature delivered. An intense upper level long-wave trough (Figure 10) and surface cold front in the mid-latitude storm track arrived from the northwest that day and in addition to causing thunderstorms with hail, fog, and wind gusts up to 59 mph, it also produced rainfall totals of over 1/2" in the Valley proper with much larger amounts nearby as well as for a large swath of central Arizona (Figures 11 & 12).

Figure 10

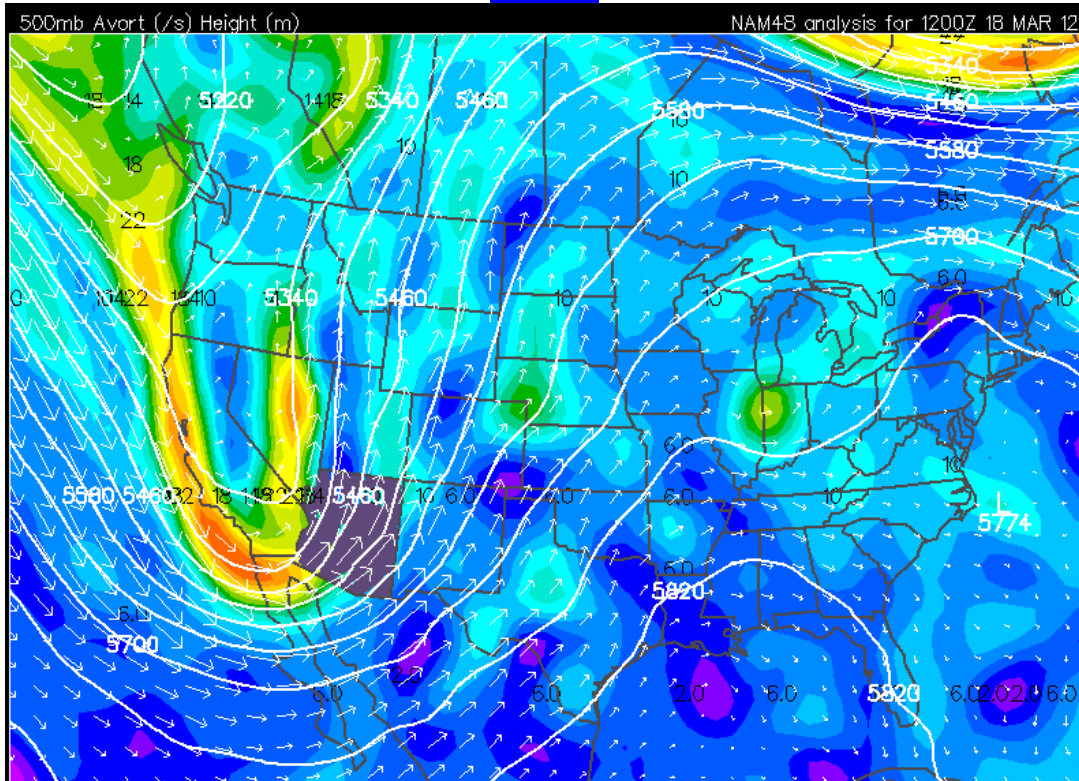


