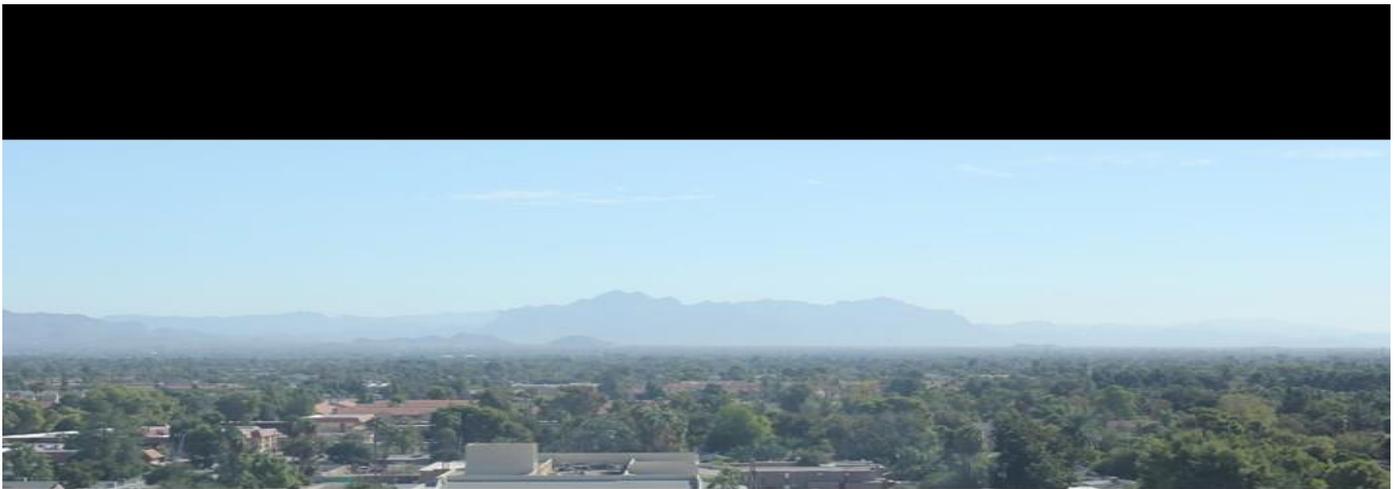


State of Arizona Exceptional Event Documentation for October 9, 2013, for the Phoenix PM10 Nonattainment Area

Produced by:

Arizona Department of Environmental Quality
Maricopa County Air Quality Department
Maricopa Association of Governments

FINAL Report
December, 2013



View of Superstition Mountains before High Wind Dust Event: October 9, 2013, 9:30 AM



View of Superstition Mountains during High Wind Dust Event: October 9, 2013, 5:00 PM

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I. EXCEPTIONAL EVENT RULE (EER) REQUIREMENTS

In addition to the technical requirements that are contained within the EER, procedural requirements must also be met in order for EPA to concur with the flagged air quality monitoring data. This section of the report lays out the requirements of the EER and associated guidance, and discusses how the Arizona Department of Environmental Quality (ADEQ) addressed those requirements.

Procedural Requirements

This section presents a review of the procedural requirements of the EER as required by 40 CFR 50.14 (Treatment of Air Quality Monitoring Data Influenced by Exceptional Events) and explains how ADEQ fulfills them. The Federal EER requirements include public notification that an event was occurring, the placement of informational flags on data in EPA's Air Quality System (AQS), the notification of EPA of the intent to flag through submission of initial event description, the documentation that the public comment process was followed, and the submittal of a demonstration supporting the exceptional events flag. ADEQ has addressed all of these procedural and documentation requirements.

Public notification that event was occurring (40 CFR 50.14(c)(1)(i))

ADEQ issued Dust Control Action Forecasts and Ensemble Forecasts for the Greater Phoenix area advising citizens of the potential for high wind / dust events on October 9, 2013. More information on ADEQ's forecasting program can be found in Section IV. The forecast products that were issued for October 9, 2013, are included in Appendix A.

Place informational flag on data in AQS (40 CFR 50.14(c)(2)(ii))

ADEQ and other operating agencies in Arizona submit data into EPA's AQS. Data from both filter-based and continuous monitors operated in Arizona are submitted to AQS.

When ADEQ and/or another agency operating monitors in Arizona suspects that data may be influenced by an exceptional event, ADEQ and/or the other operating agency expedites analysis of the filters collected from the potentially-affected filter-based air monitoring instruments, quality assures the results and submits the data into AQS. ADEQ and/or other operating agencies also submit data from continuous monitors into AQS after quality assurance is complete.

If ADEQ and/or the operating agency have determined a potential exists that the monitor reading has been influenced by an exceptional event, a preliminary flag is submitted for the measurement in the AQS. The data are not official until they undergo more thorough quality assurance and quality control, leading to certification by May 1st of the year following the calendar year in which the data were collected (40 CFR 58.15(a)(2)). The presence of the flag can be confirmed in AQS.

Notify EPA of intent to flag through submission of initial event description by July 1 of calendar year following event (40 CFR 50.14(c)(2)(iii))

ADEQ submitted a letter to EPA Region 9 Air Division Director, Deborah Jordan, on September 11, 2013, notifying EPA of ADEQ's intent to flag data in AQS and submit documentation to EPA by

February 2014 for multiple exceptional events. EPA was later notified with subsequent communication via email that the October 9, 2013, exceptional event would be added to the other exceptional events specified in the September 11, 2013, letter. This assessment report serves as the demonstration supporting the flagging of these data. One Maricopa County monitor has been flagged as exceeding the 24-hour PM10 standard as a result of the high wind exceptional event:

West Chandler (04-013-4004-81102-1)

Document that the public comment process was followed for event documentation (40 CFR 50.14(c)(3)(iv))

ADEQ posted this assessment report on the ADEQ webpage and placed a hardcopy of the report in the ADEQ Records Management Center for public review. ADEQ opened a 30-day public comment period on 01/13/2014. A copy of the public notice certification, along with any comments received, will be submitted to EPA, consistent with the requirements of 40 CFR 50.14(c)(3)(iv). See Appendix C for a copy of the affidavit of public notice.

Submit demonstration supporting exceptional event flag (40 CFR 50.14(a)(1-2))

At the close of the comment period, and after ADEQ has had the opportunity to consider any comments submitted on this document, ADEQ will submit this document, the comments received, and ADEQ's responses to those comments to EPA Region IX headquarters in San Francisco, California. The deadline for the submittal of this demonstration package is December 31, 2016.

Documentation Requirements

Section 50.14(c)(3)(iii) of the EER states that in order to justify excluding air quality monitoring data, evidence must be provided for the following elements:

- a. The event satisfies the criteria set forth in 40 CFR 501(j) that:
 - (1) The event affected air quality,
 - (2) The event was not reasonably controllable or preventable, and
 - (3) The event was caused by human activity unlikely to recur in a particular location or was a natural event;
- b. There is a clear causal relationship between the measurement under consideration and the event;
- c. The event is associated with a measured concentration in excess of normal historical fluctuations; and
- d. There would have been no exceedance or violation but for the event.

Section II of this assessment introduces the conceptual model of the low pressure system wind event that transpired on October 9, 2013, providing a background narrative of the exceptional event and an overall explanation that ‘the event affected air quality’. Further evidence that ‘the event affected air quality’ is provided in Section V. Sections II and V also provide evidence that the event was a natural event.

Section IV of this assessment details the existing area control measures and demonstrates that despite the presence and enforcement of these controls, the event on October 9, 2013, was not reasonably controllable or preventable.

Section V of this assessment establishes a clear causal relationship between the natural event on October 9, 2013, and the exceedance of the 24-hour PM10 standard at the West Chandler monitoring station. The evidence in this section (and the previous section on historical fluctuations) also confirms that the event in question both affected air quality and was the result of a natural event.

Section III of this assessment provides data summaries and time series graphs which help illustrate that the event on October 9, 2013, produced PM10 concentrations in excess of normal historical fluctuations.

Section VI of this assessment builds upon the demonstration showing a clear causal relationship between the natural event and the exceedance and concludes there would have been no exceedance on October 9, 2013, but for the presence of the natural event.

II. CONCEPTUAL MODEL

Geographic Setting and Climate

Geographic Setting

Phoenix is located in the Salt River Valley in south-central Arizona. It lies at a mean elevation of 1,090 feet above mean sea level (msl) in the northeastern part of the Sonoran Desert. Other than the mountains in and around the city, the topography of Phoenix is generally flat. The Phoenix area is surrounded by the McDowell Mountains (~4,200 ft msl) to the northeast, the foothills of the Bradshaw (~7,900 ft msl) and Mazatzal (~7,900 ft msl) ranges to the north, the White Tank Mountains (~4,500 ft msl) to the west, the Sierra Estrella (~4,450 ft msl) to the southwest, and the Superstition Mountains (~5,000 ft msl) far to the east. Within the City are the Phoenix Mountains (~2,600 ft msl) and South Mountain (~2,600 ft msl). Current development is pushing north, west, and south into Pinal County. The Phoenix metropolitan area contains a fairly dense network of PM10 monitors throughout the area, with a much less dense network of monitors located throughout the rest of the state. Figure 2–1 shows the general geographic setting of Phoenix, as well as the locations of PM10 monitors throughout the state. It should be noted that some of the monitors shown in Figure 2-1 are filter-based monitors; therefore, monitoring data from all locations may only be available for select days (i.e. 1-in-6 run days).

Figure 2–2 depicts the drainage systems or watersheds for the State of Arizona. Many of the rivers that form Arizona's drainage system are dry for most of the year and, consequently, are sources of silt and fine soils that become suspended and add to regional PM10 loadings during high wind events. Much of this alluvial matter and fine soil is deposited in the low lying areas of central and southern Arizona, with larger depositional areas focused in and around the confluences of dry river channels.

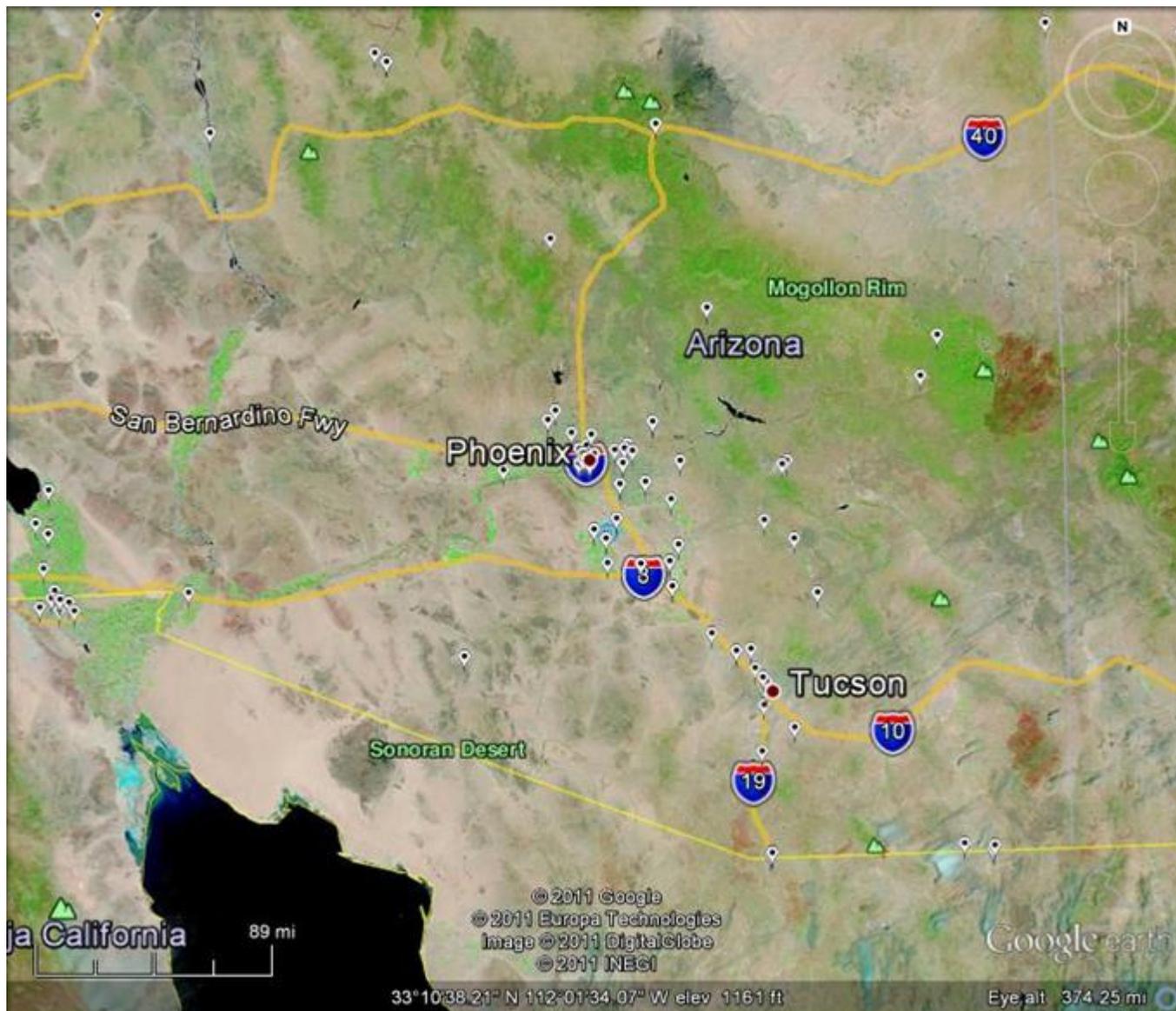


Figure 2-1. Phoenix Geographic Setting and PM10 Monitor Locations (source: EPA AQS DataMart, NASA MODIS Satellite, and Google Earth). PM10 monitor locations are indicated by white markers.

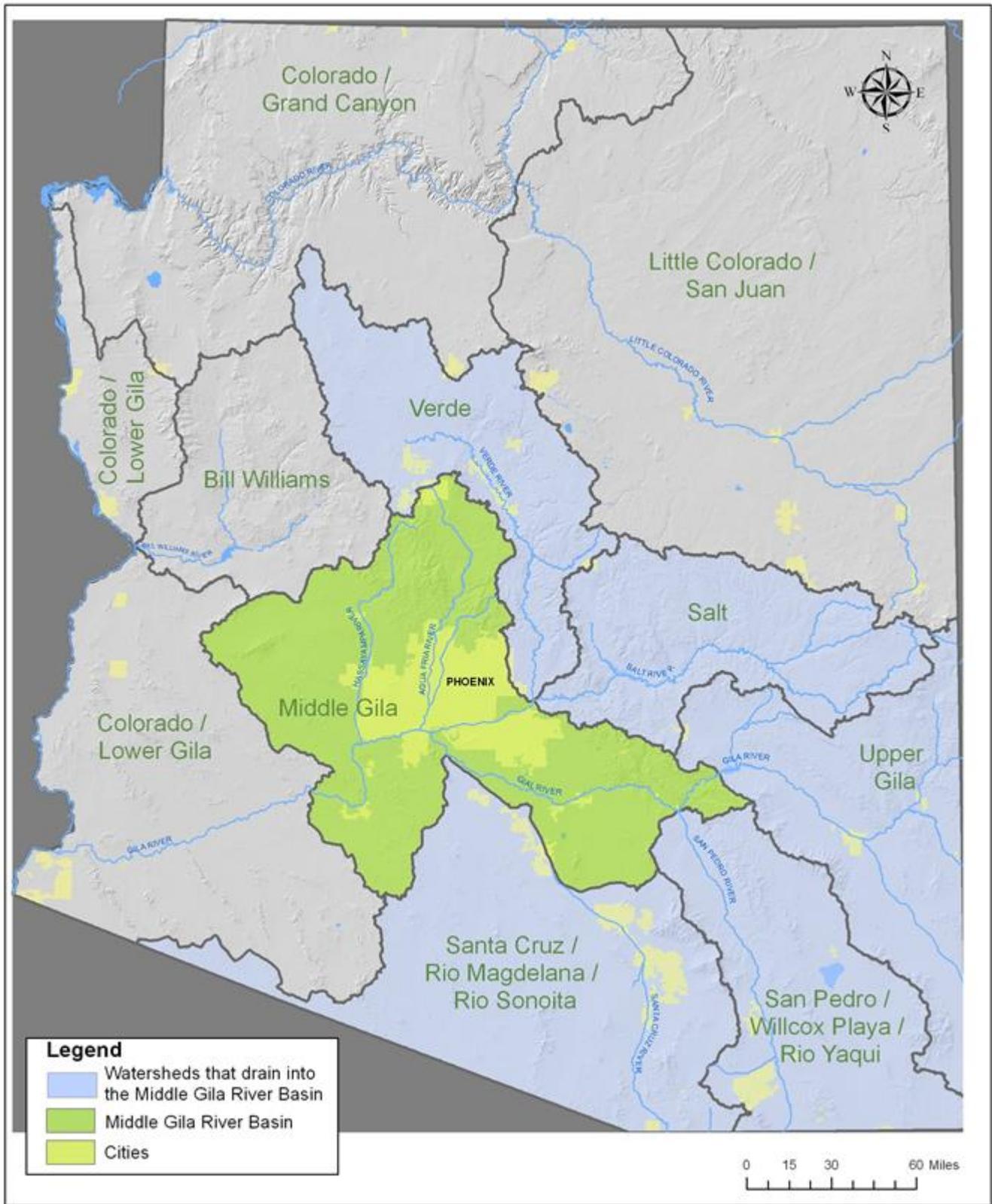


Figure 2-2. Drainage System of Phoenix, Arizona.

Climate

Phoenix has an arid climate, with very hot summers and temperate winters. The average summer high temperature is among the hottest of any populated area in the United States. The temperature reaches or exceeds 100°F an average of 110 days during the year and highs top 110°F an average of 18 days during the year. Phoenix receives an average of 7.66 inches of rain per year.

Precipitation is sparse during the first part of the summer, but the influx of monsoonal moisture, which generally begins in early July and lasts until mid-September, raises humidity levels and can cause heavy localized precipitation and flooding. Although thunderstorms are possible at any time of the year, they are most common during the monsoon season from July to mid-September as humid air is advected from the Gulf of California, Gulf of Mexico, and large thunderstorm complexes from the Sierra Madre Occidental Mountains in Mexico. This influx in moisture, combined with intense solar heating, often creates a very unstable environment that is ripe for thunderstorm development. These thunderstorms can bring strong winds and blowing dust, large hail, and heavy rain. Dust storms associated with these thunderstorms typically occur in the early part of the monsoon season (July) before soaking rains help keep soil particles bound to one another. However, depending on the amount of precipitation received during the monsoon season, extremely hot temperatures act to dry out the surface quickly, and dust storms can occur at any time. During the December through March period, winter storms moving inland from the Pacific Ocean can bring strong winds, blowing dust and significant rains throughout Arizona. This December – March time period, and July – August time period are typically the wettest parts of the year. Meanwhile, a distinct dry season occurs during the period April through June for Phoenix and the rest of Arizona. While these weather patterns describe the general climatology for the Phoenix area over a long period of time, Phoenix and the entire state of Arizona is also prone to a high degree of variability in these weather patterns from year to year.

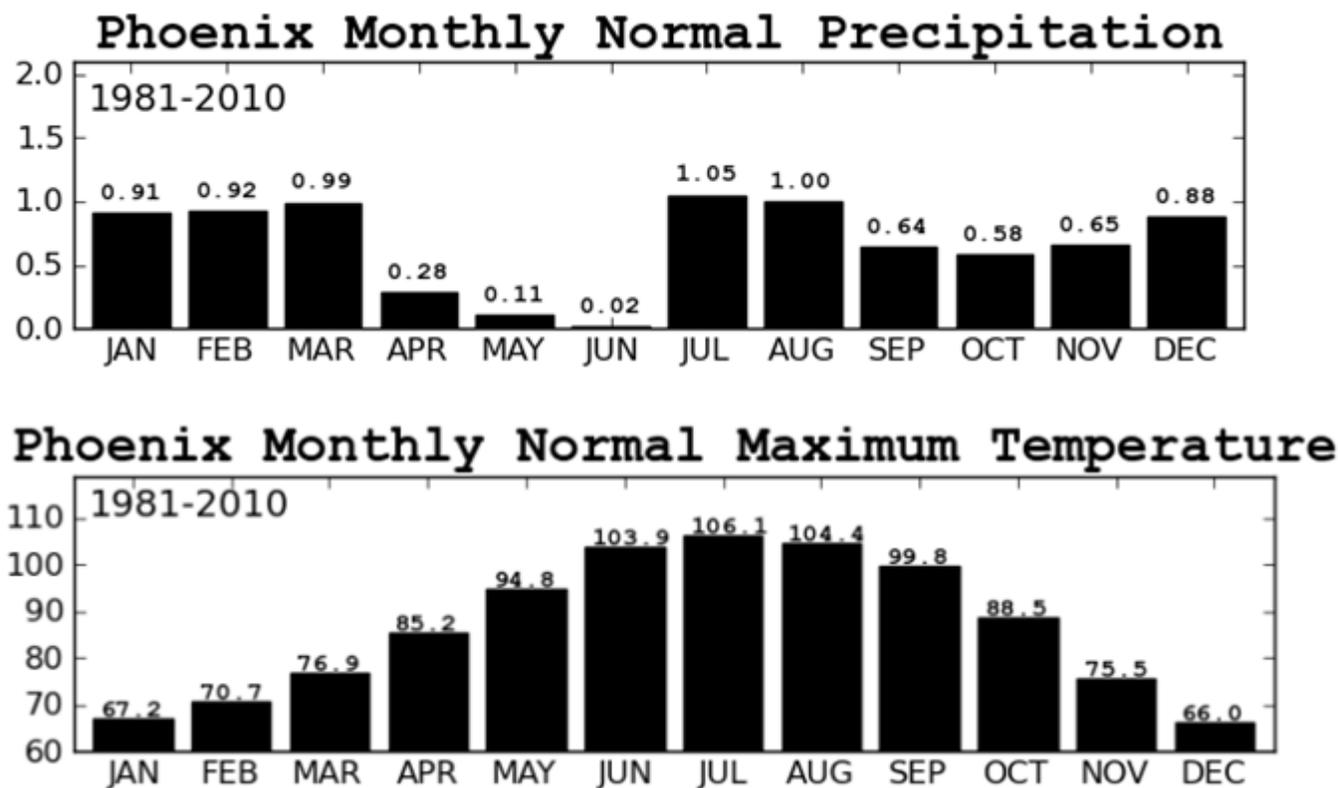


Figure 2-3 Phoenix Monthly Precipitation (top) and Maximum Temperature (bottom) Climatology (source: National Weather Service).

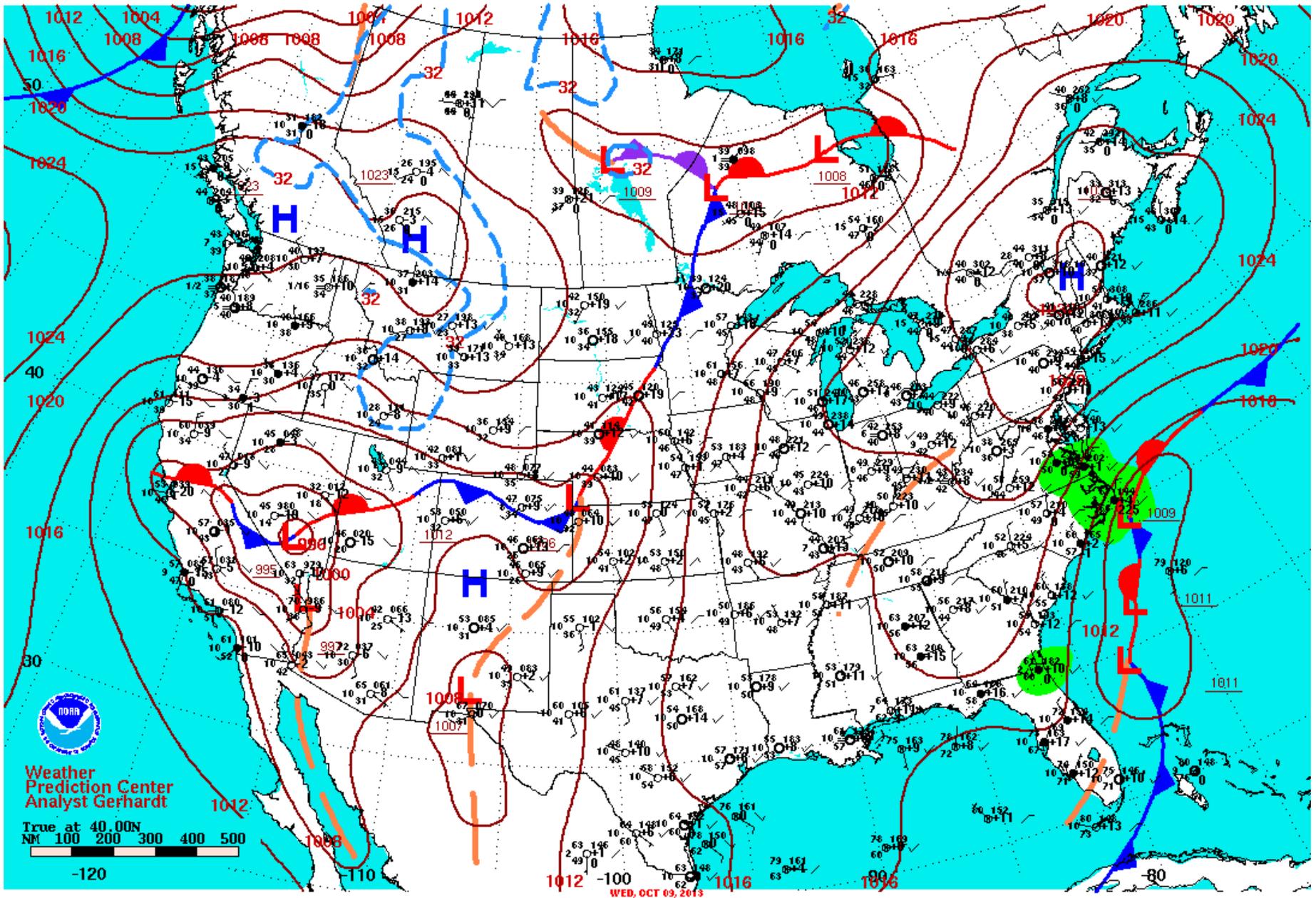
Low Pressure System Dust Storm Event Summary

In response to the approaching low pressure system and cold front on October 9, 2013, the National Weather Service (NWS) issued a wind advisory and a blowing dust advisory effective from 11:00 AM to 9:00 PM across most of the southwest deserts of Arizona, including areas within the Maricopa County PM10 nonattainment area. Sustained winds between 25 to 35 mph were expected, along with gusts up to 45 mph. Visibilities were predicted to drop to one mile or less, especially near open fields. Figure 2–4 displays the approaching system before it enters Arizona on October 9, 2013. Wind fields associated with the passing of the low pressure system are displayed in Figure 2–5.

By 11:30 AM, southwest winds of 20 mph, with gusts up to 30 mph, from the approaching low pressure system begin to produce windblown dust emissions in Pinal County. These winds increased in strength over the next few hours, culminating with the NWS issuing a dust storm warning for Pinal County at 1:28 PM for the afternoon and evening of October 9, 2013. From 2:00 PM to 6:00 PM, the southeast portion of the Maricopa County PM10 nonattainment area, directly north of Pinal County, experienced the brunt of the dust storm generated by the low pressure system winds, though the more rural western portions of Maricopa County also experienced blowing dust. Southwest winds as high as 30 mph, with gusts up to 44 mph, were recorded during this period in the southeast portion of Maricopa County. Five-minute average PM10 concentrations as high as 2,100 $\mu\text{g}/\text{m}^3$ were recorded at the West Chandler monitor and visibilities were reduced to 4.0 miles at the nearby Chandler Municipal Airport. The source region for this dust storm is primarily the desert and open areas of Pinal County, evidenced by the exceedance of six Pinal County monitors. Visibilities in the source region of the dust storm were as low as 1.5 miles, as recorded at the Casa Grande Airport.

The location of the West Chandler monitor (directly downwind of open and desert areas) subjected the monitor to increased transport from the source region of Pinal County, ultimately causing the monitor to exceed the 24-hour PM10 standard. As seen in Figure 2–6, moderate and severe drought conditions in Maricopa and Pinal counties likely exacerbated the amount of dust the low pressure system winds were able to entrain. No precipitation was recorded at area NWS stations in conjunction with the passing of this low pressure system.

As a summary of the event, Figure 2–7 displays an hourly graph of PM10 concentrations throughout Maricopa County and the nonattainment area. Table 2–1 contains PM10 concentration data from all recorded monitors throughout the State of Arizona.



Surface Weather Map and Station Weather at 7:00 A.M. E.S.T.

Figure 2-4 Location of low pressure system and cold front as of 5:00 AM Arizona time on October 9, 2013 (NOAA Daily Weather Map).

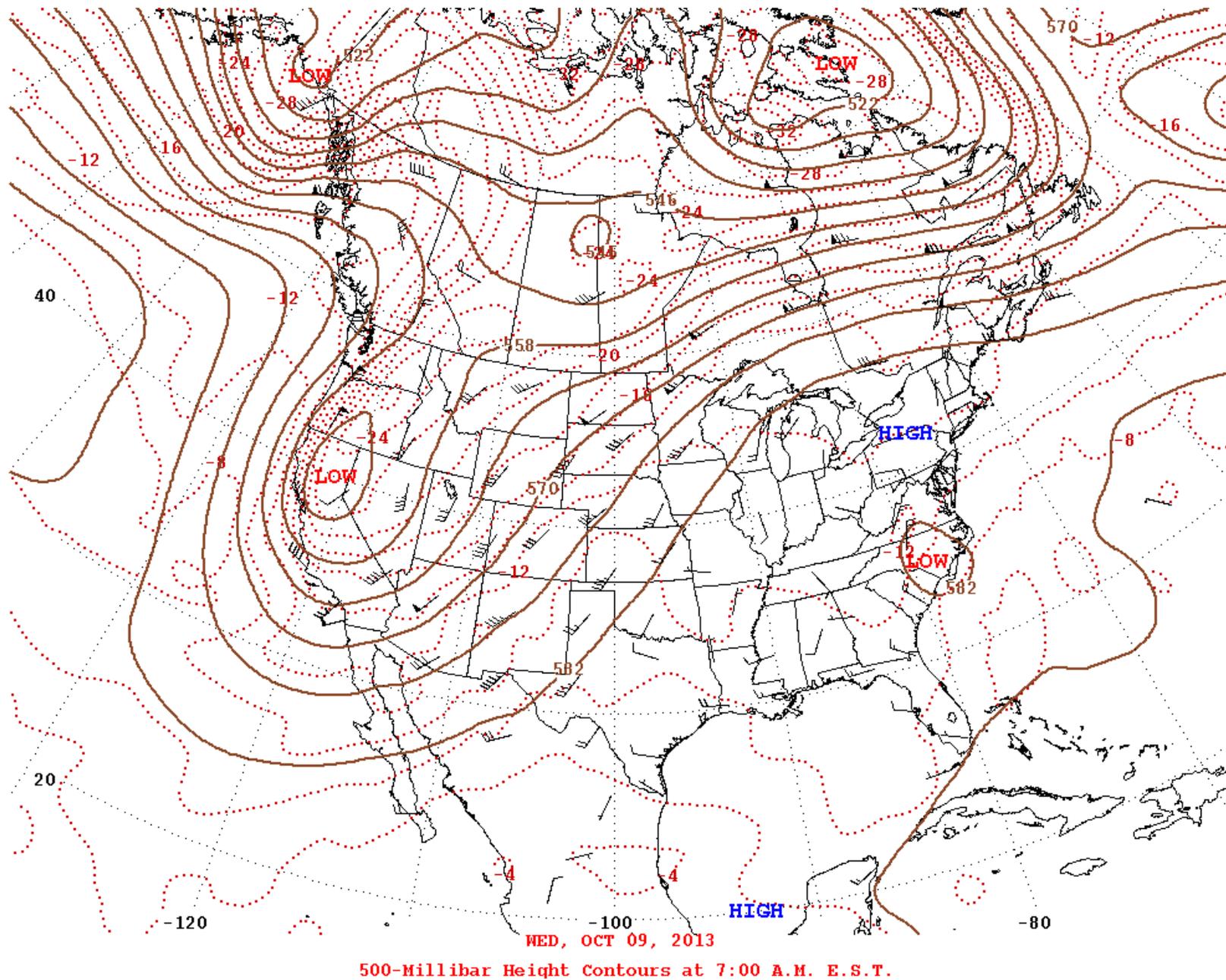
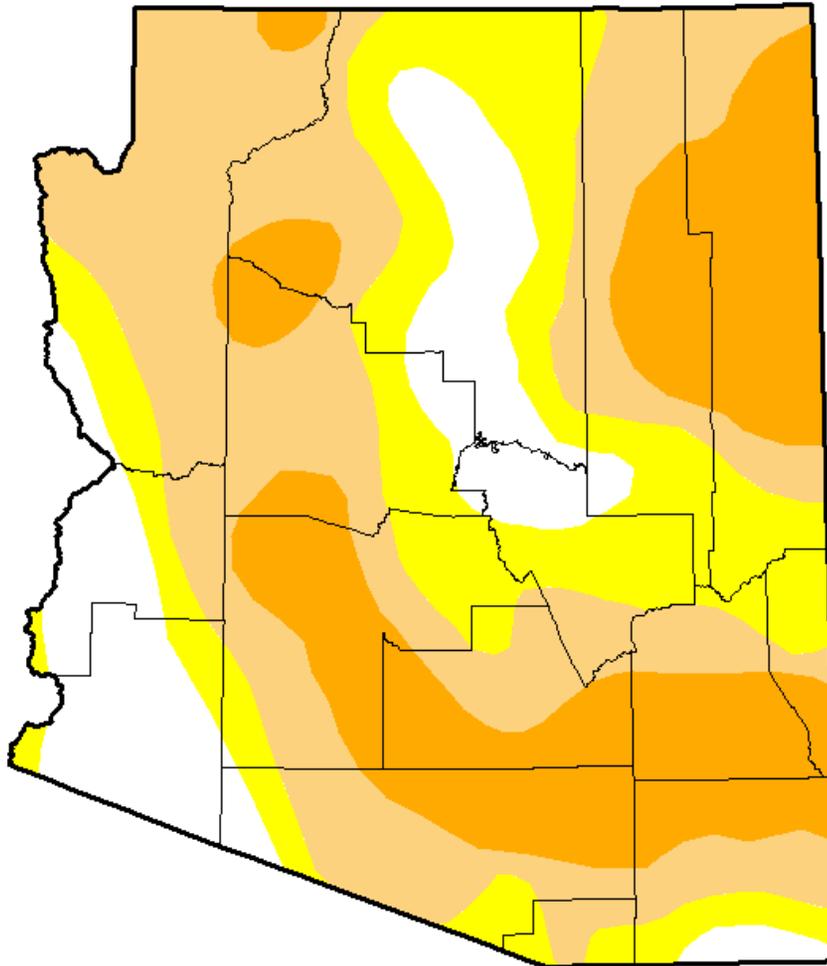


Figure 2-5. 500-Millibar wind field at 5:00 AM Arizona time on October 9, 2013 (NOAA Daily Weather Map).

U.S. Drought Monitor Arizona

October 8, 2013
(Released Thursday, Oct. 10, 2013)
Valid 7 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	15.00	85.00	61.91	25.28	0.00	0.00
Last Week <i>10/1/2013</i>	14.83	85.17	61.91	25.28	0.00	0.00
3 Months Ago <i>7/8/2013</i>	0.00	100.00	92.46	72.77	27.36	3.04
Start of Calendar Year <i>1/1/2013</i>	0.00	100.00	97.91	37.78	8.68	0.00
Start of Water Year <i>10/1/2013</i>	14.83	85.17	61.91	25.28	0.00	0.00
One Year Ago <i>10/9/2012</i>	0.00	100.00	100.00	31.42	5.67	0.00

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

*Richard Tinker
CPC/NOAA/NWS/NCEP*



<http://droughtmonitor.unl.edu/>

Figure 2-6. U.S. Drought Monitor analysis of Arizona released around the time period of the exceedance described in this report.

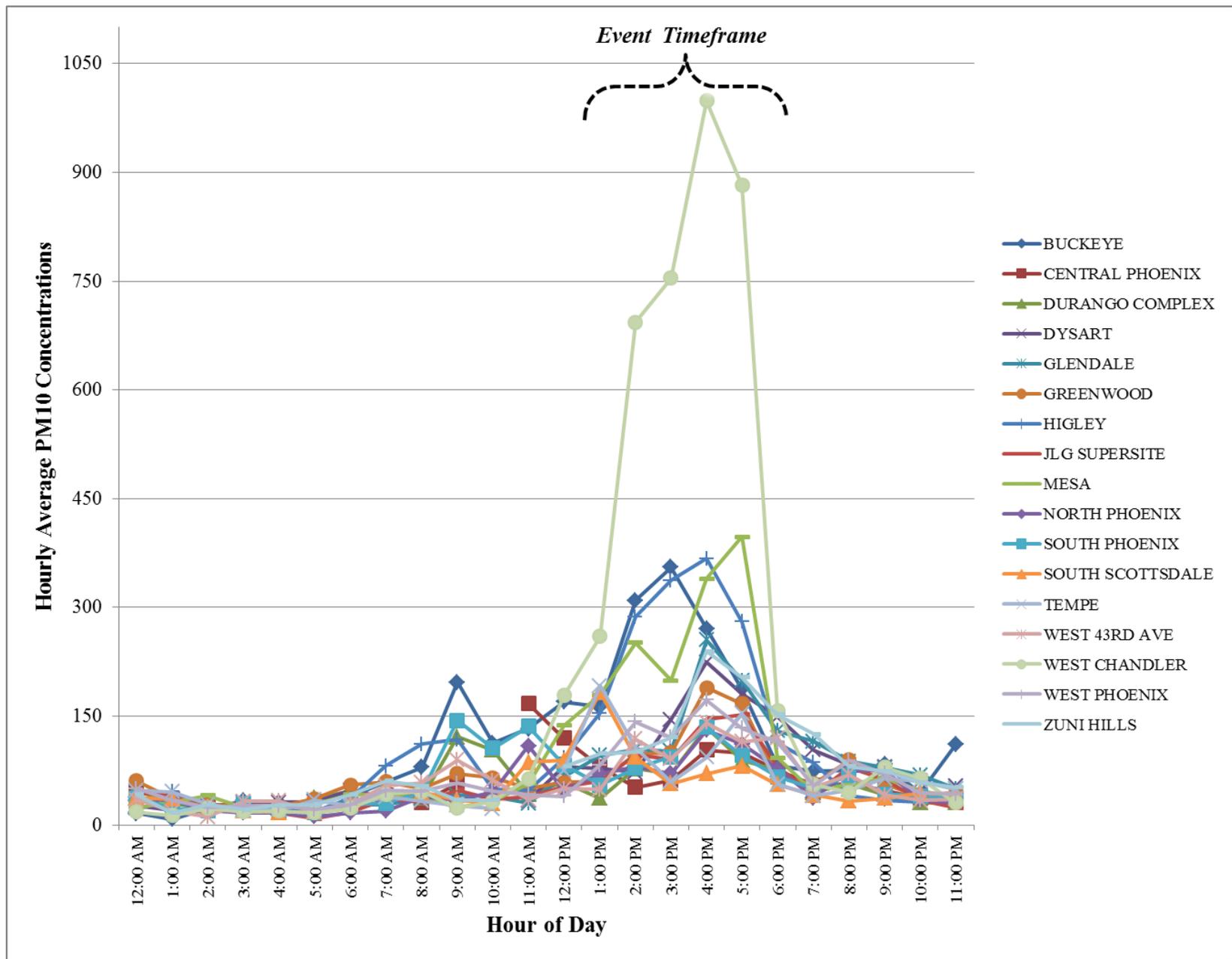


Figure 2-7. Timeline of PM10 concentrations at monitors in Maricopa County and the PM10 nonattainment area on October 9, 2013.

Table 2-1. Summary of Statewide PM10 Measurements for October 9, 2013.

Monitor	Monitor Type	Operator	AQS Monitor ID	24-hr Avg PM10 (µg/m ³)	1-hr Max PM10 (µg/m ³)	Max Time	AQS Qualifier Flag
Apache County							
N/A	N/A	WMAT	04-001-1003-81102-1	N/A	N/A	N/A	
Coconino County							
N/A	N/A	ADEQ	04-005-1237-81102-1	N/A	N/A	N/A	
Gila County¹							
Hayden Old Jail	TEOM	ADEQ	04-007-1001-81102-3	113	371	0700	
Maricopa County¹							
Buckeye	TEOM	MC	04-013-4011-81102-1	111	355	1500	
Central Phoenix	TEOM	MC	04-013-3002-81102-4	57	167	1100	
Durango Complex	TEOM	MC	04-013-9812-81102-1	55	134	1600	
Dysart	TEOM	MC	04-013-4010-81102-1	74	224	1600	
Fort McDowell/ Yuma Frank	TEOM	FMIR	04-013-5100-8112-3	N/A	N/A	N/A	
Glendale	TEOM	MC	04-013-2001-81102-1	70	254	1600	
Greenwood	TEOM	MC	04-013-3010-81102-1	66	189	1600	
Higley	TEOM	MC	04-013-4006-81102-1	102	367	1600	
JLG Supersite	BAM	ADEQ	04-013-9997-81102-3	53	152	1700	
JLG Supersite	TEOM	ADEQ	04-013-9997-81102-4	N/A	N/A	N/A	
Lehi Air Monitoring Station	N/A	SRP-MIC	04-013-7022-81102-1	N/A	N/A	N/A	
Mesa	TEOM	MC	04-013-1003-81102-1	94	397	1700	
North Phoenix	BAM	MC	04-013-1004-81102-1	51	131	1600	
Senior Center Air Monitoring Station	N/A	SRP-MIC	04-013-7020-81102-1	N/A	N/A	N/A	
Senior Center Air Monitoring Station	N/A	SRP-MIC	04-013-7020-81102-2	N/A	N/A	N/A	
South Phoenix	TEOM	MC	04-013-4003-81102-1	61	144	0900	
South Scottsdale	TEOM	MC	04-013-3003-81102-1	52	183	1300	
Tempe	TEOM	MC	04-013-4005-81102-1	58	191	1300	
West Chandler	TEOM	MC	04-013-4004-81102-1	189	998	1600	RJ
West Forty Third	TEOM	MC	04-013-4009-81102-1	58	141	1600	
West Phoenix	BAM	MC	04-013-0019-81102-1	64	172	1600	
Zuni Hills	TEOM	MC	04-013-4016-81102-1	77	239	1600	
Navajo County							
N/A	N/A	WMAT	04-017-1002-81102-1	N/A	N/A	N/A	
Pima County¹							
Ajo	TEOM	ADEQ	04-019-0001-81102-3	59	135	1400	
Orange Grove	FRM	PCDEQ	04-019-0011-81102-2	N/A	N/A	N/A	
Prince Road	FRM	PCDEQ	04-019-1009-81102-1	N/A	N/A	N/A	
Rillito	TEOM	ADEQ	04-019-0020-81102-3	186	809	1400	RJ
Santa Clara	FRM	PCDEQ	04-019-1026-81102-1	N/A	N/A	N/A	
Tangerine	FRM	PCDEQ	04-019-1018-81102-1	N/A	N/A	N/A	
Pinal County²							
Apache Junction Fire Station	FRM	PCAQCD	04-021-3002-81102-3	N/A	N/A	N/A	
Bapchule	FRM	GRIC	04-021-7004-81102-1	N/A	N/A	N/A	
Bapchule	FRM	GRIC	04-021-7004-81102-2	N/A	N/A	N/A	
Casa Grande Downtown	TEOM	PCAQCD	04-021-0001-81102-3	174	703	1300	
Combs School	TEOM	PCAQCD	04-021-3009-81102-3	180	785	1300	
Cowtown	TEOM	PCAQCD	04-021-3013-81102-3	247	1,068	1800	
Maricopa	TEOM	PCAQCD	04-021-3010-81102-3	N/A	530	1500	
Pinal Air Park	TEOM	PCAQCD	04-021-3007-81102-3	155	757	1000	
Pinal County Housing	TEOM	PCAQCD	04-021-3011-81102-3	242	957	1500	
Stanfield	TEOM	PCAQCD	04-021-3008-81102-3	388	1,965	1400	
Santa Cruz County¹							
Nogales Post Office	BAM	ADEQ	04-023-0004-81102-3	76	205	1100	

Monitor	Monitor Type	Operator	AQS Monitor ID	24-hr Avg PM10 (µg/m ³)	1-hr Max PM10 (µg/m ³)	Max Time	AQS Qualifier Flag
Yuma County¹							
Yuma Supersite	TEOM	ADEQ	04-027-8011-81102-3	151	274	0100	

SOURCE: ¹ADEQ's AZURITE database. ²Pinal County Air Quality Control District (PCAQCD). These data are preliminary and should not be considered final until entered into EPA's Air Quality System (AQS).

TEOM: Tapered Element Oscillating Microbalance monitor

BAM: Beta Attenuation monitor

FRM: Federal Reference Method

WMAT: White Mountain Apache Tribe of Fort Apache Reservation, AZ

SRP-MIC: Salt River Pima-Maricopa Indian Community of Slat River Reservation, AZ

PCDEQ: Pima County Department of Environmental Quality

PCAQCD: Pinal County Air Quality District

GRIC: Gila River Indian Community

RJ: qualifier flag for high winds

III. HISTORICAL FLUCTUATIONS

Figure 3–1 displays a time series plot of the 24-hour PM10 concentrations for the period January 1, 2008, through October 31, 2013, for the exceeding West Chandler monitor. The figure indicates that the PM10 concentrations seen at the West Chandler monitor on October 9, 2013 were in excess of normal historical fluctuations.

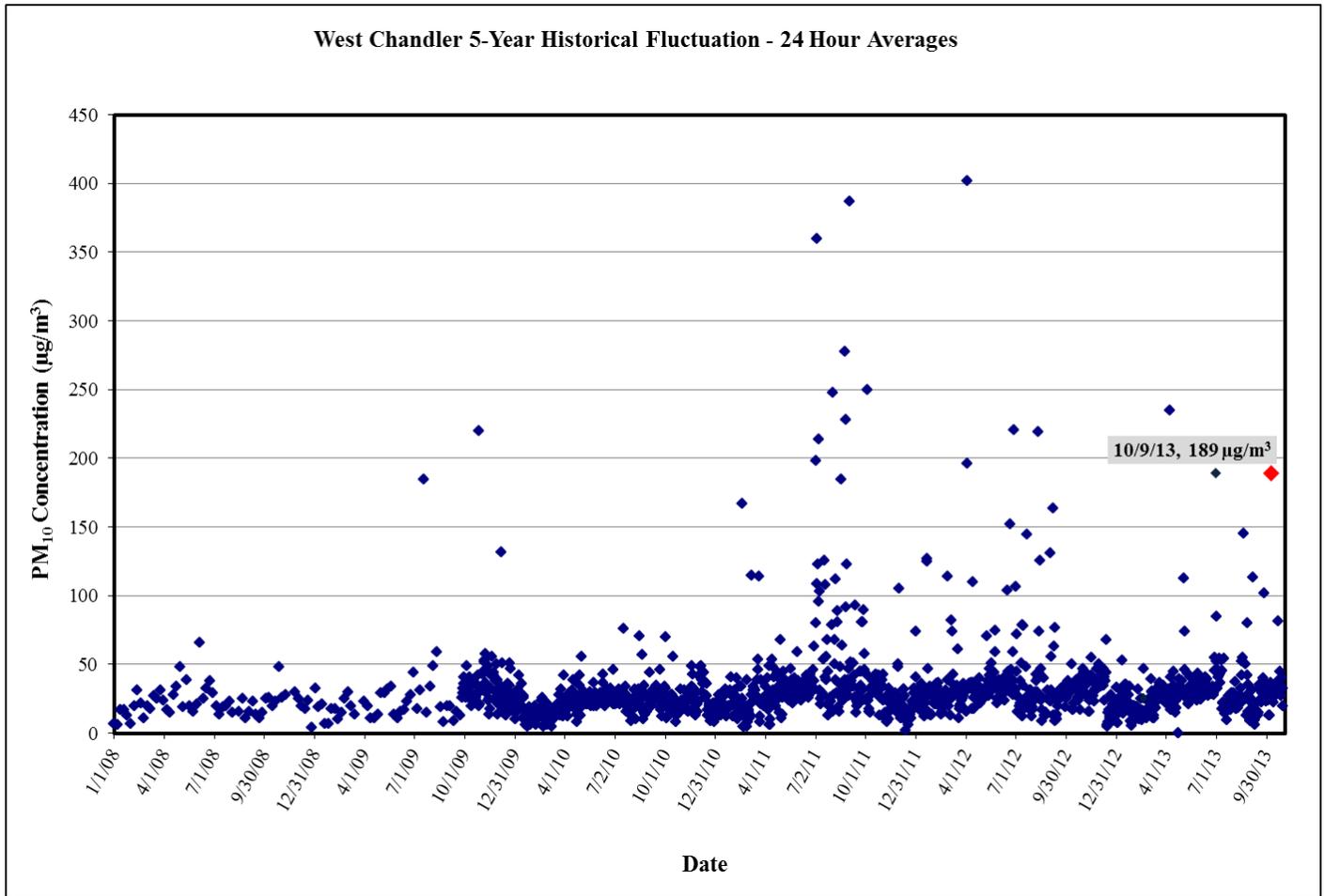


Figure 3-1. Plot of 24-hour average PM10 concentrations (January 2008 – October 2013) at the West Chandler monitor.