Figure 11

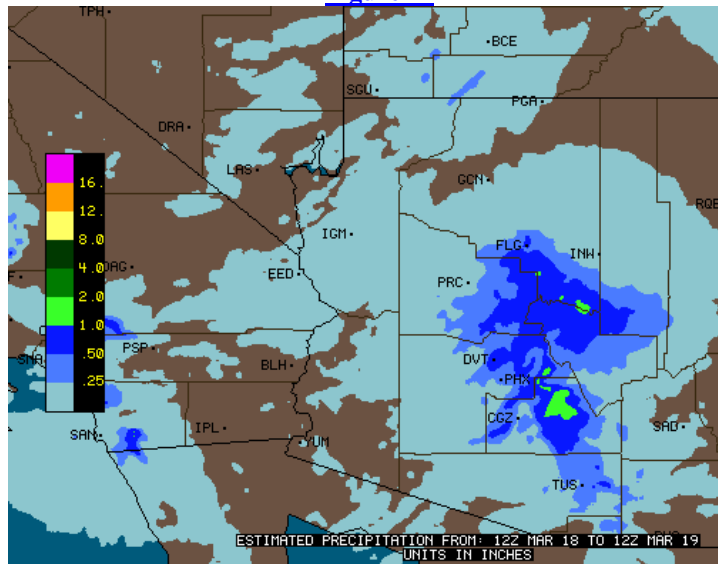
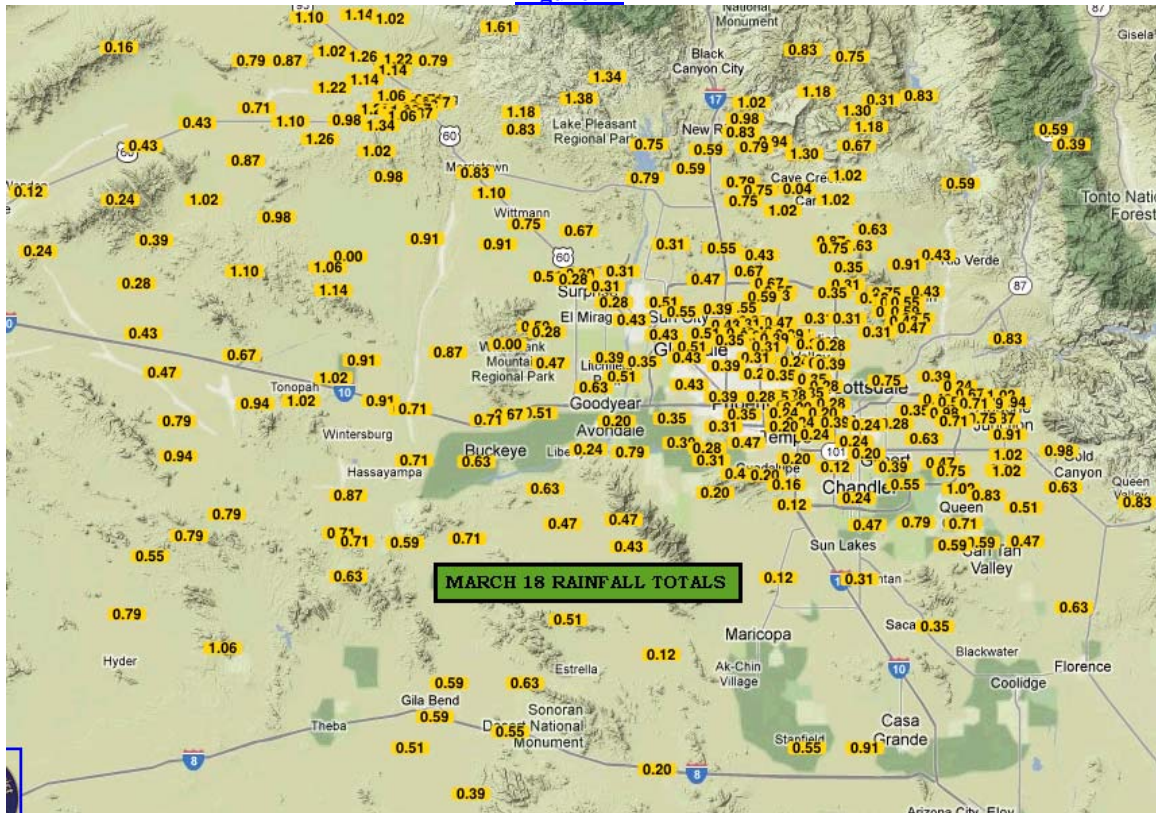


Figure 12



The benefits of this precipitation event went way beyond local air quality but helped to keep particle pollution levels low the remainder of the month. Unfortunately, in its wake as afternoon temperatures, sun angles, and day-length increased, so did local ozone production with levels reaching as high as the mid-moderate range of the AQI. -Reith

Figure 13