IV. NOT REASONABLY CONTROLLABLE OR PREVENTABLE

Section 50.1(j) of Title 40 CFR Part 50 requires that an event must be “not reasonably controllable or preventable” in order to be defined as an exceptional event. This requirement is met by demonstrating that despite reasonable control measures in place within Maricopa County and the nonattainment area, high wind conditions overwhelmed all reasonably available controls. The event occurring on October 9, 2013, was directly related to strong and gusty winds generated by a low pressure storm system.

As shown in Section V, strong sustained winds up to 30 mph and gusts up to 44 mph overwhelmed local controls, generating and transporting windblown dust throughout the nonattainment area. Transported windblown dust from the desert source region of Pinal County caused the southeast portion of the nonattainment area to experience the highest concentrations of PM10; ultimately leading to the exceedance recorded at the West Chandler monitor located immediately downwind of the source region of the dust storm.

Strict controls on local sources of fugitive dust were in place and enforced during the event on October 9, 2013, but were ultimately overwhelmed by strong and gusty low pressure system winds. The following sections describe the BACM- and MSM-level PM10 control measures in place on October 9, 2013, and the robustness of the programs designed to enforce these measures. Inspections of local sources performed before, during and after October 9, 2013, confirmed that no unusual anthropogenic PM10-producing activities occurred in Maricopa County, the nonattainment area, nor the local areas surrounding the exceeding monitors.

Regulatory Measures and Control Programs

The Arizona Department of Environmental Quality (ADEQ) and the Maricopa County Air Quality Department (MCAQD) are responsible for implementing regulatory measures to control emissions from agricultural sources, stationary sources, fugitive dust sources, and open burning within Maricopa County. Three major programs provide or contribute to air pollution control measures for the Greater Phoenix area. These programs include:

- 1.) ADEQ’s Agricultural Best Management Program (AgBMP)
- 2.) Maricopa County’s Inspection and Compliance Program
- 3.) ADEQ’s Air Quality Forecasting Program

Specifically, ADEQ is responsible for compliance assistance and enforcement of Agricultural Best Management Practices developed by the Governor’s Agricultural Best Management Practices Committee, while MCAQD is responsible for compliance assurance for all other significant sources of PM10 emissions. In addition to routine inspections and inspections driven by complaints, inspections are often increased when 1.) ADEQ forecasters issue a High Risk for the Maricopa County Dust Control Forecast, 2.) ADEQ forecasters issue a High Pollution Advisory, or 3.) near real-time monitoring data indicate unique activity via high PM concentrations. The forecasting program and inspection / compliance programs work together so that resources can be best utilized during days that are of greatest risk for elevated PM emissions.

On July 25, 2002, EPA took initial action to finalize approval of the Best Available Control Measure (BACM) and the Most Stringent Measure (MSM) demonstrations in the Serious Area PM10 plan for the Maricopa County portion of the metropolitan Phoenix PM10 nonattainment area (67 FR 48718). These BACM and MSM demonstrations were again approved by EPA on July 14, 2006 (71 FR 43979). The Agricultural Best Management Practices General Permit rule and related definitions have been approved into the Arizona Administrative Code as R18-2-610 and R18-2-611 pursuant to Arizona Revised Statutes § 49-457¹. Maricopa County regulations of PM10 emissions are listed in Table 4-1.

Table 4-1. Rules and Ordinances Regulating Particulate Matter Emissions in Maricopa County.

Rule/Ordinance Number & Title	Description
Rule 300: Visible Emissions	Establishes standards for visible emissions and opacity.
Rule 310: Fugitive Dust from Dust-Generating Operations	Establishes limits for the emissions of particulate matter into the ambient air from any property, operations, or activity that may serve as a fugitive dust source.
Rule 310.01: Fugitive Dust from Non-Traditional Sources of Fugitive Dust	Establishes limits for the emissions of particulate matter into the ambient air from open areas, vacant lots, unpaved parking lots, and unpaved roadways which are not regulated by Rule 310 and which are not required to have either a permit or a dust control plan.
Rule 311: Particulate Matter from Process Industries	Establishes emission rates based on process weight applicable to any affected operations not subject to Rule 316.
Rule 312: Abrasive Blasting	Establishes limits for particulate emissions from abrasive blasting operations.
Rule 314: Open Outdoor Fires and Indoor Fireplaces at Commercial and Institutional Establishments	Establishes limits for the emissions of air contaminants produced from open burning.
Rule 316: Nonmetallic Mineral Processing	Establishes limits for the emissions of particulate matter into the ambient air from any nonmetallic mining operation or rock product processing plant.
Rule 317: Hospital/Medical/ Infectious Waste Incinerators	Establishes limits for the emissions of air pollutants from medical waste incinerators.
Rule 322: Power Plant Operations	Establishes limits for the emissions of nitrogen oxides, sulfur oxides, carbon monoxide and particulate matter from existing power plants and cogeneration plants.
Rule 323: Fuel Burning Equipment from Industrial/Commercial/ Institutional (ICI) Sources	Establishes limits for the emissions of nitrogen oxides, sulfur oxides, carbon monoxide and particulate matter from ICI sources.
Rule 324: Stationary Internal Combustion (IC) Engines	Establishes limits for the emissions of carbon monoxide, nitrogen oxides, sulfur oxides, volatile organic compounds, and particulate matter from stationary internal combustion engines, including stationary IC engines used in cogeneration.

¹ Updates to the AgBMP program in December, 2011, clarified BMPs for crop and added BMPs for animal operations. Effective 12/29/2011, R18-2-611 was renumbered to R18-2-610.0,1 **Agricultural PM10 General Permit for Crop Operations** and R18-2-611.01, **Animal Operations PM10 General Permit** was added. Definitions for Crop Operations were revised at R18-2-610 and new definitions for Animal Operations were added at R18-2-611.

Rule/Ordinance Number & Title	Description
Rule 325: Brick and Structural Clay Products (BSCP) Manufacturing	Establishes limits for particulate matter emissions from the use of tunnel kilns for curing in the brick and structural clay product (BSCP) manufacturing processes.
Ordinance P-25: Leaf Blower Restriction	Establishes restrictions for leaf blowers in incorporated and unincorporated sections of Area A in Maricopa County.
Ordinance P-26: Residential Woodburning Restriction	Establishes restrictions for residential woodburning.
Ordinance P-27: Vehicle Parking and Use on Unstabilized Vacant Lots	Establishes restrictions for vehicle parking and use on unstabilized vacant lots in unincorporated sections of Area A in Maricopa County.
Ordinance P-28: Off-Road Vehicle Use in Unincorporated Areas of Maricopa County	Establishes restrictions for operating vehicles on unpaved property in unincorporated areas of Maricopa County.
Arizona Administrative Code R18-2-611 & 610: Agricultural PM10 General permit	Establishes a requirement for commercial farmers to implement best management practices and maintain a record demonstrating compliance

In addition to the rules and regulations listed in the above table, other PM10 reducing control measures (e.g., paving of unpaved roads, PM10 certified street sweepers, controlling unpaved parking lots, etc.) have been committed to, and implemented by, local jurisdictions throughout the PM10 nonattainment area, and incorporated into the Arizona SIP through PM10 plans such as the Revised MAG 1999 Serious Area Particulate Plan for PM10 for the Maricopa County Nonattainment Area. The Pinal County Air Quality Control District (PCAQCD) also implements regulatory control measures on emissions from existing and new non-point sources within Pinal County (see Table 4-2). Additionally, the PCAQCD implements specific nonattainment rules for that part of the Phoenix PM10 nonattainment area that resides in Pinal County (see Table 4-3).

Table 4-2. Pinal County Rules Regulating Existing and New Non-point Sources in Pinal County.

Article Number & Title	Description
Article 2: Fugitive Dust	Provides a mechanism to reasonably regulate operations which periodically may cause fugitive dust emissions into the atmosphere
Article 3: Construction Sites – Fugitive Dust	Improves the control of excessive fugitive dust emissions that have been traditionally associated with construction, earthwork, and land development, and thereby minimize nuisance impacts

Table 4-3. Pinal County Rules Regulating Fugitive Dust in Pinal County Portion of MC PM10 NAA.

Article Number & Title	Description
Article 4: Nonattainment Area Rules; Dustproofing for Commercial Parking, Drives and Yards	Establishes rules to avoid violations of the prevailing PM10 standard and additionally minimize nuisance impacts by improving control of excessive fugitive dust emissions from unpaved parking lots
Article 5: Nonattainment Area Rules; Stabilization for Residential Parking and Drives	Establishes rules for stabilizing residential properties
Article 6: Restrictions on Vehicle Parking and Use on Vacant Lots	Establishes rules for unpaved or unstabilized vacant lots

Article Number & Title	Description
Article 7: Construction Sites in Nonattainment Areas – Fugitive Dust	Establishes rules to avoid violations of the prevailing PM10 standard and additionally minimize nuisance impacts by improving control of excessive fugitive dust emissions from activities associated with construction, earthwork, or land development.
Article 8: Nonattainment Area Rules, Requirement for Stabilization of Disturbed Areas at Vacant Lots	Establishes rules for stabilizing disturbed areas at vacant lots

PM10 Rule Effectiveness

MCAQD analyzed the effectiveness of its fugitive dust rules (Rules 310, 310.01 and 316) in terms of source compliance rates. The rule effectiveness study was designed to assess how many sources regulated by MCAQD during the subject time period received no PM10 emissions-related violations. As a basis for comparison, the percentage of sources that did not receive a PM10 emissions-related violation during calendar year 2007 was 76% for sources subject to Rule 310, 85% for sources subject to Rule 310.01, and 40% for sources subject to Rule 316. In early 2008, Rules 310, 310.01, and 316 were strengthened and new ordinances (covering additional source categories such as leaf blowers, vacant lots, and off-road vehicles) were adopted. These enhancements resulted from MCAQD’s obligations under such agreements as the 2005 Revised PM10 State Implementation Plan for the Salt River Area and the Maricopa Association of Governments (MAG) 2007 Five Percent Plan for PM10 for the Maricopa County Nonattainment Area. Three major areas that contributed to increased compliance were an increase in departmental staffing (especially inspectors), a robust training program, and regulatory changes that broadened and strengthened control measures under Rules 310, 310.01, and 316.

Rule effectiveness rates were re-assessed for FY 2009 (July 2008–June 2009), a period that allowed time for the new and revised regulations to take effect. The results showed significant increases in compliance compared with the earlier period: to 90% (from 76%) for Rule 310 sources, to 95% (from 85%) for Rule 310.01 sources, and to 65% (from 40%) for Rule 316 sources. These improvements continued into calendar year 2010 with rule effectiveness rates of 94% for Rule 310 sources, 96% for Rule 310.01, and 73% for Rule 316 sources.

Additional rule effectiveness increases were observed for Rule 310.01 and Rule 316 in calendar year 2012. The increase in rule effectiveness for Rule 310.01 was attributed to ADEQ’s Dust Action General Permit, which was a new dust measure contained in the 2012 Five Percent Plan for PM10 for the Maricopa County Nonattainment Area. The rule effectiveness for Rule 310.01 was 98%, an increase of 2% in 2012. The rule effectiveness for Rule 316 had a considerable increase to 83%, which is an increase of 10% compared to 2010.

The timeline below illustrates the improvements in rule effectiveness over the last several years, and also points out significant revisions to previous rules, as well as newly adopted rules, ordinances and measures. Since the first study of 2007, the rule effectiveness has increased for Rule 310, Rule 310.01, and Rule 316 by 17%, 13%, and 43%, respectively.

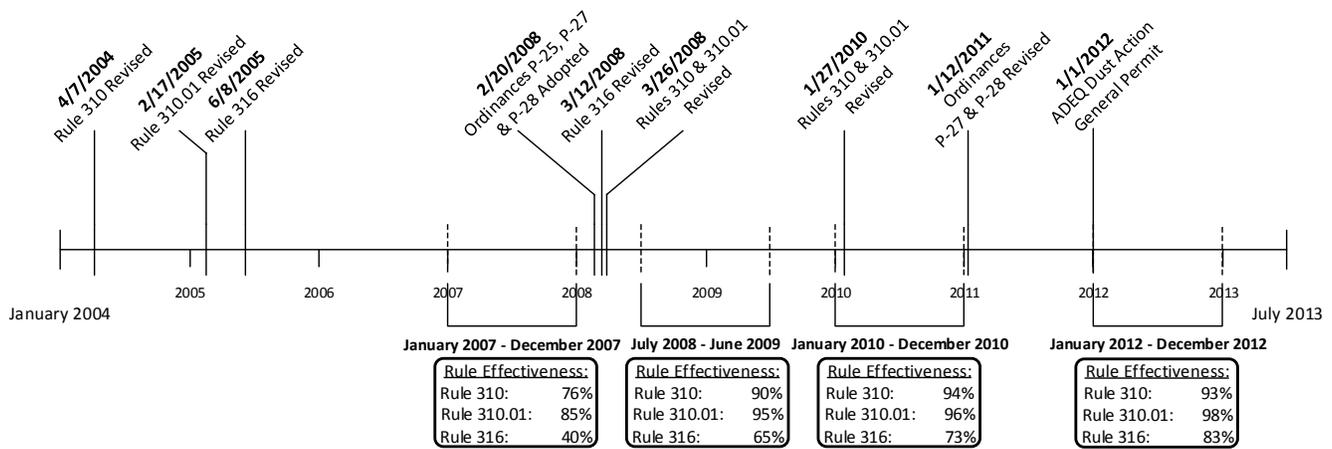


Figure 4-1. Timeline of Maricopa County fugitive dust rules and ordinances.

Compliance and Enforcement Activities

MCAQD is prepared to proactively respond to high wind events and protect human health and well-being. MCAQD’s approach consists of two primary components: routine proactive inspections, as well as surveillance inspections, conducted both during and after significant events. MCAQD routinely inspects dust control-permitted sites and increases the frequency of inspections for permits covering areas of ten acres or more. Non-metallic surface mining sources under Rule 316 are also regularly inspected multiple times every year. Maricopa County also responds to the majority of air quality complaints within 24 hours.

Maricopa County monitors the ADEQ Five-Day Dust Control Forecast to identify the potential for elevated PM₁₀ pollution levels due to high winds or stagnant conditions. When a High Pollution Advisory (HPA) is issued for Maricopa County, MCAQD conducts additional increased surveillance before, during, and after the forecast event(s). MCAQD also conducts event surveillance and post-event activities after an exceptional event that had not been forecast (i.e., those instances in which an HPA had not been issued).

Pre-event surveillance consists of surveying high-risk areas for any dust-generating activities, educating sources of the impending HPA event, and issuing violations for failure to comply with local, state, or federal regulations. During the event, MCAQD inspectors survey high-risk areas to confirm that control measures are in place, document any violations, and contact other regulatory agencies if necessary. Post-event activities include continued surveys of high-risk areas, re-inspecting sources within two business days of receiving a violation, and an internal MCAQD debriefing of event activities.

Currently, a total of 16 MCAQD air monitoring sites were upgraded with new equipment to allow the monitoring sites to automatically report monitored readings at 5-minute intervals. Previously, hourly readings were only available. The real-time data reporting system includes a mechanism to alert MCAQD inspectors when PM₁₀ concentrations are elevated. The system allows MCAQD inspectors to review concentrations at the monitor and to consult the National Weather Service website to check for weather event activity. This capability allows the MCAQD responder to identify regional events and monitor specific issues. If necessary, the MCAQD responders can inform nearby stakeholders and local governments of the elevated PM₁₀ concentrations.

For October 9, 2013, a Maricopa County Dust Control Forecast was issued indicating a high risk level for unhealthy PM10. The Dust Control Forecast indicated south and southwesterly winds of 25-35 mph with gusts near 45 mph. The forecast also advised of “lengthy periods of strong and gusty winds to a large area including the Phoenix area” which creates “a very high potential for significant blowing and transported dust episode.”

An evaluation of all inspection reports, air quality complaints, compliance reports, and other documentation indicate no evidence of unusual anthropogenic-based PM10 emissions. During the time period of October 6 through October 12, 2013, MCAQD inspectors conducted a total of 217 inspections of permitted facilities, of which 177 were at fugitive dust sources. Additionally, MCAQD conducted 307 inspections on vacant lots and unpaved parking lots during this period.

During this 7-day period, a total of 34 violations were issued county-wide for PM10 and non-PM10-related violations. Violations were issued to two PM10 fugitive dust sources within a 4-mile radius of the exceeding West Chandler monitor.

MCAQD issued a violation to a fugitive dust source on October 7, 2013, for failing to have a water pull driver complete the basic dust control training class. The inspector noted the site was stable during the inspection and did not observe any fugitive dust emissions. The site was located approximately 1.5 miles to the east of the West Chandler monitor. The violation would not have contributed to the exceedance because there were no fugitive dust emissions and the source was located outside the wind profile of the West Chandler monitor.

Additionally, MCAQD issued a violation to a fugitive dust source on October 8, 2013, for unstable surface areas. The unstable surface area was relatively small and measured approximately 0.14 acres. The violation was corrected prior to the exceptional event by stabilizing the areas with water and erecting barriers. The source was located 1.98 miles southeast of the West Chandler monitor, which was outside of the wind profile of the monitor during the exceptional event. The violation would not have contributed to the exceedance at the monitor.

MCAQD was prepared for any complaints received due to the high wind event. During the 7-day period from October 6 through October 12, 2013, MCAQD received 6 complaints, of which none were windblown dust or PM10 related.

Based on a review of the inspection reports and site visit documentation, there is no evidence to suggest that agricultural activities within Maricopa County produced unusual or significant PM10 emissions. From October 6 through October 12, 2013, the ADEQ Ag BMP inspector received no complaints and completed one inspection. On the day of the exceedance the ADEQ Ag BMP inspector was in the field and noted that dust impacting the West Chandler monitor area appeared to derive from the south-southwest from the Gila River Indian Community and Pinal County where open desert, undeveloped lands, and agricultural lands exist. The agriculture fields in Maricopa County during that time of year have established crops of sorghum and alfalfa and would not have significantly contributed to PM10 emissions.

Conclusions

The strong and gusty low pressure system winds on October 9, 2013, overwhelmed local controls, generating and transporting enough windblown PM10 to cause an exceedance at the West Chandler monitor. Transported dust from the source region deserts of Pinal County contributed heavily to the exceedance at the West Chandler monitor, located immediately downwind of the source region. The

Maricopa County area is designated as a serious nonattainment area for PM10 and is required to have BACM for all significant sources of PM10. BACM-approved control measures on significant anthropogenic sources were in place and enforced during the events, and pro-active tracking and response to the events by regulatory agencies and local governments confirmed the uncontrollable nature of the dust emissions; therefore, these pre-existing/prior approved required controls are adequate for meeting the requirements of an exceptional event and should be considered “reasonable” for these purposes.

Despite the deployment of comprehensive control measures and sophisticated response programs, high wind conditions associated with the low pressure system generated and transported high concentrations of PM10 within the nonattainment area. Sustained winds up to 30 mph and gusts up to 44 mph easily overwhelmed all available efforts to limit PM10 concentrations from the event. The fact that this was a natural event involving a low pressure storm system that generated and transported PM10 emissions both within, and into the nonattainment area, provides strong evidence that the exceedance on October 9, 2013, recorded at the West Chandler monitor was not reasonably controllable or preventable.

V. CLEAR CAUSAL RELATIONSHIP

Introduction

A demonstration of the clear causal relationship between windblown dust generated and transported by low pressure system winds and the exceedance at the West Chandler monitor on October 9, 2013, is provided in this section. A strong, gusty low pressure system generated sustained winds up to 30 mph and gusts up to 44 mph in Maricopa and Pinal counties. The open and desert areas of Pinal County were particularly impacted by the strong winds, generating enough windblown dust to cause six monitors in the county to exceed. Transported dust from the desert source region of Pinal County caused the southeast portion of the nonattainment area to experience the highest levels of PM10 concentrations. The West Chandler monitor, located immediately downwind of the source region deserts, experienced the brunt of the transported dust leading to an exceedance of the 24-hour PM10 standard.

A detailed description of the meteorology that caused the natural windblown dust exceedance event at the West Chandler monitor is described below in a series of time-stamped maps. Visibility photos from within the nonattainment area provide additional temporal evidence of the link between the blowing dust from the low pressure system winds and high PM10 concentrations. The weight of evidence from these sources provides the clear causal relationship between the windblown dust generated and transported by low pressure storm system winds and the exceedance at the West Chandler monitor on October 9, 2013.

Time Series Maps and Visibility Photos

Figures 5–1 through 5–15 provide a time series GIS-based visualization of the meteorology and PM10 concentrations associated with the storm system. The data displayed in the following maps were gathered from five data sources. All available meteorological and air quality data was used in order to present the most complete story of the event. Table 5–1 displays the types of data used from each agency in creating the maps.

Table 5-1. Data Sets Used in the Creation of Time Series GIS Maps.

Agency	Data Sets
Arizona Department of Environmental Quality (ADEQ)	Hourly PM10 Concentrations, Wind Speed, Wind Direction and Wind Gusts
Arizona Meteorological Network (AZMET)	Hourly Wind Speed, Wind Direction and Wind Gusts
Maricopa County Air Quality Department (MCAQD)	5-Minute PM10 Concentrations, Wind Speed, Wind Direction, and Wind Gusts (hourly data used when 5-minute was unavailable)
Pinal County Air Quality Control District (PCAQCD)	Hourly PM10 Concentrations, 5-Minute and Hourly Wind Speed, Wind Direction and Wind Gusts
National Weather Service (NWS)	Point in Time Wind Speed, Wind Direction, Wind Gusts, and Visibility

Map Description

A description of each time series map is provided to highlight important data in each map and explain the progression of the meteorology and PM10 concentrations through time. Taken as a whole, the maps and associated explanatory text describe the clear causal relationship between the windblown dust generated

transported by the low pressure storm system winds and the PM10 exceedance at the West Chandler monitor.

11:30 AM – 12:00 PM

Winds from the southwest begin to cause increased PM10 concentrations in Pinal County. Conditions are breezy in the Maricopa County nonattainment area, with PM10 concentrations slightly elevated across the area.

12:00 PM – 12:30 PM

Significant PM10 concentration levels (over 1,000 $\mu\text{g}/\text{m}^3$) begin to be generated in Pinal County in response to sustained winds as high as 23 mph and wind gusts as high as 34 mph. A few monitors in the Maricopa County nonattainment area begin to record concentrations above 150 $\mu\text{g}/\text{m}^3$ under sustained winds as high as 16 mph and gusts as high as 34 mph.

12:30 PM – 1:00 PM

Sustained winds as high as 23 mph are recorded in the southeast portion of the nonattainment area, prompting the West Chandler monitor to record PM10 concentrations above 150 $\mu\text{g}/\text{m}^3$ for the whole period. Significant dust is still being generated in Pinal County, with the Casa Grande airport reporting visibility as low as 5.0 miles. Dust from Pinal County begins to be transported into the southeast portion of the nonattainment area on constant southwest winds.

1:00 PM – 1:30 PM

PM10 concentrations remain elevated in the southeast portion of the nonattainment area in response to more transported dust from Pinal County. Visibility is now only 3.0 miles at the Casa Grande airport in response to sustained winds of 28 mph and gusts of 41 mph.

1:30 PM – 2:00 PM

Sustained winds and gusts strengthen to 23 mph and 36 mph, respectively, in the southeast portion of the nonattainment area, transporting and generating additional PM10 concentrations. Visibility is now reduced to 4.0 miles at the Williams Gateway airport. The five easternmost Maricopa County monitors record PM10 concentrations above 150 $\mu\text{g}/\text{m}^3$, with the West Chandler monitor recording concentrations above 500 $\mu\text{g}/\text{m}^3$. During this period, the National Weather Service upgrades the blowing dust warning to a dust storm warning in Pinal County. The Casa Grande airport reports visibility of only 1.8 miles.

2:00 PM – 2:30 PM

PM10 concentrations remain elevated in the southeast portion of Maricopa County under sustained winds as high as 20 mph and gusts as high as 36 mph. Increased PM10 concentrations are also recorded in the western portion of Maricopa County as well. Pinal County remains the primary source of dust, with five monitors recording concentrations above 500 $\mu\text{g}/\text{m}^3$ and visibility reduced to 2.5 miles at the Casa Grande airport. Dominant, sustained winds from the southwest confine the transport of dust from Pinal County to the southeast portion of the Maricopa County nonattainment area.

2:30 PM – 3:00 PM

PM10 concentrations rise even further in the southeast portion of the nonattainment area in response to increasing sustained winds of 25 mph and gusts of 37 mph. Visibility is reduced to 4.0 miles at both the Chandler Municipal and Williams Gateway airports, and 5.0 miles at the Mesa/Falcon Field airport. Visibility has been reduced to 1.5 miles in the source region of Pinal County as reported at the Casa Grande airport. Reduced visibility of 5.0 miles is also noted at the western Buckeye Municipal Airport.

3:00 PM – 3:30 PM

Sustained winds from the southwest continue the trend of transporting dust from Pinal County to the southeast portion of the nonattainment area. PM10 concentrations remain most elevated at the West Chandler and Higley monitors. Visibility remain very poor (1.8 miles) in the source region of Pinal County in response to continual generation of PM10 above $500 \mu\text{g}/\text{m}^3$ at monitors across the region.

3:30 PM – 4:00 PM

A burst of wind speed with sustained winds of 29 mph and gusts of 39 mph in the southeast portion of the nonattainment area generate additional PM10 concentrations, causing the West Chandler monitor to record PM10 concentration above $1,000 \mu\text{g}/\text{m}^3$ for the first time during the wind event. Visibilities remained reduced to 4.0 miles at the Chandler Municipal and Williams Gateway airports. Strong winds from the west in the central portions of the nonattainment area help to keep the transported dust from Pinal County confined to the southeast portion of the nonattainment area and help explain why only the West Chandler monitor exceeded during the high wind event. Dust production has increased in the western portions of Maricopa County as well, reducing visibilities to 5.0 miles at the Buckeye Municipal and Luke Air Force Base airports. However, wind speeds in the western portion of Maricopa County are not as great as those experienced in Pinal County and the southeast portion of Maricopa County, allowing the desert areas around the western monitors to generate and transport less PM10 and thus avoid any PM10 exceedances.

4:00 PM – 4:30 PM

PM10 concentrations remain elevated in the southeast portion of Maricopa County in response to continual transport of PM10 from Pinal County. Dominant winds from the west in the central portions of Maricopa County continue to keep transported dust confined to the southeast portion of Maricopa County.

4:30 PM – 5:00 PM

Another burst of sustained winds as high as 30 mph and gusts as high as 38 mph generate and transport fresh PM10 to the exceeding West Chandler monitor, causing PM10 concentrations to remain above $1,000 \mu\text{g}/\text{m}^3$ for this entire period. Visibility photos from the Superstition Mountain camera show widespread dust affecting the whole southeast region of Maricopa County. Visibilities remain reduced to 5.0 miles at the Chandler Municipal Airport and 4.0 at the Williams Gateway Airport.

5:00 PM – 5:30 PM

As PM10 concentrations finally begin to subside in the source region of Pinal County, the southeast portion of Maricopa County also begins to see reduced PM10 concentrations. Wind speeds are still breezy with gusts up to 30 mph, but the worst dust of the high wind event has passed.

5:30 PM – 6:00 PM

Visibility is restored to 10.0 miles at the Chandler Municipal airport and the Casa Grande airport as PM10 concentrations continue to drop to levels below $500 \mu\text{g}/\text{m}^3$ throughout the region. As no new dust is generated from the wind event, the dominant southwest winds now help to blow out remaining PM10 from the region.

6:00 PM – 6:30 PM

Wind speeds abruptly drop during this period allowing almost all the Maricopa County monitors to record PM10 concentrations below $150 \mu\text{g}/\text{m}^3$. Localized PM10 generation in Pinal County still occurs, but the wind speeds are no longer strong enough to transport the dust into the southeast portion of Maricopa County.

6:30 PM – 7:00 PM

With the passing of the high winds from the low pressure system, PM10 concentrations have largely returned to pre-dust event levels and will remain so for the remainder of the day.

24-Hour Summary Graphic

This 24-hour summary graphic is included to help explain why only the West Chandler monitor exceeded during the high wind event in the Maricopa County nonattainment area. The graphic includes the 24-hour average PM10 concentration, maximum sustained wind speed (with an averaged directional vector) during the event, and maximum wind gust during the event.

The graphic clearly shows that the source region of the dust during the high wind event was the open and desert areas of Pinal County. As can be seen on the satellite photo, the area immediately upwind of the West Chandler monitor is the open deserts of Pinal County and the Gila River Indian Community. The strongest sustained winds and gusts were predominantly located in Pinal County and the southeast portion of Maricopa County. While the Higley monitor is also located in the southeast portion of Maricopa County, there are several miles of housing and urbanized development immediately upwind of that monitor, which helped to both reduce maximum wind speeds and reduce the amount of transported dust from Pinal County that could reach the monitor. The centralized portion of Maricopa County had a wind trajectory more from the west, which helped to keep any transported dust from Pinal County east of these monitors. All of these factors help to explain why the West Chandler monitor exceeded during the high wind event and other Maricopa County monitors did not.

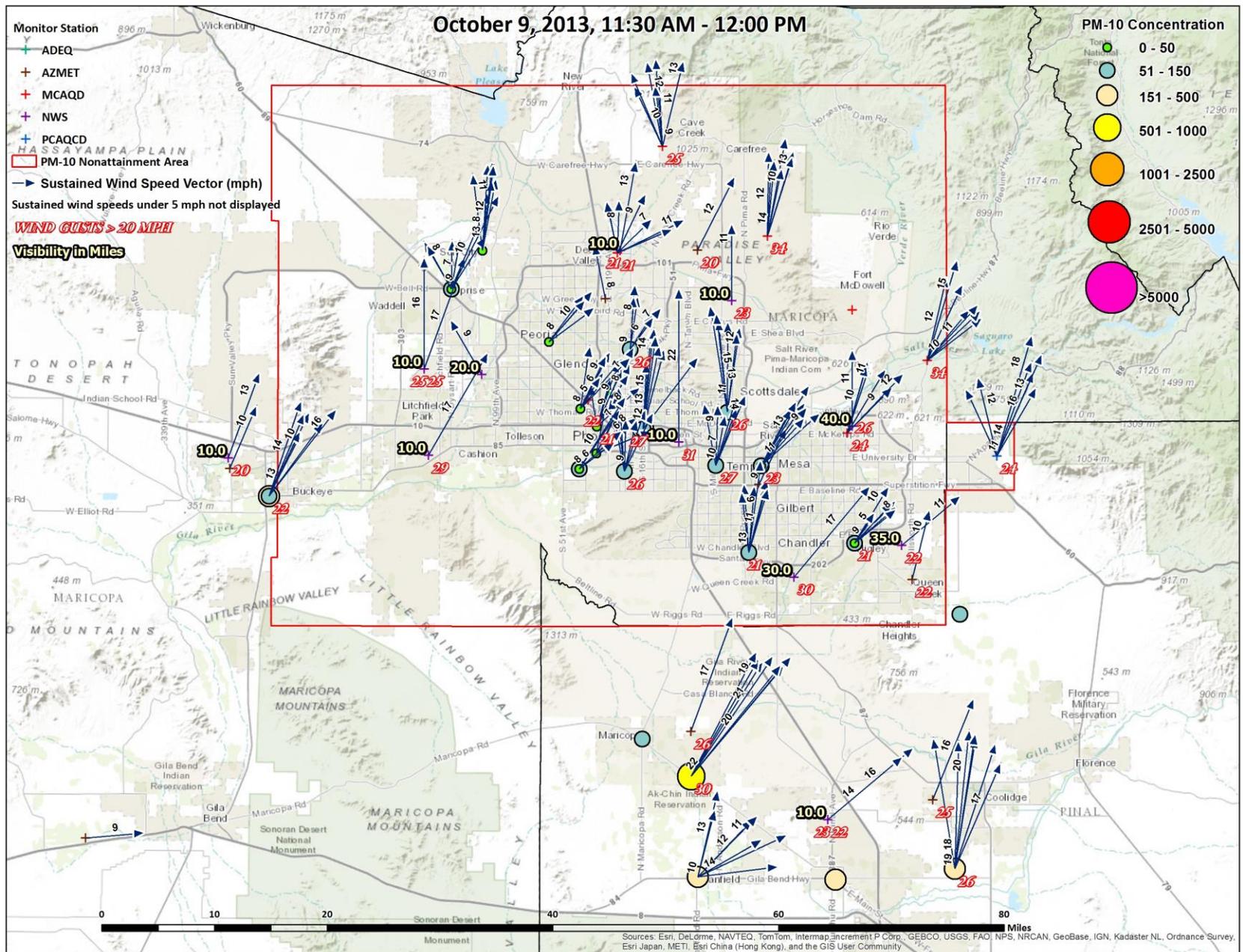


Figure 5-1. October 9, 2013, 11:30 AM – 12:00 PM.

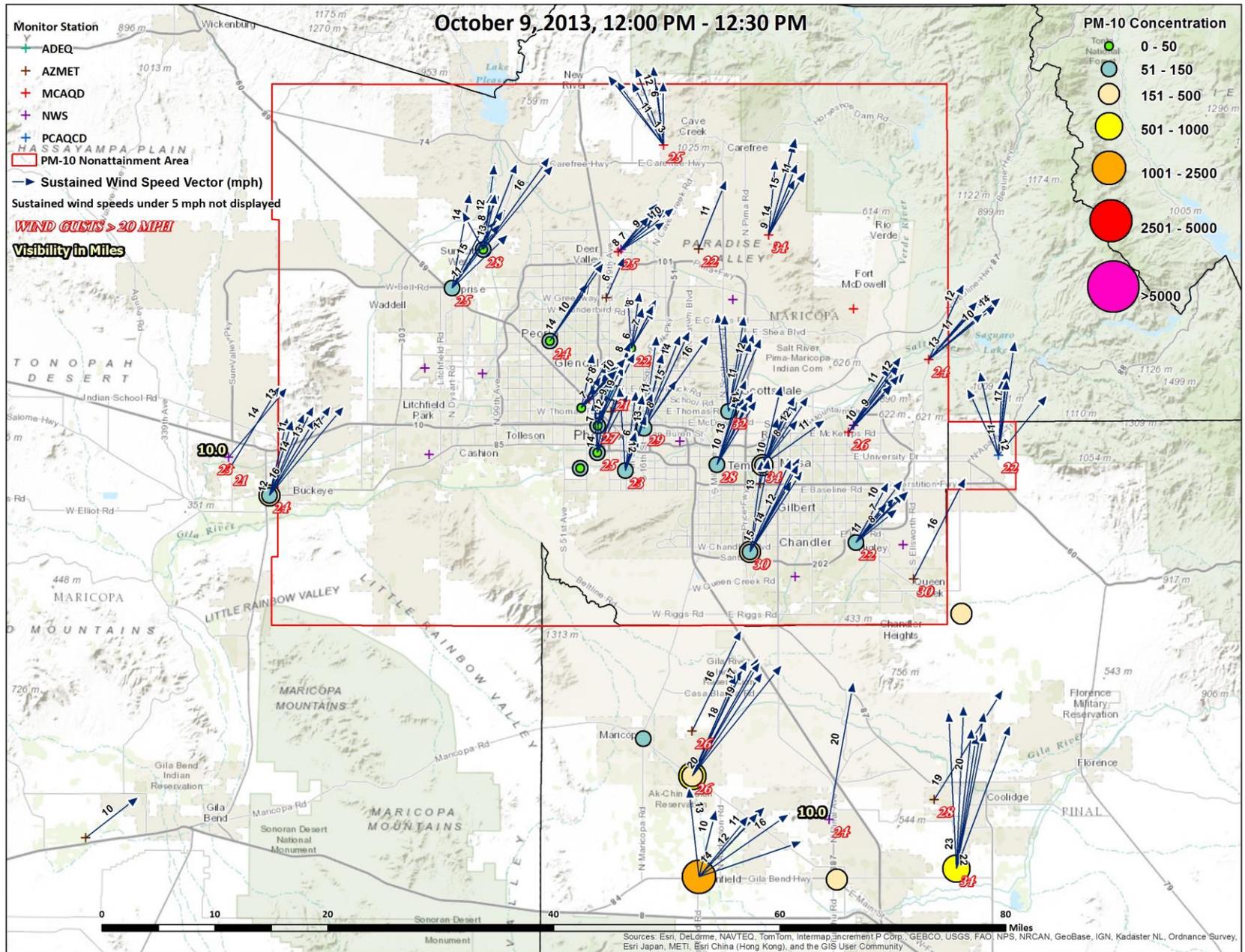


Figure 5-2. October 9, 2013, 12:00 PM – 12:30 PM.

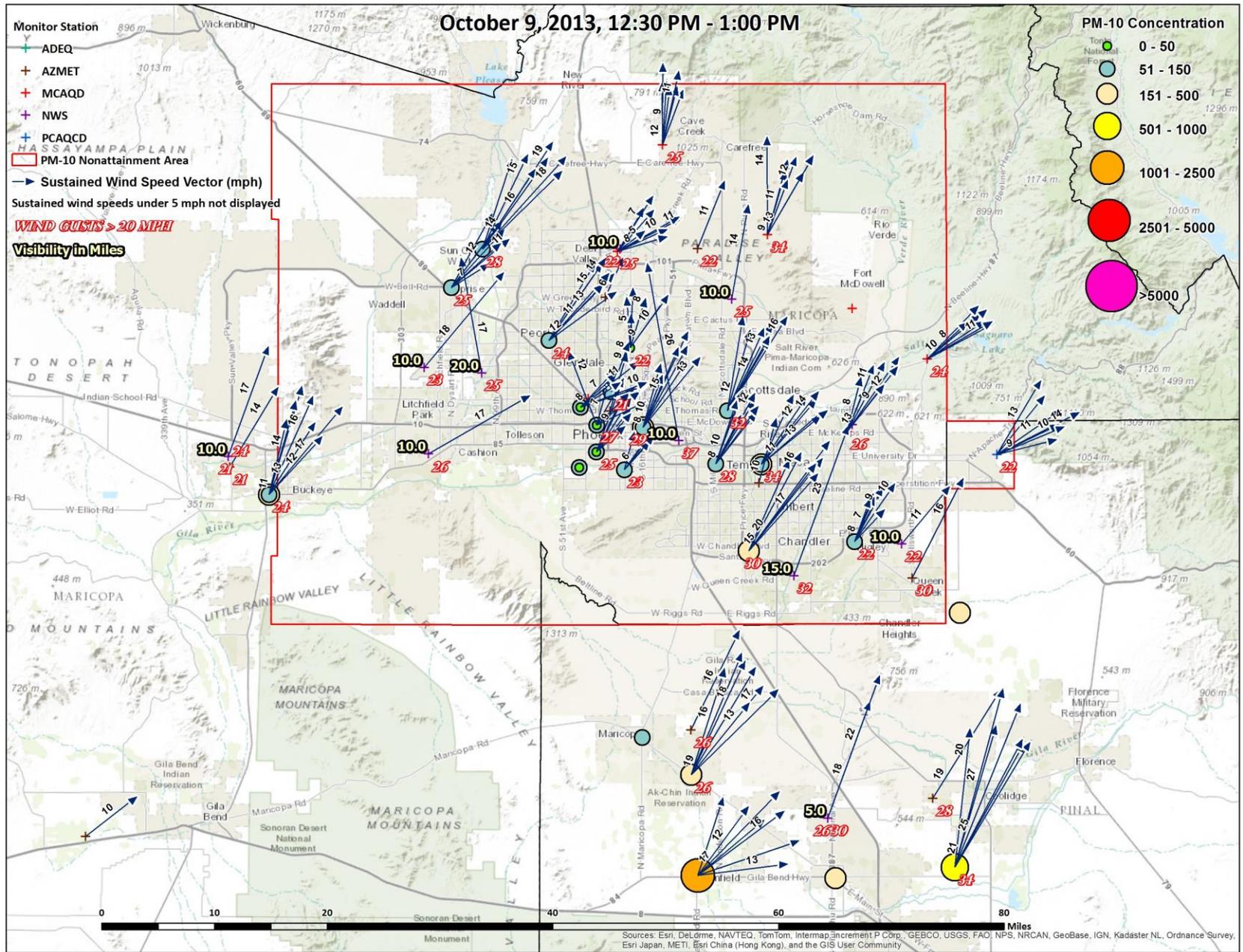


Figure 5-3. October 9, 2013, 12:30 PM – 1:00 PM.

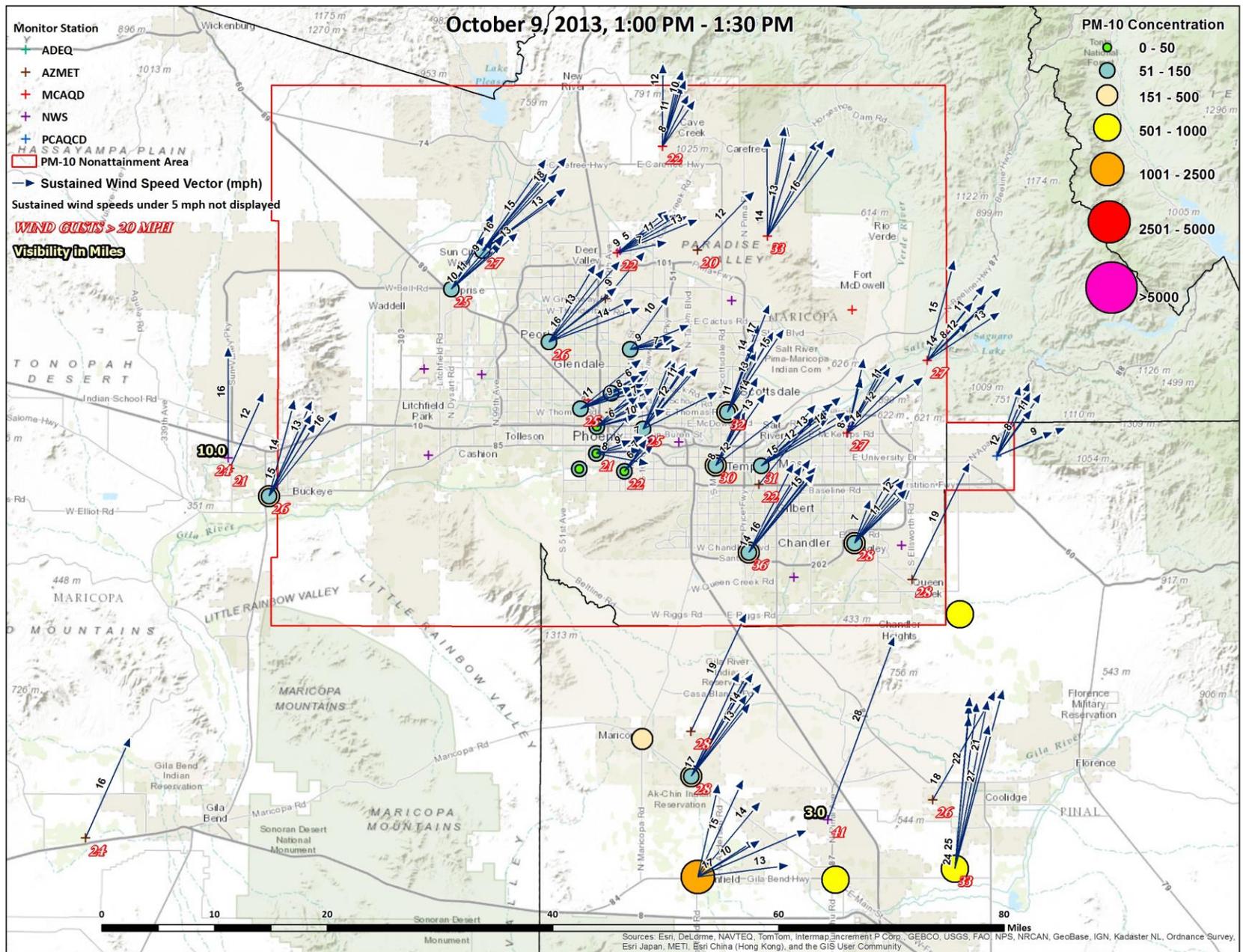


Figure 5-4. October 9, 2013, 1:00 PM – 1:30 PM.

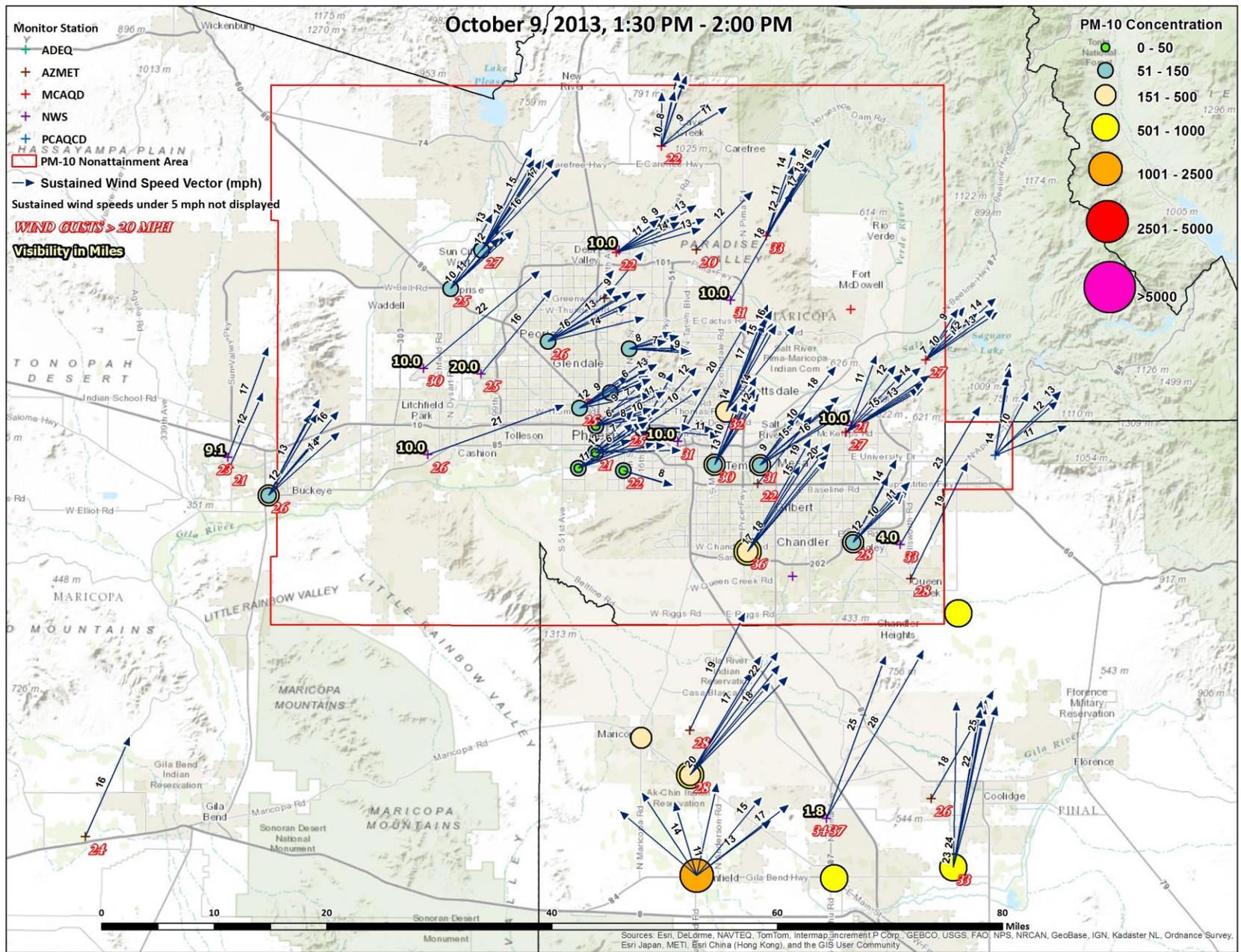


Figure 5-5. October 9, 2013, 1:30 PM – 2:00 PM.

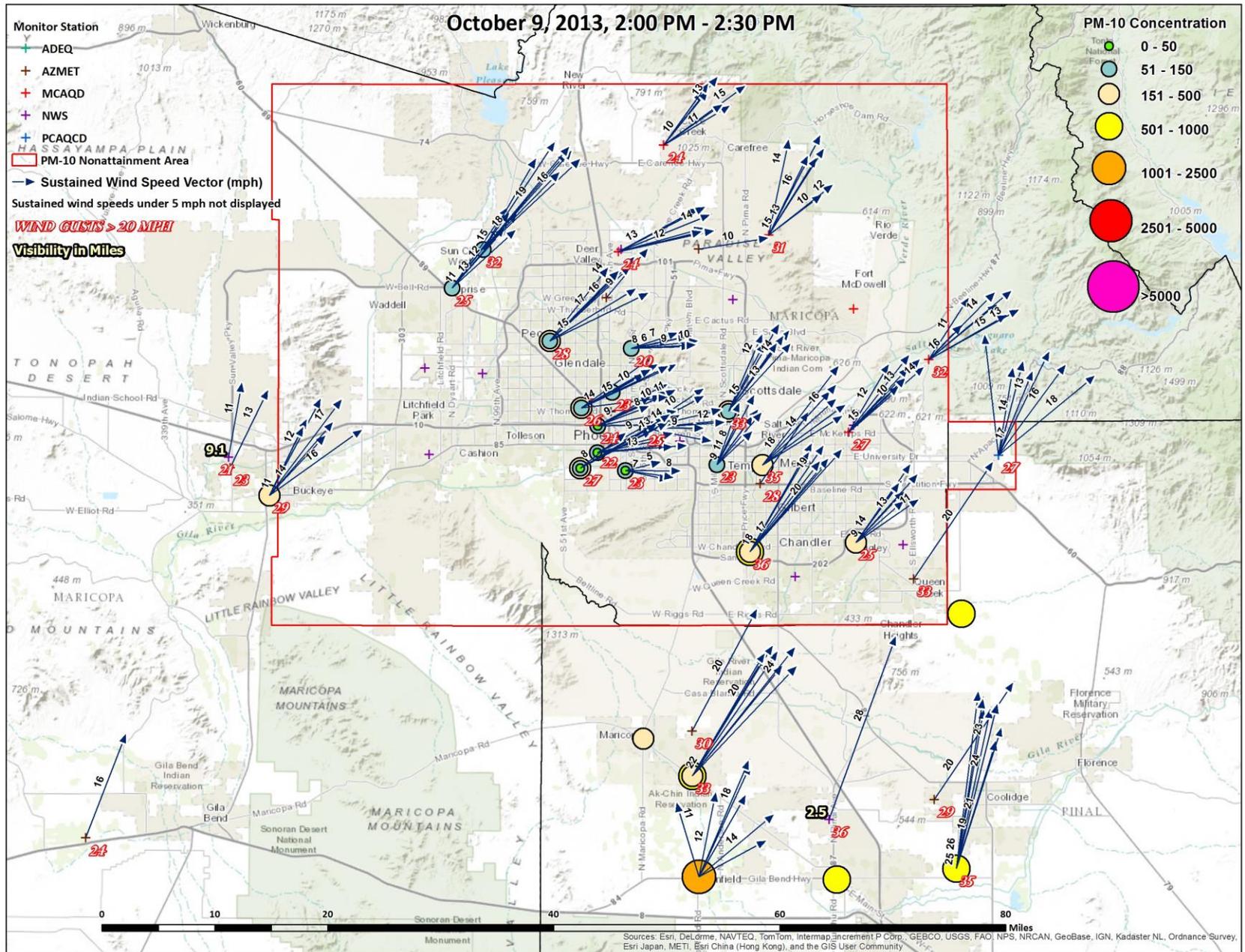


Figure 5-6. October 9, 2013, 2:00 PM – 2:30 PM.

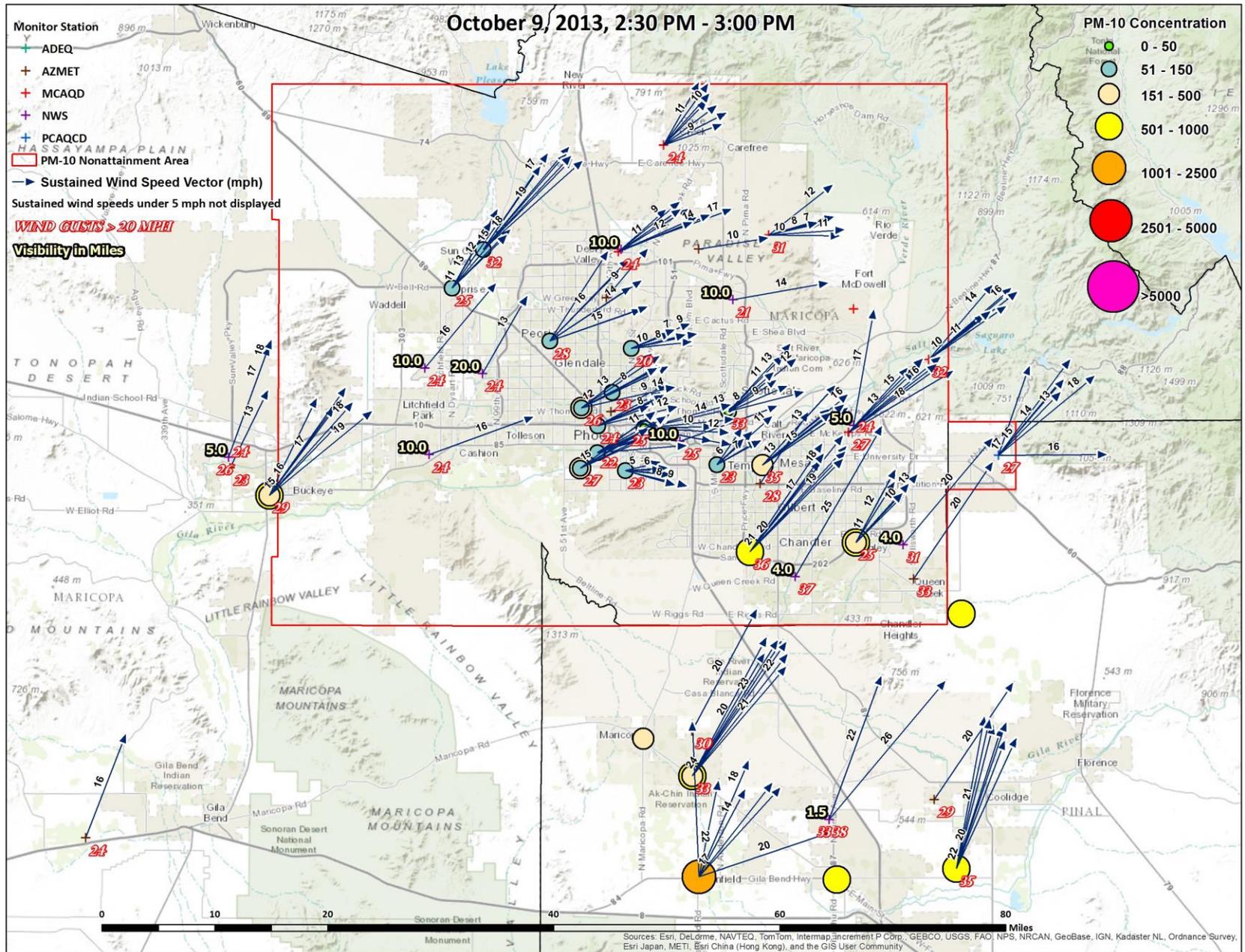


Figure 5-7. October 9, 2013, 2:30 PM – 3:00 PM.

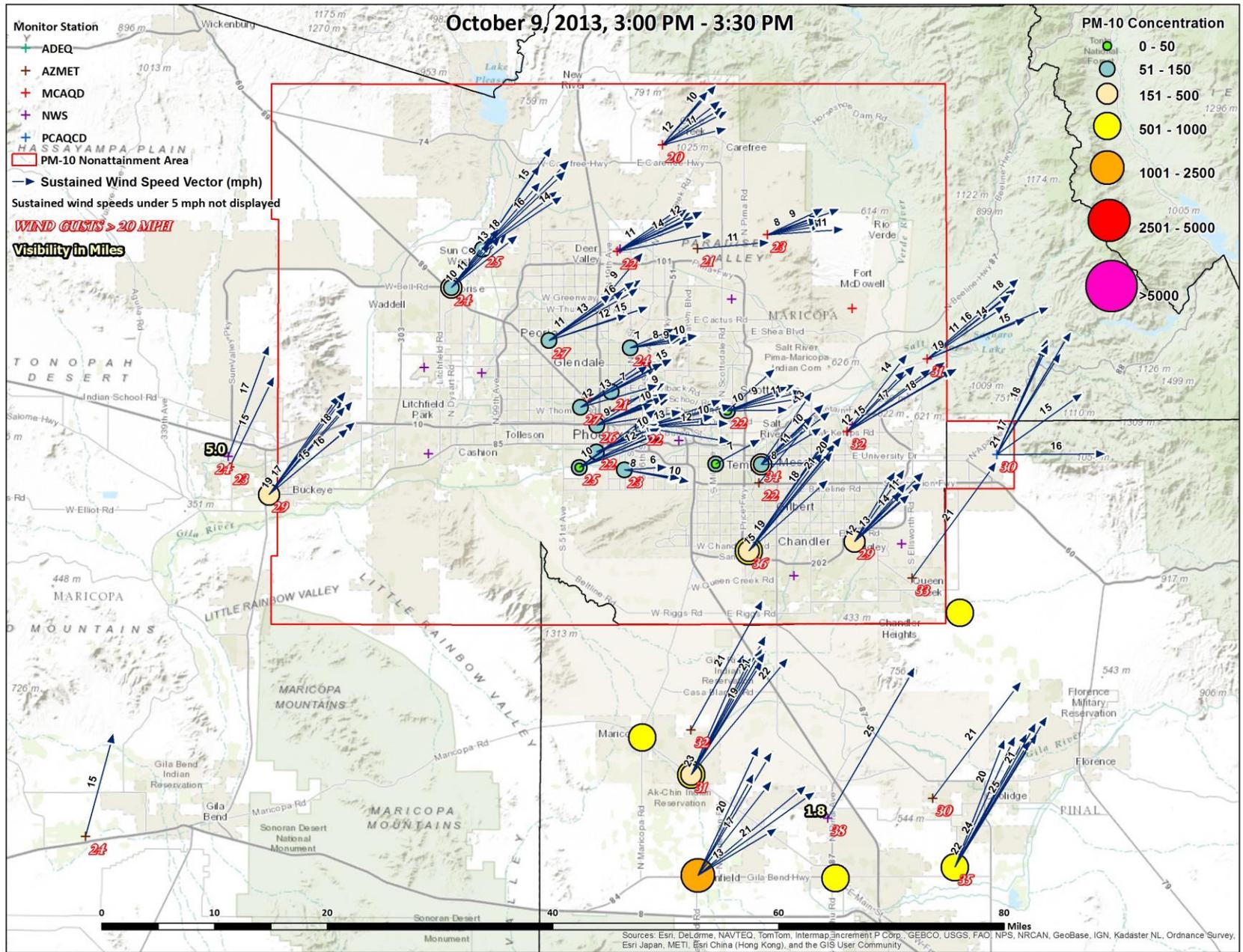


Figure 5-8. October 9, 2013, 3:00 PM – 3:30 PM.

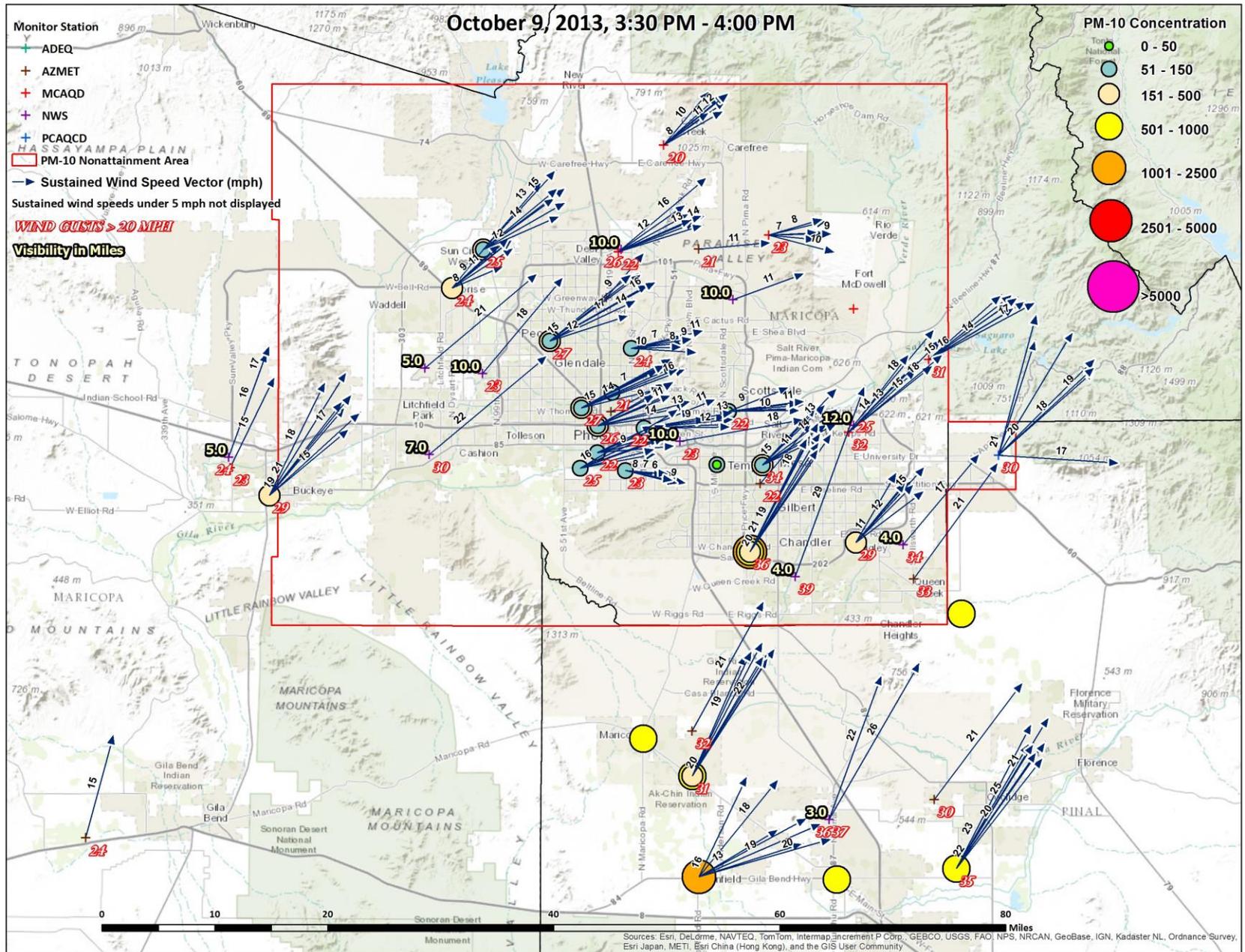


Figure 5-9. October 9, 2013, 3:30 PM – 4:00 PM.

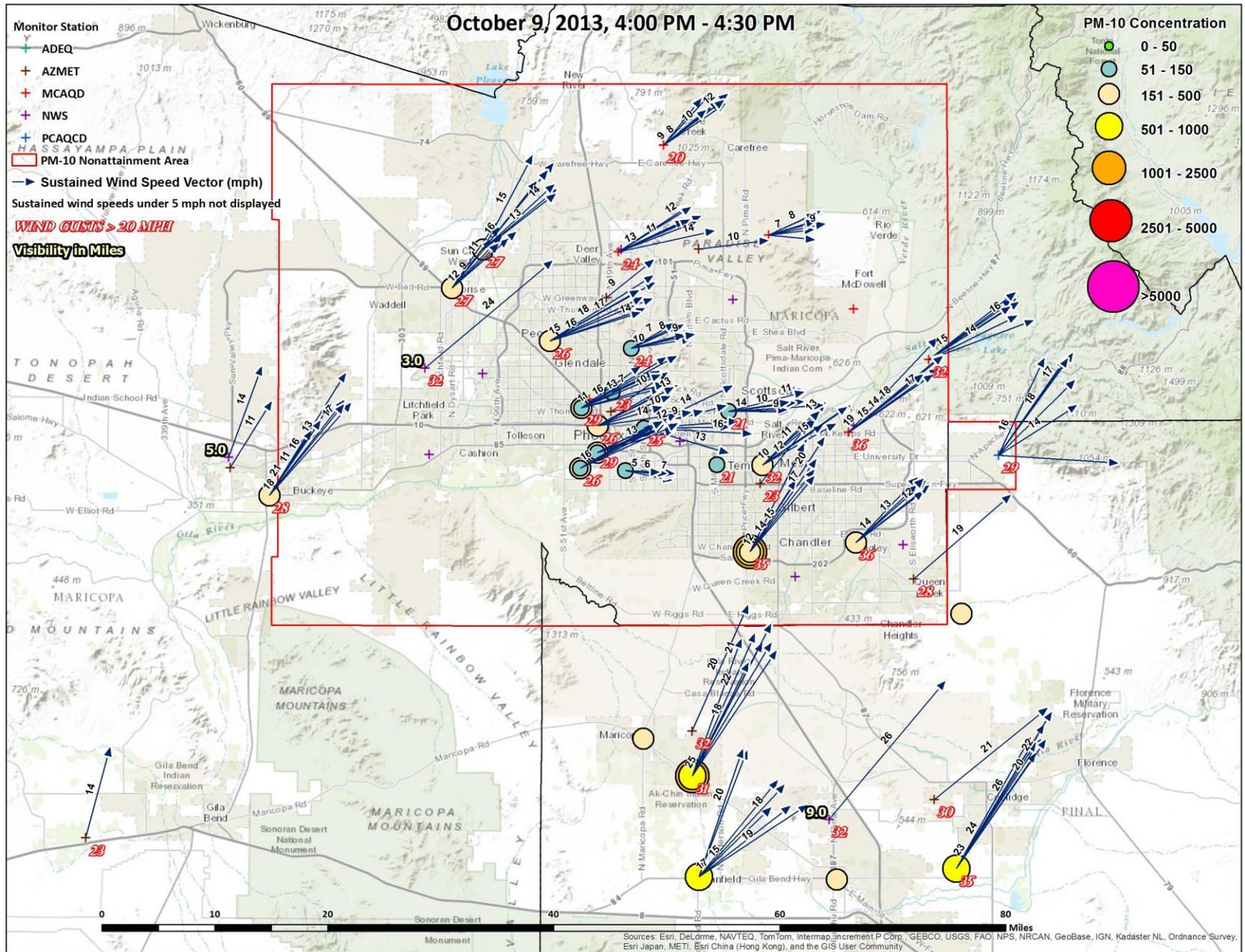


Figure 5-10. October 9, 2013, 4:00 PM – 4:30 PM

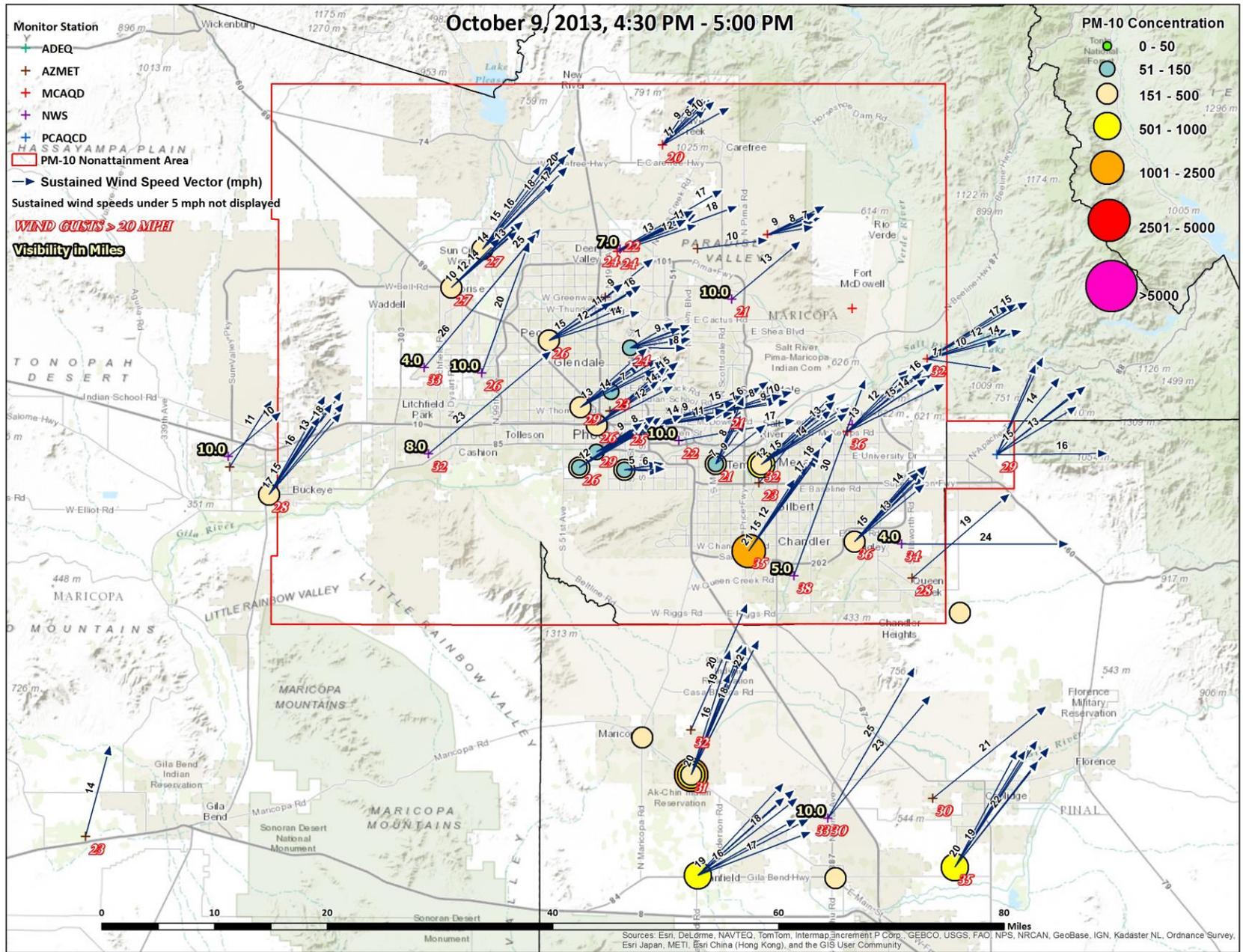


Figure 5-11. October 9, 2013, 4:30 PM – 5:00 PM

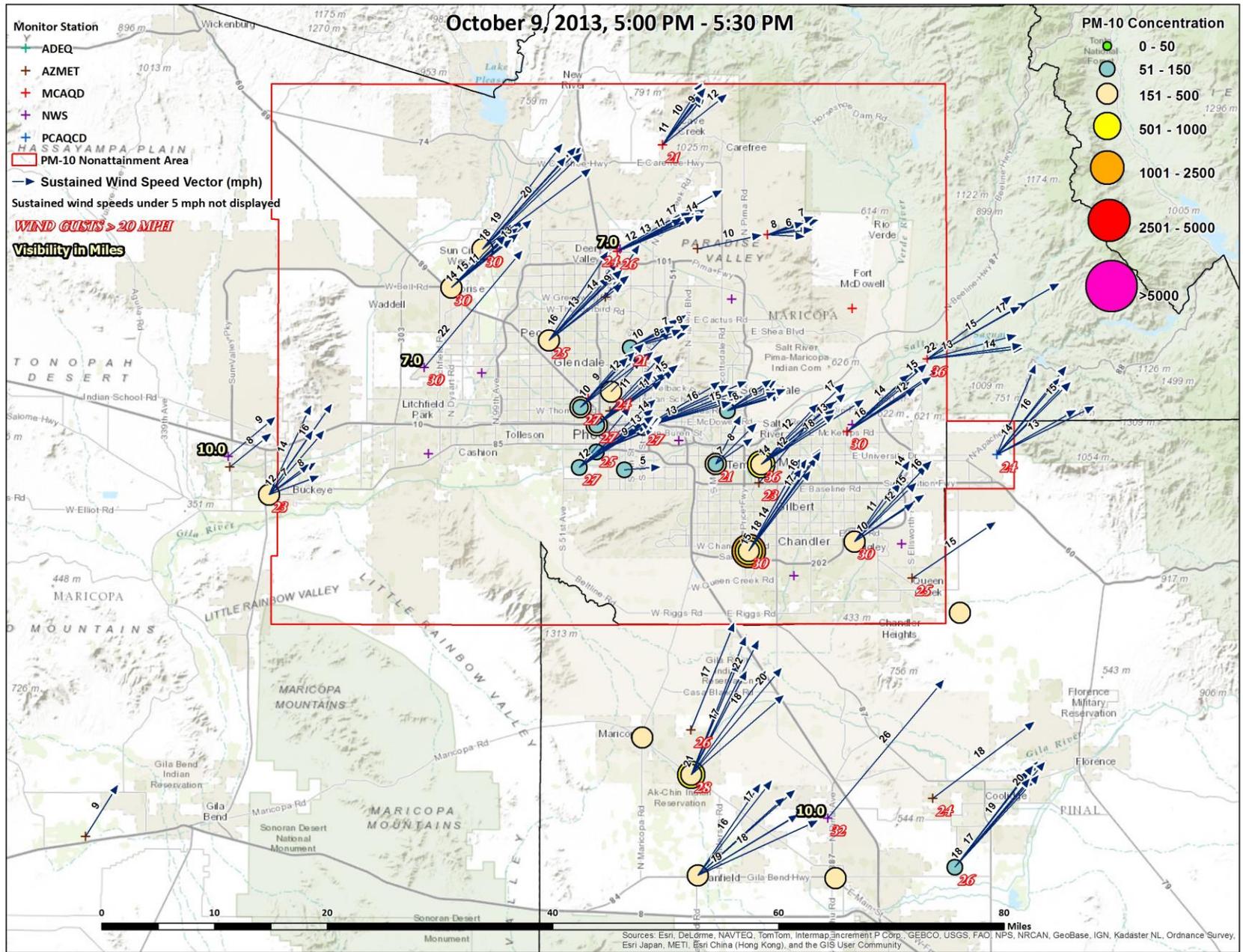


Figure 5-12. October 9, 2013, 5:00 PM – 5:30 PM

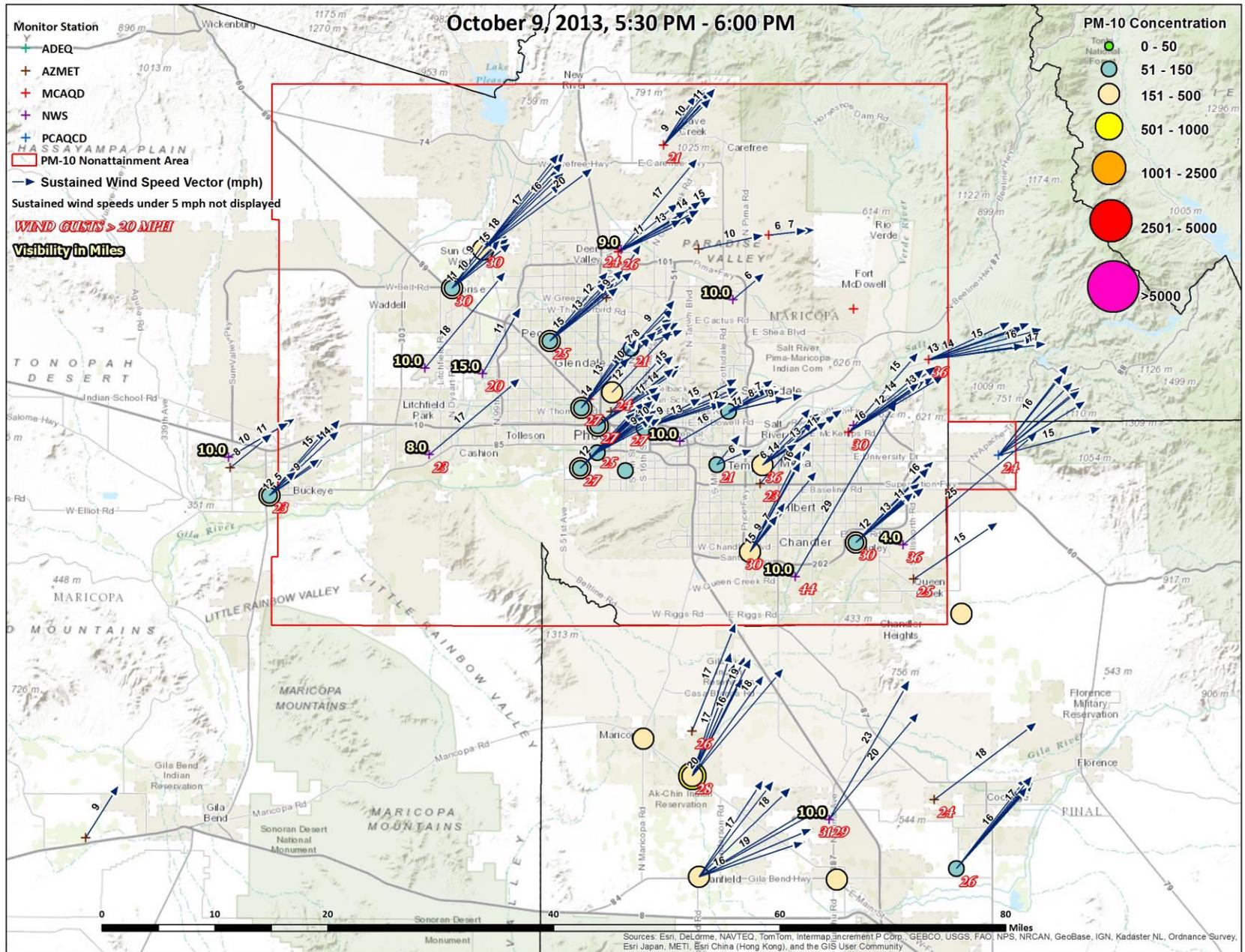


Figure 5-13. October 9, 2013, 5:30 PM – 6:00 PM

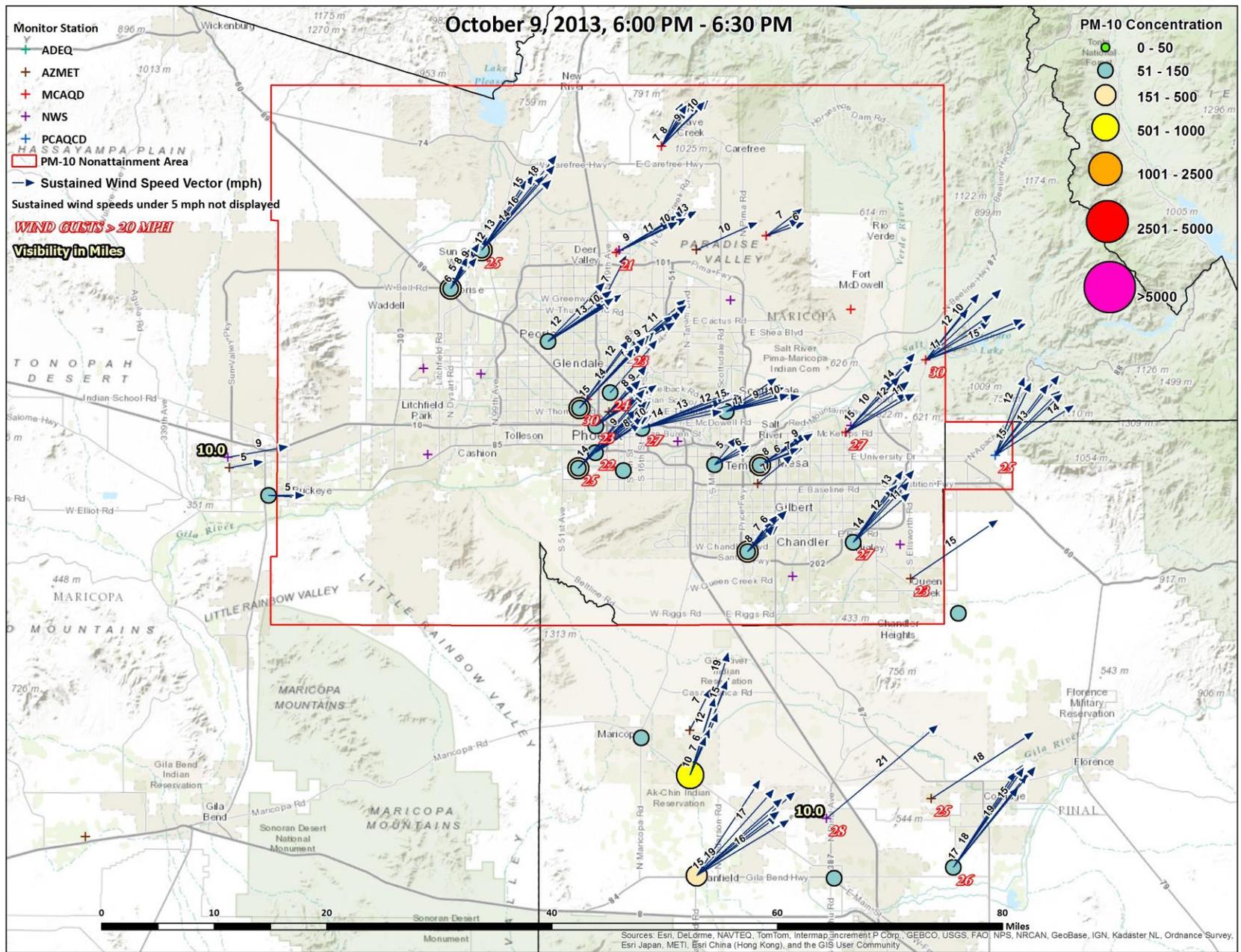


Figure 5-14. October 9, 2013, 6:00 PM – 6:30 PM.

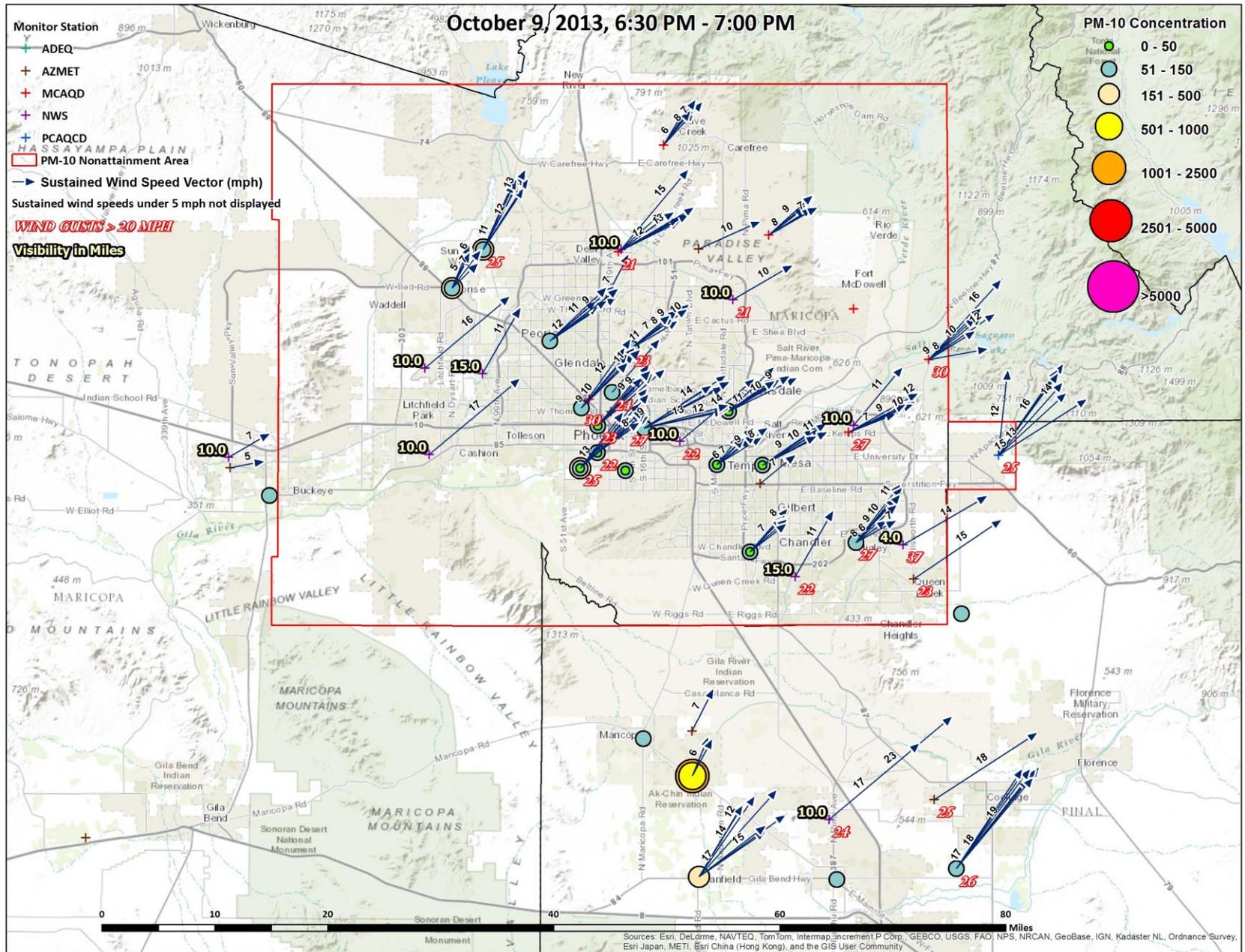


Figure 5-15. October 9, 2013, 6:30 PM – 7:00 PM.

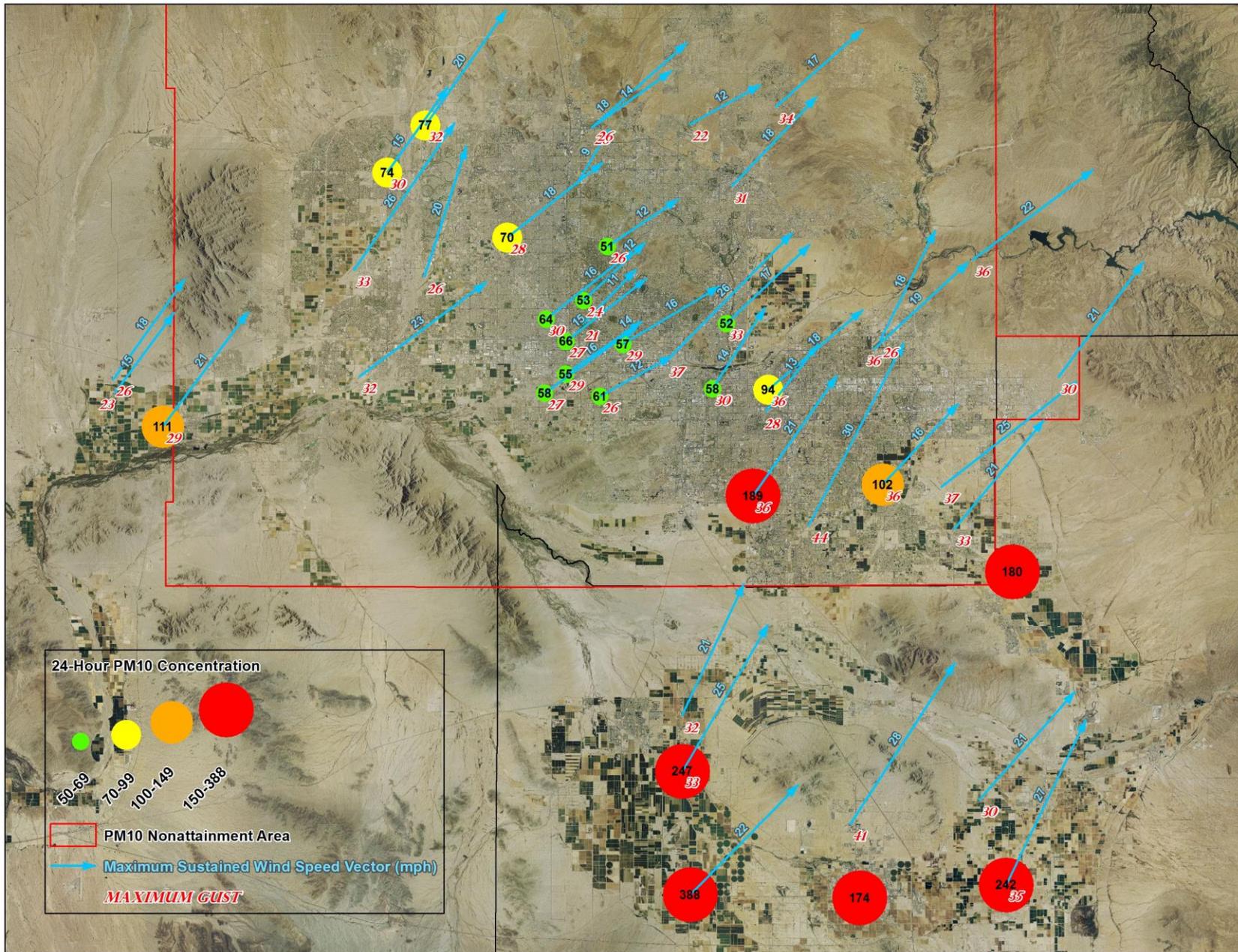


Figure 5-16. October 9, 2013, 24-Hour Summary Graphic

Visibility Photos

Time series videos of visibility photos taken by the Superstition Mountains (link #1) camera in the area of the exceeding monitor clearly show the approach of the windblown dust generated and transported by the low pressure system and the decreased visibility associated with the dust storm. Locations for visibility cameras positioned in the Phoenix area are shown in link #2.

1.) http://www.phoenixvis.net/tlapse_camera.aspx?site=SUPM1

2.) <http://www.phoenixvis.net/>

Conclusion

The information presented within this section has adequately demonstrated a clear causal relationship between the windblown dust emissions generated and transported by the uncontrollable natural high wind dust event and the exceedance measured at the monitor. The maps and visibility photos provided in this section contain an illustration of the event as it unfolded. The series of maps for the event show a spatial and temporal representation of the low pressure system winds and associated windblown dust as they move throughout Maricopa and Pinal counties. These maps and visibility photos show a clear causal relationship between the windblown dust generated and transported by the low pressure system winds and the exceedance at the West Chandler monitor. The location of the West Chandler immediately downwind of the desert source regions of Pinal County helps to explain why this was the only monitor in the nonattainment area to record an exceedance. It is clear from these data that sustained wind speeds of 30 mph and gusts of 44 mph were strong enough to generate and transport uncontrollable windblown PM10 emissions to the West Chandler monitor and demonstrates the clear causal relationship between the low pressure system winds and the recorded exceedance.

VI. “BUT FOR” ANALYSIS

Section 50.14(c)(3)(iv)(D) in 40 CFR part 50 requires that an exceptional event demonstration must satisfy that “[t]here would have been no exceedance or violation but for the event.” The prior sections of this submittal have provided detailed information that the exceedance on October 9, 2013, was not reasonably controllable or preventable and that there is a clear causal relationship between the windblown dust generated and transported by low pressure system winds and the exceedance at the West Chandler monitor. The weight of evidence in these sections demonstrates that but for the existence of windblown dust emissions generated and transported by low pressure system winds, there would have been no exceedance of the 24-Hour PM10 standard.

As detailed in Section IV, all reasonable control measures were in place and actively enforced before, during, and after the exceedance on October 9, 2013. Inspection and compliance data of local fugitive dust sources during this time period revealed that PM10 from anthropogenic activities was well controlled and constant. Local regulatory agencies, industry and the general public were alerted to the arrival of the storm through daily forecasts and a blowing dust and dust storm advisory issued by the National Weather Service. Real-time surveillance of PM10 monitoring stations during the event established a clear link between rapidly rising PM10 concentrations and the arrival of the low pressure system winds. As shown in Figure 6–1, PM10 concentrations in the hours before the event at the exceeding West Chandler monitor were at normal levels, indicating no significant anthropogenic activities. PM10 concentrations in the hours after the event show a quick return to low levels once winds from the low pressure system exited.

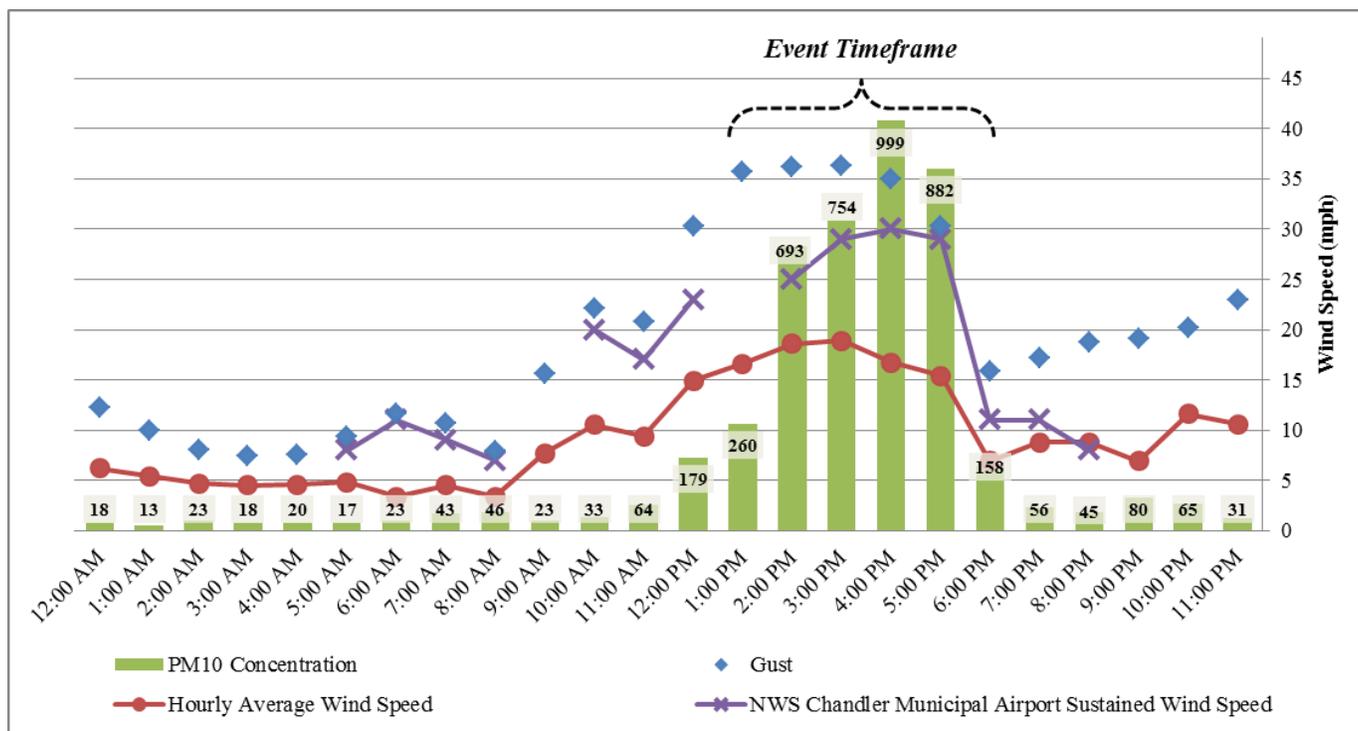


Figure 6-1. Hourly PM10 concentration, wind gust, and average wind speed as recorded at the exceeding West Chandler monitor.

As shown in Section V, detailed, time series maps establish a clear causal relationship between the arrival of windblown dust generated and transported by low pressure system winds and elevated PM10 concentrations at the monitors. Sustained winds up to 30 mph and gusts up to 44 mph overwhelmed all reasonable controls in the nonattainment area and generated and transported widespread blowing dust. The particular location of the exceeding West Chandler monitor immediately downwind of the desert source regions of Pinal County establish the clear causal connection between the exceedance and the windblown dust generated and transported by low pressure system winds.

The body of evidence presented in this submittal confirms that the exceedance on October 9, 2013, was a natural event and that there would have been no exceedance but for the presence of the uncontrollable windblown dust from the low pressure system winds.

VII. CONCLUSIONS

The exceedance that occurred on October 9, 2013, satisfies the criteria of 40 CFR 50.1(j) and meets the definition of an exceptional event. These criteria are:

- The event affects air quality.
- The event is not reasonably controllable or preventable.
- The event is unlikely to reoccur at a particular location or [is] a natural event.

A. Affects Air Quality

As stated in the preamble to the Exceptional Events Rule, the event in question is considered to have affected air quality if it can be shown that there is a clear causal relationship between the monitored exceedance and the event, and that the event is associated with a measured concentration in excess of normal historical fluctuations. Given the information presented in Sections II, III, IV and V, it is reasonable to conclude that the event in question affected air quality.

B. Not Reasonably Controllable or Preventable

Section 50.1(j) of Title 40 CFR Part 50 requires that an event must be “not reasonably controllable or preventable” in order to be defined as an exceptional event. This requirement is met by demonstrating that despite reasonable control measures in place within Maricopa County and the nonattainment area, high wind conditions overwhelmed all reasonably available controls. Despite the deployment of comprehensive control measures and sophisticated response programs, high wind conditions associated with low pressure system winds generated and transported high concentrations of PM10 and overwhelmed controls within the nonattainment area. Sustained winds of 30 mph and gusts of 44 mph easily overwhelmed all available efforts to limit PM10 concentrations from the event. The fact that this was a natural event involving low pressure system winds that generated and transported PM10 emissions in Maricopa County provides strong evidence that the exceedance on October 9, 2013, recorded at the West Chandler monitor was not reasonably controllable or preventable.

C. Natural Event

As discussed above, the event shown to cause the exceedance was emissions of PM10 caused by low pressure system winds on October 9, 2013. The event therefore qualifies as a natural event.

In summary, the exceedance of the federal 24-hour PM10 standard on October 9, 2013, would not have occurred but for the uncontrollable windblown dust emissions generated and transported by low pressure system winds, based on the following weight of evidence:

- Section II explains the meteorology associated with a low pressure system and displays how this type of system produces strong and gusty winds which in turn generate significant quantities of windblown dust.
- The Historical Fluctuation analysis in Section III, showing five years of 24-hour average data for the West Chandler monitor, demonstrates the atypical values recorded at the monitor on October 9, 2013.
- Section IV discusses rules that are in place in the nonattainment area as well as inspections that were conducted in the area to verify compliance with those rules in order to show that the event was not reasonably controllable or preventable and that no significant anthropogenic dust emissions were present during the event.
- Figures in Section V show that the timing of elevated PM10 concentrations at the West Chandler monitor are tied to the progression of low pressure system winds. These sustained winds of 30 mph and gusts of 44 mph generated and transported uncontrollable windblown dust. The proximity of the West Chandler immediately downwind of the desert source regions of Pinal County explains why the West Chandler monitor in particular exceeded the PM10 standard.
- Visibility camera imagery displayed in Section V indicates the widespread nature of the windblown dust caused by the low pressure system winds and provides evidence that high PM10 concentrations are linked to natural sources as opposed to specific anthropogenic sources of dust.

APPENDIX A

ADEQ FORECAST PRODUCTS FOR MARICOPA COUNTY



MARICOPA COUNTY DUST CONTROL FORECAST

ISSUED Tuesday, October 8, 2013

Three-day weather outlook:

A strong but mainly dry upper level trough and surface cold front in the mid-latitude storm track will approach Arizona from the northwest on Wednesday. This system is forecast to bring a lengthy period of strong and gusty winds to a large area including the Phoenix metro area on Wednesday along with a very high potential for a significant blowing and transported dust episode. As a result a HIGH risk level for unhealthy 24-hour average PM-10 concentrations has been posted for Wednesday. A slight chance for showers is predicted for Wednesday night and Thursday with decreasing winds on Thursday. For Friday and the weekend an increase in stagnation due to light winds, strong warming aloft, and overnight inversion formation will contribute to periodic elevated PM-10 readings but a low risk for unhealthy concentrations.

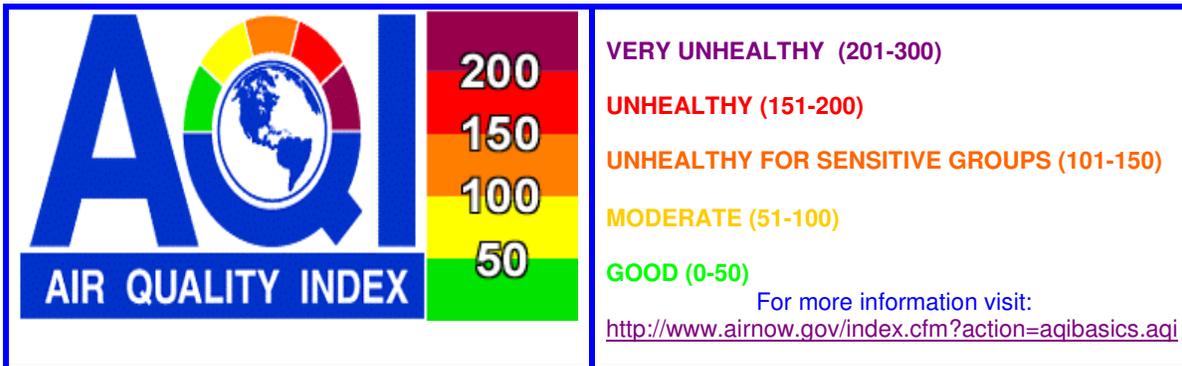
R I S K F A C T O R S

	<u>WINDS</u>	<u>STAGNATION</u>	<u>UNHEALTHY PM-10 RISK LEVEL</u>
Day 1: Wed. 10/9/2013	South to southwesterly 25-35 mph with gusts near 45 mph possible by the afternoon.	Briefly stagnant during the morning hours.	HIGH
Day 2: Thu. 10/10/2013	Westerly 10-20 mph.	Little if any stagnation expected.	LOW
Day 3: Fri. 10/11/2013	Mostly light.	Slightly stagnant during the morning hours.	LOW

EXTENDED OUTLOOK

Day 4: Sat. 10/12/2013	Mostly light.	Quite stagnant during the morning hours.	LOW
Day 5: Sun. 10/13/2013	Mostly light.	Quite stagnant during the morning hours.	LOW

The Maricopa County Dust Control Action Forecast is issued to assist in the planning of work activities to help reduce dust pollution. A recorded message of this forecast can be accessed at 602-771-2368. To review the complete air quality forecast for the Phoenix metropolitan area, as well as the health impacts and reduction methods for different air pollutants, call 602-771-2367 for recorded forecast information or click on ADEQ's Air Quality Forecast at <http://www.azdeq.gov/environ/air/ozone/ensemble.pdf>.



[*LINK TO 2012 AIR POLLUTION EXCEEDANCE GRAPH*](#)

AIR QUALITY FORECAST FOR Wednesday, October 9, 2013

This report is updated by 1:00 p.m. Sunday thru Friday and is valid for areas within and bordering Maricopa County in Arizona

FORECAST DATE	YESTERDAY Mon 10/07/2013	TODAY Tue 10/08/2013	TOMORROW Wed 10/09/2013	EXTENDED Thu 10/10/2013
NOTICES (*SEE BELOW FOR DETAILS)			PM-10 HPA NWS Wind Advisory	
AIR POLLUTANT	Highest AQI Reading/Site (*Preliminary data only*)			
O3*	47 Pinnacle Peak	41 Good	32 Good	34 Good
CO*	13 West Phoenix	8 Good	5 Good	7 Good
PM-10*	53 Greenwood	53 Moderate	130 Unhealthy for Sensitive Groups	54 Moderate
PM-2.5*	32 West Phoenix	30 Good	52 Moderate	38 Good

* O3 = Ozone CO = Carbon Monoxide PM-10 = Particles 10 microns & smaller PM-2.5 = Particles smaller than 2.5 microns
 **"Ozone Health Watch" means that the highest concentration of OZONE may approach the federal health standard.
 "PM-10 or PM-2.5 Health Watch" means that the highest concentration of PM-10 or PM-2.5 may approach the federal health standard.
 "High Pollution Advisory" means that the highest concentration of OZONE, PM-10, or PM-2.5 may exceed the federal health standard.
 "DUST" means that short periods of high PM-10 concentrations caused by outflow from thunderstorms are possible.

Health Statements	
Tuesday, 10/08/2013	Unusually sensitive people should consider reducing prolonged or heavy exertion outdoors.
Wednesday, 10/09/2013	Active children and adults and people with respiratory disease such as asthma should limit prolonged exertion outdoors.

SYNOPSIS AND DISCUSSION

...A PM-10 HIGH POLLUTION ADVISORY HAS BEEN ISSUED FOR WEDNESDAY OCTOBER 9, 2013...

PARTICLES: A strong but mainly dry upper level trough and surface cold front in the mid-latitude storm track will approach Arizona from the northwest on Wednesday. This system is forecast to bring a lengthy period of strong and gusty winds to much of the region including the Phoenix metro area by late Wednesday morning along with a very high potential for a significant blowing and transported dust episode. Sustained gradient winds as high as 33 mph at the 5K' level and 47 mph at the 10K' level are projected to occur overhead during the afternoon hours with a forecast mixing depth of 10K'. There should be little if any cloud cover to impede the downward mixing of these strong winds. In addition, a long-lived southerly wind component will greatly increase the likelihood of transported dust as well as blowing dust – especially over the east Valley with the monitoring sites at Higley and Chandler at highest risk for dense blowing dust by late morning. There has been no local rainfall since September 10 and the potential for rainfall from this system is not expected to increase until late Wednesday night. Meanwhile elevated coarse particle (PM-10) concentrations under light wind conditions are ongoing such as the 270+ug/m3 readings at the West Forty Third and Durango sites earlier this morning and indicate that local soils are dry and prone to fugitive dust emissions. Due to the numerous factors listed above a PM-10 High Pollution Advisory has been issued for Wednesday.

OZONE: The combination of decreasing sun-angle and day-length – along with a significant wind event and cooling trend by mid-week – should help to keep highest local ozone levels in the good range of the Air Quality Index during this forecast period.

Check back tomorrow for more. Until then, have a good day! -C.Reith

MONITORING SITE MAPS	
STATIC MAP	http://www.azdeq.gov/enviro/air/monitoring/images/map.jpg
INTERACTIVE MAPS	http://156.42.96.39/alert/Google/air.html http://www.airnow.gov/

POLLUTION MONITOR READINGS FOR Monday, October 7, 2013

O3 (OZONE)

Info on current 8-hour ozone standard: http://www.epa.gov/air/ozonepollution/pdfs/2008_03_aqi_changes.pdf

For archived AQI maps go to: <http://www.airnow.gov/index.cfm?action=airnow.maps>

SITE NAME	MAX 8-HR VALUE (PPB)	MAX AQI	AQI COLOR CODE
Apache Junction	42	36	
Blue Point	53	45	
Fountain Hills	51	43	
Phoenix Supersite	NOT AVBL	NOT AVBL	NOT AVBL
North Phoenix	54	46	
Pinnacle Peak	56	47	
South Phoenix	51	43	
South Scottsdale	51	43	
West Phoenix	51	43	

CO (CARBON MONOXIDE)

SITE NAME	MAX 8-HR VALUE (PPM)	MAX AQI	AQI COLOR CODE
Buckeye	0.2	2	
Central Phoenix	1.0	11	
Dysart	0.3	3	
Glendale	0.9	10	
Greenwood	1.0	11	
Phoenix Supersite	0.8	9	
Mesa	0.5	6	
North Phoenix	0.6	7	
South Phoenix	0.7	8	
South Scottsdale	0.6	7	
Tempe	0.6	7	
West Chandler	0.3	3	
West Phoenix	1.1	13	

PM-10 (PARTICLES)

SITE NAME	MAX 24-HR VALUE (µg/m3)	MAX AQI	AQI COLOR CODE
Buckeye	51.1	47	
Central Phoenix	38.1	35	
Combs School (Pinal County)	55.9	51	
Durango	54.2	49	
Dysart	26.8	24	
Glendale	36.7	33	
Greenwood	58.7	53	
Higley	54.6	50	
Maricopa (Pinal County)	53.8	49	
Phoenix Supersite	34.1	31	
Mesa	28.5	26	
North Phoenix	29.2	27	
South Phoenix	50.3	46	
South Scottsdale	29.0	26	
Tempe	43.7	40	
West Chandler	29.6	27	
West Forty Third	54.1	49	
West Phoenix	55.4	51	
Zuni Hills	25.6	23	

PM-2.5 (PARTICLES)

(Some data derived from light-scattering equipment)

For maps go to: <http://www.airnow.gov/>

SITE NAME	MAX 24-HR VALUE (µg/m3)	MAX AQI	AQI COLOR CODE
Durango	9.3	30	
Glendale	5.9	19	
Phoenix Supersite	5.6	18	
Mesa	5.5	18	
North Phoenix	4.8	16	
South Phoenix	7.3	24	
Tempe	6.9	22	
West Phoenix	9.8	32	

DESCRIPTION OF LOCAL AIR POLLUTANTS IN DETAIL



O3 (OZONE):

Description –

This is a secondary pollutant that is formed by the reaction of other primary pollutants (precursors) such as VOCs (volatile organic compounds) and NO_x (Nitrogen Oxides) in the presence of heat and sunlight.

Sources – VOCs are emitted from motor vehicles, chemical plants, refineries, factories, and other industrial sources. NO_x is emitted from motor vehicles, power plants, and other sources of combustion.

Potential health impacts – Exposure to ozone can make people more susceptible to respiratory infection, result in lung inflammation, and aggravate pre-existing respiratory diseases such as asthma. Other effects include decrease in lung function, chest pain, and cough.

Unit of measurement – Parts per billion (ppb).

Averaging interval – Highest eight-hour period within a 24-hour period (midnight to midnight)

Reduction tips – Curtail daytime driving, refuel cars and use gasoline-powered equipment as late in the day as possible.

CO (CARBON MONOXIDE):

Description – A colorless, odorless, poisonous gas formed when carbon in fuels is not burned completely.

Sources – In cities, as much as 95 percent of all CO emissions emanate from automobile exhaust. Other sources include industrial processes, non-transportation fuel combustion, and natural sources such as wildfires. Peak concentrations occur in colder winter months.

Potential health impacts – Reduces oxygen delivery to the body's organs and tissues. The health threat is most serious for those who suffer from cardiovascular disease.

Unit of measurement – Parts per million (ppm).

Averaging interval – Highest eight-hour period within a 24-hour period (midnight to midnight)

Reduction tips – Keep motor vehicle tuned properly and minimize nighttime driving.

PM-10 & PM-2.5 (PARTICLES):

Description – The term “particulate matter” (PM) includes both solid particles and liquid droplets found in air. Many manmade and natural sources emit PM directly or emit other pollutants that react in the atmosphere to form PM. Particles less than 10 micrometers in diameter tend to pose the greatest health concern because they can be inhaled into and accumulate in the respiratory system. Particles less than 2.5 micrometers in diameter are referred to as “fine” particles and are responsible for many visibility degradations such as the “Valley Brown Cloud” (see <http://www.phoenixvis.net/>). Particles with diameters between 2.5 and 10 micrometers are referred to as “coarse”.

Sources – Fine = All types of combustion (motor vehicles, power plants, wood burning, etc.) and some industrial processes. Coarse = crushing or grinding operations and dust from paved or unpaved roads.

Potential health impacts – PM can increase susceptibility to respiratory infections and can aggravate existing respiratory diseases, such as asthma and chronic bronchitis.

Units of measurement – Micrograms per cubic meter (ug/m³)

Averaging interval – 24 hours (midnight to midnight).

Reduction tips – Stabilize loose soils, slow down on dirt roads, carpool, and use public transit.

APPENDIX B

NATIONAL WEATHER SERVICE METEOROLOGICAL OBSERVATIONS AND STORM REPORTS

U.S. Department of Commerce
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA
(final)
HOURLY OBSERVATIONS TABLE
CHANDLER MUNICIPAL AIRPORT (53128)
CHANDLER, AZ
(10/2013)**

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

Elevation: 1243 ft. above sea level
Latitude: 33.268
Longitude: -111.812
Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti-meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
09	0547	0	FEW180	15.00		63	17.0	48	9.0	32	0.0	31	8	090		28.40			M	AA		29.72
09	0647	0	FEW180	40.00		63	17.0	48	9.0	32	0.0	31	11	110		28.40			M	AA		29.72
09	0747	0	FEW200	40.00		66	19.0	51	10.7	37	3.0	34	9	100		28.43			M	AA		29.75
09	0847	0	FEW200	40.00		75	24.0	55	12.6	36	2.0	24	7	150		28.43			M	AA		29.75
09	1047	0	SCT200	40.00		82	28.0	57	13.8	34	1.0	18	20	170	25	28.43			M	AA		29.75
09	1147	0	FEW070 SCT200	30.00		84	29.0	58	14.2	34	1.0	17	17	220	30	28.42			M	AA		29.73
09	1247	0	FEW070 BKN200	15.00		86	30.0	58	14.6	34	1.0	16	23	200	32	28.38			M	AA		29.69
09	1447	0	FEW070 BKN200	4.00	DU	88	31.0	61	15.9	39	4.0	18	25	210	37	28.33			M	AA		29.64
09	1547	0	FEW070 BKN200	4.00	BLDU	86	30.0	59	15.0	36	2.0	17	29	200	39	28.33			M	AA		29.64
09	1647	0	FEW070 BKN200	5.00	BLDU	84	29.0	58	14.6	36	2.0	18	30	200	38	28.34			M	AA		29.65
09	1747	0	FEW070 BKN200	10.00	BLDU	81	27.0	57	13.6	34	1.0	18	29	210	44	28.34			M	AA		29.65
09	1847	0	FEW070 BKN200	15.00		77	25.0	M	M	39	4.0	M	11	210	22	M			M	AA		M
09	1947	0	FEW070 BKN200	15.00		75	24.0	56	13.2	39	4.0	27	11	210		28.38			M	AA		29.69
09	2047	0	FEW070 BKN200	15.00		72	22.0	55	13.0	41	5.0	33	8	150		28.40			M	AA		29.71

Dynamically generated Mon Nov 18 12:21:26 EST 2013 via <http://cdo.ncdc.noaa.gov/qclcd/QCLCD>

U.S. Department of Commerce
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA**
(final)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

**HOURLY OBSERVATIONS TABLE
CASA GRANDE MUNICIPAL ARPT (03914)
CASA GRANDE, AZ
(10/2013)**

Elevation: 1462 ft. above sea level
Latitude: 32.95
Longitude: -111.766
Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti-meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
09	0015	0	CLR	10.00		72	22.0	51	10.5	28	-2.0	19	3	110				M	AA		29.77	
09	0035	0	CLR	10.00		66	19.0	48	8.8	27	-3.0	23	6	060				M	AA		29.76	
09	0055	0	CLR	10.00		66	19.0	48	9.0	28	-2.0	24	6	080				M	AA		29.76	
09	0115	0	CLR	10.00		66	19.0	48	9.0	28	-2.0	24	7	080				M	AA		29.76	
09	0155	0	CLR	10.00		66	19.0	48	8.8	27	-3.0	23	7	100				M	AA		29.76	
09	0235	0	CLR	10.00		64	18.0	47	8.3	27	-3.0	25	6	120				M	AA		29.75	
09	0255	0	CLR	10.00		64	18.0	47	8.5	28	-2.0	26	0	000				M	AA		29.74	
09	0315	0	CLR	10.00		63	17.0	47	8.2	28	-2.0	27	6	110				M	AA		29.74	
09	0335	0	CLR	10.00		64	18.0	47	8.5	28	-2.0	26	8	110				M	AA		29.73	
09	0355	0	CLR	10.00		64	18.0	47	8.5	28	-2.0	26	6	110				M	AA		29.73	
09	0415	0	CLR	10.00		64	18.0	47	8.5	28	-2.0	26	5	100				M	AA		29.73	
09	0435	0	CLR	10.00		64	18.0	48	8.9	30	-1.0	28	7	110				M	AA		29.73	
09	0455	0	CLR	10.00		64	18.0	48	8.9	30	-1.0	28	7	090				M	AA		29.74	
09	0515	0	CLR	10.00		64	18.0	48	8.9	30	-1.0	28	7	100				M	AA		29.73	
09	0535	0	CLR	10.00		64	18.0	48	8.9	30	-1.0	28	8	100				M	AA		29.74	
09	0555	0	CLR	10.00		64	18.0	48	8.9	30	-1.0	28	8	090				M	AA		29.74	
09	0615	0	CLR	10.00		61	16.0	47	8.1	30	-1.0	31	5	050				M	AA		29.74	
09	0635	0	CLR	10.00		61	16.0	47	8.1	30	-1.0	31	5	060				M	AA		29.74	
09	0655	0	CLR	10.00		61	16.0	47	8.1	30	-1.0	31	3	070				M	AA		29.74	
09	0715	0	CLR	10.00		64	18.0	49	9.6	34	1.0	33	7	100				M	AA		29.75	
09	0735	0	CLR	10.00		66	19.0	50	10.1	34	1.0	31	5	080				M	AA		29.76	
09	0755	0	CLR	10.00		70	21.0	52	11.1	34	1.0	27	5	080				M	AA		29.76	
09	0815	0	CLR	10.00		70	21.0	52	11.1	34	1.0	27	0	000				M	AA		29.77	
09	0835	0	CLR	10.00		72	22.0	53	11.5	34	1.0	25	0	000				M	AA		29.77	
09	0855	0	CLR	10.00		73	23.0	54	12.2	36	2.0	26	3	110				M	AA		29.78	
09	0915	0	CLR	10.00		73	23.0	54	12.2	36	2.0	26	5	140				M	AA		29.78	
09	0935	0	CLR	10.00		77	25.0	56	13.0	36	2.0	23	0	000				M	AA		29.78	
09	0955	0	CLR	10.00		79	26.0	56	13.5	36	2.0	21	0	000				M	AA		29.78	
09	1015	0	CLR	10.00		81	27.0	57	13.9	36	2.0	20	8	250				M	AA		29.78	
09	1035	0	CLR	10.00		82	28.0	57	13.8	34	1.0	18	17	170	26			M	AA		29.77	
09	1055	0	CLR	10.00		82	28.0	57	13.8	34	1.0	18	21	190	26			M	AA		29.76	
09	1115	0	CLR	10.00		84	29.0	58	14.5	36	2.0	18	14	220	30			M	AA		29.76	
09	1135	0	CLR	10.00		84	29.0	58	14.5	36	2.0	18	16	230	23			M	AA		29.75	
09	1155	0	CLR	10.00		84	29.0	58	14.5	36	2.0	18	14	230	22			M	AA		29.74	
09	1215	0	CLR	10.00		84	29.0	58	14.5	36	2.0	18	20	190	24			M	AA		29.73	
09	1235	0	CLR	10.00		84	29.0	57	13.8	32	0.0	15	18	200	26			M	AA		29.72	
09	1255	0	CLR	5.00		88	31.0	58	14.7	32	0.0	13	22	200	30			M	AA		29.71	
09	1315	0	CLR	3.00		88	31.0	58	14.7	32	0.0	13	28	200	41			M	AA		29.69	
09	1335	0	CLR	2.00		88	31.0	59	15.0	34	1.0	15	25	200	34			M	AA		29.68	
09	1355	0	CLR	1.75		88	31.0	58	14.4	30	-1.0	12	28	210	37			M	AA		29.68	
09	1415	0	FEW008	2.50		88	31.0	58	14.4	30	-1.0	12	28	200	36			M	AA		29.67	
09	1435	0	FEW026	5.00		88	31.0	59	15.0	34	1.0	15	22	200	33			M	AA		29.67	
09	1455	0	SCT026	1.50		88	31.0	60	15.3	36	2.0	16	26	220	38			M	AA		29.66	
09	1515	0	SCT028	1.75		86	30.0	59	15.1	37	3.0	18	25	210	38			M	AA		29.67	
09	1535	0	FEW024 FEW029	3.00		86	30.0	59	14.9	36	2.0	17	26	210	36			M	AA		29.66	
09	1555	0	CLR	4.00		86	30.0	59	15.1	37	3.0	18	22	200	37			M	AA		29.66	
09	1615	0	CLR	9.00		84	29.0	59	15.1	39	4.0	20	26	220	32			M	AA		29.66	
09	1635	0	CLR	10.00		82	28.0	59	14.7	39	4.0	22	25	210	33			M	AA		29.67	
09	1655	0	CLR	10.00		82	28.0	59	15.1	41	5.0	23	23	220	30			M	AA		29.67	
09	1715	0	CLR	10.00		82	28.0	59	14.7	39	4.0	22	26	220	32			M	AA		29.67	
09	1735	0	CLR	10.00		81	27.0	59	14.9	41	5.0	24	23	210	31			M	AA		29.67	
09	1755	0	CLR	10.00		79	26.0	57	14.1	39	4.0	24	20	220	29			M	AA		29.68	
09	1815	0	CLR	10.00		77	25.0	57	13.6	39	4.0	26	21	230	28			M	AA		29.69	
09	1835	0	CLR	10.00		75	24.0	56	13.2	39	4.0	27	23	230				M	AA		29.69	
09	1855	0	CLR	10.00		73	23.0	54	12.3	37	3.0	27	17	230	24			M	AA		29.70	
09	1915	0	CLR	10.00		73	23.0	55	12.8	39	4.0	29	21	220	28			M	AA		29.70	
09	1935	0	CLR	10.00		73	23.0	55	12.8	39	4.0	29	14	210	30			M	AA		29.71	
09	1955	0	CLR	10.00		72	22.0	55	13.0	41	5.0	33	13	210	16			M	AA		29.71	
09	2015	0	CLR	10.00		72	22.0	55	13.0	41	5.0	33	8	140				M	AA		29.72	
09	2035	0	CLR	10.00		72	22.0	57	13.9	45	7.0	38	8	150				M	AA		29.73	
09	2055	0	CLR	10.00		70	21.0	56	13.4	45	7.0	41	13	170				M	AA		29.74	
09	2115	0	CLR	10.00		70	21.0	56	13.4	45	7.0	41	15	180				M	AA		29.74	
09	2135	0	CLR	10.00		70	21.0	57	13.7	46	8.0	42	11	200				M	AA		29.74	
09	2155	0	CLR	10.00		68	20.0	56	13.2	46	8.0	45	10	210				M	AA		29.75	
09	2215	0	CLR	10.00		66	19.0	56	13.3	48	9.0	52	13	200				M	AA		29.75	
09	2235	0	CLR	10.00		66	19.0	56	13.3	48	9.0	52	11	210				M	AA		29.76	
09	2255	0	CLR	10.00		66	19.0	56	13.3	48	9.0	52	9	210				M	AA		29.76	
09	2315	0	CLR	10.00		64	18.0	55	12.8	48	9.0	56	3	210				M	AA		29.77	
09	2335	0	CLR	10.00		64	18.0	55	12.8	48	9.0	56	5	220				M	AA		29.77	
09	2355	0	FEW044	10.00		64	18.0	56	13.4	50	10.0	61	9	200				M	AA		29.77	

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U.S. Department of Commerce
National Oceanic & Atmospheric Administration

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA
(final)
HOURLY OBSERVATIONS TABLE
WILLIAMS GATEWAY AIRPORT (23104)
PHOENIX, AZ
(10/2013)**

Elevation: 1382 ft. above sea level
Latitude: 33.3
Longitude: -111.666
Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti-meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
09	0015	0	CLR	10.00		66	19.0	50	9.7	32	0.0	28	10	120		28.31			M	AA		29.77
09	0035	0	CLR	10.00		64	18.0	49	9.2	32	0.0	30	10	120		28.31			M	AA		29.77
09	0055	0	CLR	10.00		64	18.0	49	9.2	32	0.0	30	8	120		28.31			M	AA		29.77
09	0115	0	CLR	10.00		64	18.0	48	8.9	30	-1.0	28	9	120		28.31			M	AA		29.77
09	0135	0	CLR	10.00		66	19.0	48	9.0	28	-2.0	24	9	120		28.30			M	AA		29.76
09	0155	0	CLR	10.00		64	18.0	47	8.5	28	-2.0	26	8	110		28.30			M	AA		29.76
09	0215	0	CLR	10.00		64	18.0	47	8.3	27	-3.0	25	8	120		28.30			M	AA		29.76
09	0235	0	CLR	10.00		61	16.0	47	8.1	30	-1.0	31	6	130		28.30			M	AA		29.76
09	0255	0	CLR	10.00		61	16.0	47	8.1	30	-1.0	31	10	140		28.29			M	AA		29.75
09	0315	0	CLR	10.00		63	17.0	48	8.6	30	-1.0	29	10	150		28.29			M	AA		29.75
09	0335	0	CLR	10.00		63	17.0	48	8.6	30	-1.0	29	8	140		28.28			M	AA		29.74
09	0355	0	CLR	10.00		57	14.0	45	7.4	32	0.0	39	7	150		28.28			M	AA		29.74
09	0415	0	CLR	10.00		57	14.0	45	7.4	32	0.0	39	8	150		28.28			M	AA		29.74
09	0435	0	CLR	10.00		59	15.0	46	7.9	32	0.0	36	9	140		28.28			M	AA		29.74
09	0447	0	CLR200	20.00		61	16.0	M	M	32	0.0	M	8	130		M			M	AA		29.74
09	0455	0	CLR	10.00		61	16.0	47	8.5	32	0.0	34	10	160		28.28			M	AA		29.74
09	0515	0	CLR	10.00		61	16.0	47	8.5	32	0.0	34	7	140		28.28			M	AA		29.74
09	0535	0	CLR	10.00		61	16.0	47	8.5	32	0.0	34	10	150		28.28			M	AA		29.74
09	0547	0	SCT200	20.00		61	16.0	47	8.5	32	0.0	34	9	140		28.28			M	AA		29.74
09	0647	0	FEW250	35.00		63	17.0	48	9.0	32	0.0	31	8	130		28.29			M	AA		29.75
09	0747	0	FEW250	45.00		68	20.0	51	10.6	34	1.0	29	8	140		28.30			M	AA		29.76
09	0847	0	SCT250	45.00		73	23.0	54	12.4	37	3.0	27	7	110		28.31			M	AA		29.77
09	0950	0	SCT250	45.00		79	26.0	56	13.1	34	1.0	20	9	140		28.32			M	AA		29.78
09	1052	0	SCT250	35.00		84	29.0	56	13.5	30	-1.0	14	13	190	21	28.31			M	AA		29.77
09	1147	0	SCT250	35.00		84	29.0	56	13.5	30	-1.0	14	11	230	22	28.29			M	AA		29.75
09	1247	0	SCT250	10.00		84	29.0	57	13.9	32	0.0	15	11	220	22	28.26			M	AA		29.72
09	1347	0	SCT250	4.00	DU	88	31.0	57	13.9	27	-3.0	11	23	210	33	28.23			M	AA		29.69
09	1447	0	SCT250	4.00	BLDU	88	31.0	57	14.1	28	-2.0	11	20	220	31	28.22			M	AA		29.67
09	1547	0	BKN250	4.00	DU	86	30.0	57	14.0	30	-1.0	13	17	220	34	28.22			M	AA		29.67
09	1647	0	BKN250	4.00	DU	84	29.0	58	14.5	36	2.0	18	24	270	34	28.22			M	AA		29.67
09	1747	0	BKN200	4.00	BLDU	81	27.0	57	13.9	36	2.0	20	25	230	36	28.22			M	AA		29.67
09	1847	0	BKN200	4.00	BLDU	79	26.0	54	12.4	30	-1.0	17	14	240	37	28.23			M	AA		29.69
09	1947	0	CLR200	10.00		73	23.0	M	M	36	2.0	M	8	240		M			M	AA		29.70
09	1955	0	BKN095	10.00		73	23.0	54	12.2	36	2.0	26	14	240		28.25			M	AA		29.71
09	2015	0	SCT095 SCT110	10.00		72	22.0	54	11.9	36	2.0	27	11	240		28.25			M	AA		29.71
09	2035	0	SCT095	10.00		72	22.0	54	12.1	37	3.0	28	10	250		28.26			M	AA		29.72
09	2047	0	CLR200	10.00		73	23.0	M	M	39	4.0	M	9	240		M			M	AA		29.72
09	2055	0	CLR	10.00		72	22.0	55	12.5	39	4.0	30	14	250		28.27			M	AA		29.73
09	2115	0	CLR	10.00		72	22.0	55	13.0	41	5.0	33	15	240		28.27			M	AA		29.73
09	2147	0	CLR200	20.00		72	22.0	M	M	43	6.0	M	8	240		M			M	AA		29.75
09	2155	0	SCT075	10.00		70	21.0	55	12.5	41	5.0	35	9	220		28.29			M	AA		29.75
09	2215	0	SCT075	10.00		70	21.0	56	13.5	45	7.0	41	15	210		28.29			M	AA		29.75
09	2235	0	CLR	10.00		70	21.0	56	13.5	45	7.0	41	14	220	18	28.29			M	AA		29.75
09	2247	0	CLR120	20.00		70	21.0	M	M	46	8.0	M	14	210	21	M			M	AA		29.76
09	2255	0	CLR	10.00		68	20.0	55	13.0	45	7.0	44	10	220		28.30			M	AA		29.76
09	2315	0	CLR	10.00		68	20.0	56	13.3	46	8.0	45	7	230		28.31			M	AA		29.77
09	2335	0	SCT070	10.00		66	19.0	55	12.5	45	7.0	47	5	220		28.31			M	AA		29.77
09	2347	0	CLR150	20.00		66	19.0	M	M	46	8.0	M	5	320		M			M	AA		29.77
09	2355	0	CLR	10.00		66	19.0	55	12.8	46	8.0	49	6	220		28.30			M	AA		29.76

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U.S. Department of Commerce
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA
(final)
HOURLY OBSERVATIONS TABLE
FALCON FIELD AIRPORT (03185)
MESA, AZ
(10/2013)**

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

Elevation: 1380 ft. above sea level
Latitude: 33.466
Longitude: -111.733
Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti-meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
09	0547	0	CLRs	20.00		68	20.0	50	9.9	30	-1.0	24	6	090		28.25			M	AA		29.72
09	0647	0	FEW200	40.00		70	21.0	51	10.3	30	-1.0	23	11	100		28.25			M	AA		29.72
09	0747	0	FEW200	40.00		72	22.0	52	11.2	32	0.0	23	7	130		28.27			M	AA		29.74
09	0855	0	FEW200	40.00		75	24.0	53	11.9	32	0.0	21	8	140		28.28			M	AA		29.75
09	0950	0	FEW250	40.00		79	26.0	56	13.1	34	1.0	20	14	150	18	28.29			M	AA		29.76
09	1147	0	SCT260	40.00		81	27.0	56	13.2	32	0.0	17	11	180	26	28.26			M	AA		29.73
09	1347	0	SCT200	10.00		86	30.0	59	14.9	36	2.0	17	11	200	21	28.19			M	AA		29.66
09	1448	0	SCT250	5.00	BLDU	84	29.0	59	14.7	37	3.0	19	17	190	24	28.17			M	AA		29.64
09	1549	0	SCT250	12.00		84	29.0	59	14.7	37	3.0	19	18	220	25	28.17			M	AA		29.64
09	1850	0	BKN200	10.00		77	25.0	57	13.6	39	4.0	26	11	220		28.19			M	AA		29.66
09	1947	0	BKN200	10.00		75	24.0	56	13.2	39	4.0	27	15	230		28.20			M	AA		29.67

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U.S. Department of Commerce
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA
(final)
HOURLY OBSERVATIONS TABLE
PHOENIX SKY HARBOR INTL AIRPORT (23183)
PHOENIX, AZ
(10/2013)**

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

Elevation: 1107 ft. above sea level
Latitude: 33.427
Longitude: -112.003
Data Version: VER3

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti-meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
09	0051	11	CLR	10.00		73	22.8	53	11.6	33	0.6	23	6	120		28.54		29.65	AA		29.71	
09	0151	11	CLR	10.00		73	22.8	52	11.3	31	-0.6	21	9	080		28.54		29.66	AA		29.71	
09	0251	11	CLR	10.00		71	21.7	52	10.8	31	-0.6	23	8	060		28.52		29.64	AA		29.69	
09	0351	11	CLR	10.00		73	22.8	52	11.1	30	-1.1	20	13	160		28.52		29.63	AA		29.69	
09	0451	11	CLR	10.00		72	22.2	52	10.9	30	-1.1	21	9	160		28.52		29.64	AA		29.69	
09	0551	11	FEW140	10.00		70	21.1	51	10.7	32	0.0	25	8	130		28.52		29.65	AA		29.69	
09	0651	11	FEW250	10.00		68	20.0	51	10.3	32	0.0	26	6	130		28.53		29.66	AA		29.70	
09	0751	11	FEW220	10.00		72	22.2	53	11.4	33	0.6	24	9	120		28.55		29.67	AA		29.72	
09	0851	11	FEW220	10.00		76	24.4	55	12.5	34	1.1	22	5	080		28.56		29.68	AA		29.73	
09	0951	11	FEW170 FEW220	10.00		81	27.2	57	13.6	34	1.1	18	17	180	22	28.57		29.69	AA		29.74	
09	1051	11	FEW080 FEW170 BKN220	10.00		83	28.3	58	14.4	36	2.2	19	21	180	29	28.56		29.68	AA		29.73	
09	1151	11	FEW080 FEW170 SCT220	10.00		85	29.4	60	15.5	40	4.4	20	22	180	31	28.54		29.66	AA		29.71	
09	1251	11	FEW080 FEW170 SCT220	10.00		87	30.6	61	15.9	40	4.4	19	26	170	37	28.50		29.62	AA		29.67	
09	1351	11	FEW080 FEW170 BKN220	10.00		88	31.1	61	16.1	40	4.4	18	20	210	31	28.47		29.59	AA		29.64	
09	1451	11	FEW080 SCT170 BKN230	10.00		86	30.0	63	17.0	46	7.8	25	15	250	25	28.46		29.58	AA		29.63	
09	1551	11	FEW090 SCT170 BKN210	10.00		84	28.9	61	16.0	43	6.1	24	18	260	23	28.46		29.58	AA		29.63	
09	1651	11	FEW090 SCT170 BKN210	10.00		83	28.3	60	15.3	41	5.0	23	17	260	22	28.46		29.58	AA		29.63	
09	1751	11	FEW090 SCT170 BKN210	10.00		81	27.2	59	14.7	40	4.4	23	16	240		28.47		29.59	AA		29.64	
09	1851	11	FEW090 SCT170 BKN210	10.00		79	26.1	57	13.9	38	3.3	23	14	230	22	28.47		29.60	AA		29.64	
09	1951	11	FEW170 SCT210 BKN250	10.00		77	25.0	56	13.3	37	2.8	24	13	220		28.49		29.61	AA		29.66	
09	2051	11	FEW170 SCT210 SCT250	10.00		75	23.9	57	13.9	42	5.6	31	11	250		28.51		29.63	AA		29.68	
09	2151	11	OVC180	10.00		74	23.3	56	13.2	40	4.4	29	13	220		28.52		29.65	AA		29.69	
09	2251	11	BKN180	10.00		72	22.2	57	13.9	45	7.2	38	15	190		28.53		29.65	AA		29.70	
09	2351	11	FEW150 OVC170	10.00		70	21.1	58	14.2	48	8.9	46	8	200		28.54		29.66	AA		29.71	

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U.S. Department of Commerce
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA
(final)
HOURLY OBSERVATIONS TABLE
SCOTTSDALE AIRPORT (03192)
SCOTTSDALE, AZ
(10/2013)**

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

Elevation: 1473 ft. above sea level
Latitude: 33.622
Longitude: -111.910
Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti-meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
09	0053	12	CLR	10.00		71	21.7	52	11.1	33	0.6	25	6	110					29.68	AA		29.75
09	0153	12	CLR	10.00		71	21.7	51	10.6	30	-1.1	22	6	120					29.67	AA		29.75
09	0253	12	CLR	10.00		72	22.2	51	10.3	27	-2.8	19	7	130					29.65	AA		29.73
09	0353	12	CLR	10.00		72	22.2	51	10.3	27	-2.8	19	8	130					29.65	AA		29.72
09	0453	12	CLR	10.00		70	21.1	50	10.0	28	-2.2	21	0	000					29.66	AA		29.73
09	0553	12	CLR	10.00		67	19.4	49	9.4	29	-1.7	24	0	000					29.67	AA		29.73
09	0653	12	CLR	10.00		66	18.9	49	9.5	31	-0.6	27	0	000					29.67	AA		29.74
09	0753	12	CLR	10.00		72	22.2	53	11.7	35	1.7	26	3	170					29.69	AA		29.76
09	0853	12	CLR	10.00		75	23.9	54	12.0	33	0.6	22	9	160	16				29.70	AA		29.76
09	0953	12	CLR	10.00		78	25.6	55	12.7	33	0.6	19	10	170					29.71	AA		29.77
09	1053	12	CLR	10.00		81	27.2	56	13.5	34	1.1	18	13	170	20				29.70	AA		29.77
09	1153	12	FEW041	10.00		82	27.8	58	14.3	37	2.8	20	11	180	23				29.67	AA		29.74
09	1253	12	CLR	10.00		83	28.3	59	14.9	39	3.9	21	14	190	25				29.64	AA		29.71
09	1353	12	FEW041	10.00		84	28.9	59	15.1	39	3.9	20	18	210	31				29.61	AA		29.68
09	1453	12	CLR	10.00		81	27.2	61	16.2	47	8.3	30	14	260	21				29.60	AA		29.67
09	1553	12	CLR	10.00		81	27.2	61	16.0	46	7.8	29	11	250					29.60	AA		29.67
09	1653	12	CLR	10.00		79	26.1	59	14.9	43	6.1	28	13	230	21				29.61	AA		29.67
09	1753	12	CLR	10.00		79	26.1	58	14.2	40	4.4	25	6	230					29.61	AA		29.67
09	1853	12	CLR	10.00		77	25.0	56	13.2	37	2.8	24	10	240	21				29.61	AA		29.67
09	1953	12	CLR	10.00		76	24.4	55	12.8	36	2.2	23	15	220	23				29.62	AA		29.68
09	2053	12	CLR	10.00		73	22.8	56	13.4	42	5.6	33	13	250	18				29.64	AA		29.71
09	2153	12	CLR	10.00		72	22.2	55	13.0	41	5.0	33	10	240					29.66	AA		29.72
09	2253	12	CLR	10.00		71	21.7	55	13.0	42	5.6	35	5	210					29.67	AA		29.73
09	2353	12	FEW060 SCT080	10.00		69	20.6	56	13.2	45	7.2	42	9	200					29.67	AA		29.74

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U.S. Department of Commerce
National Oceanic & Atmospheric Administration

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA**
(final)
HOURLY OBSERVATIONS TABLE
LUKE AFB AIRPORT (23111)
GLENDALE, AZ
(10/2013)

Elevation: 1085 ft. above sea level
Latitude: 33.55
Longitude: -112.366
Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti-meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
09	0058	0	CLR	10.00		70	21.2	52	11.3	35	1.7	28	2	120		28.55			29.66	AA		29.70
09	0158	0	CLR	10.00		69	20.3	52	10.9	34	0.9	28	7	050		28.54			29.65	AA		29.69
09	0258	0	CLR	10.00		64	17.7	51	10.7	39	3.7	40	1	030		28.53			29.65	AA		29.68
09	0358	0	CLR	10.00		62	16.4	50	9.8	37	2.9	40	8	310		28.53			29.65	AA		29.68
09	0458	0	CLR	10.00		65	18.3	51	10.3	36	2.0	34	2	060		28.54			29.66	AA		29.69
09	0558	0	CLR	10.00		60	15.4	49	9.5	38	3.1	44	3	070		28.54			29.66	AA		29.69
09	0658	0	CLR	10.00		60	15.8	49	9.5	38	3.4	44	5	320		28.55			29.67	AA		29.70
09	0758	0	CLR	10.00		65	18.1	51	10.7	38	3.2	37	6	320		28.57			29.69	AA		29.72
09	0858	0	CLR	10.00		73	22.6	54	12.4	37	2.5	27	1	320		28.59			29.71	AA		29.74
09	0955	0	CLR	10.00		77	25.0	M	M	39	4.0	M	6	200		M			M	AA		29.74
09	0958	0	CLR	10.00		77	25.0	56	13.5	38	3.3	25	7	VR		28.59			29.70	AA		29.74
09	1055	0	CLR	10.00		79	26.0	M	M	43	6.0	M	9	160		M			M	AA		29.74
09	1058	0	CLR	10.00		79	26.3	59	15.0	43	6.3	28	9	150		28.59			29.69	AA		29.74
09	1102	0	CLR	10.00		79	26.0	60	15.4	45	7.0	30	6	180		28.58			29.69	AA		29.73
09	1102	0	CLR	10.00		79	26.0	M	M	45	7.0	M	6	180		M			29.69	SP		29.73
09	1155	0	CLR	10.00		82	28.0	M	M	48	9.0	M	16	180	25	M			M	AA		29.71
09	1158	0	CLR	10.00		82	27.7	63	16.9	49	9.4	32	17	200	25	28.56			29.67	AA		29.71
09	1255	0	CLR	10.00		81	27.0	64	17.5	52	11.0	37	18	220	23	28.54			M	AA		29.69
09	1358	0	BKN150	10.00		82	27.7	63	17.2	50	9.9	33	22	230	30	28.52			29.64	AA		29.67
09	1458	0	BKN150	10.00		81	27.3	62	16.7	49	9.6	33	16	220	24	28.49			29.61	AA		29.64
09	1558	0	BKN120	5.00	BLDU	81	27.2	61	16.0	46	8.0	29	21	230		28.49			29.61	AA		29.64
09	1625	0	FEW004 BKN120	3.00	BLDU	81	27.0	61	15.8	45	7.0	28	24	230	32	28.48			M	AA		29.63
09	1635	0	FEW003 BKN120	2.50	BLDU	81	27.0	61	15.8	45	7.0	28	26	220		28.48			M	AA		29.63
09	1642	0	CLR003 CLR120	4.00	BLDU	79	26.0	60	15.4	45	7.0	30	25	220		28.48			M	AA		29.63
09	1658	0	FEW003 BKN120	4.00	BLDU	80	26.7	60	15.4	44	6.9	28	25	220	33	28.48			29.60	AA		29.63
09	1723	0	BKN180	7.00	BLDU	79	26.0	60	15.4	45	7.0	30	22	220	30	28.48			M	AA		29.63
09	1758	0	FEW200	10.00		78	25.5	59	15.2	45	7.0	31	18	220		28.49			29.62	AA		29.64
09	1858	0	FEW200	10.00		75	24.0	59	14.8	46	8.0	36	16	230		28.49			29.62	AA		29.64
09	1958	0	FEW210	10.00		73	22.9	56	13.4	42	5.6	33	11	230		28.50			29.62	AA		29.65
09	2058	0	BKN180	10.00		72	22.0	55	12.8	40	4.7	31	2	200		28.53			29.65	AA		29.68
09	2158	0	OVC170	10.00		71	21.4	56	13.5	44	6.4	38	11	190		28.55			M	AA		29.70
09	2258	0	OVC170	10.00		69	20.7	58	14.5	50	10.0	51	8	150		28.55			M	AA		29.70
09	2338	0	BKN060 OVC160	10.00		68	20.0	56	13.0	45	7.0	44	10	200		28.56			M	AA		29.71
09	2358	0	OVC055	10.00		69	20.3	55	12.5	42	5.7	38	8	210		28.57			M	AA		29.72

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U.S. Department of Commerce
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA**
(final)
HOURLY OBSERVATIONS TABLE
PHOENIX GOODYEAR AIRPORT (03186)
GOODYEAR, AZ
(10/2013)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

Elevation: 968 ft. above sea level
Latitude: 33.416
Longitude: -112.383
Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti-meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
09	0547	0	FEW200	10.00		68	20.0	52	11.2	37	3.0	32	9	120		28.67		M	AA		29.70	
09	0647	0	FEW200	10.00		M	M	M	M	37	3.0	M	7	VR		28.68		M	AA		29.71	
09	0747	0	FEW200	10.00		70	21.0	54	12.1	39	4.0	32	6	VR		28.70		M	AA		29.73	
09	0850	0	SCT200	10.00		73	23.0	57	13.7	43	6.0	34	6	130		28.72		M	AA		29.75	
09	0947	0	FEW070 SCT200	10.00		77	25.0	59	15.0	45	7.0	32	6	240		28.73		M	AA		29.76	
09	1047	0	FEW070 SCT180	10.00		81	27.0	62	16.5	48	9.0	32	7	260		28.72		M	AA		29.75	
09	1147	0	SCT080 SCT200 BKN250	10.00		81	27.0	62	16.5	48	9.0	32	17	210	29	28.69		M	AA		29.72	
09	1247	0	SCT070 SCT180 BKN220	10.00		82	28.0	65	18.5	55	13.0	40	17	240	26	28.68		M	AA		29.71	
09	1347	0	FEW070 SCT180 BKN220	10.00		82	28.0	65	18.2	54	12.0	38	21	250	26	28.65		M	AA		29.68	
09	1447	0	FEW070 BKN180 BKN250	10.00		84	29.0	66	18.6	54	12.0	36	16	250	24	28.63		M	AA		29.65	
09	1547	0	FEW080 SCT180 BKN230	7.00		84	29.0	65	18.1	52	11.0	33	22	230	30	28.63		M	AA		29.65	
09	1647	0	FEW090 SCT170 BKN210	8.00		82	28.0	62	16.7	48	9.0	31	23	230	32	28.63		M	AA		29.65	
09	1747	0	FEW120 FEW150 BKN200	8.00s	BLDU	81	27.0	62	16.5	48	9.0	32	17	230	23	28.64		M	AA		29.66	
09	1847	0	FEW120 FEW150 BKN200	10.00		77	25.0	61	16.2	50	10.0	39	17	230		28.64		M	AA		29.66	
09	1947	0	FEW120 FEW150 BKN200	10.00		73	23.0	58	14.4	46	8.0	38	14	230		28.65		M	AA		29.68	
09	2047	0	FEW120 SCT150 BKN200	10.00		72	22.0	58	14.2	46	8.0	40	11	230		28.66		M	AA		29.69	

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U.S. Department of Commerce
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA
(final)
HOURLY OBSERVATIONS TABLE
GLENDALE MUNICIPAL AIRPORT (53126)
GLENDALE, AZ
(10/2013)**

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

Elevation: 1066 ft. above sea level
Latitude: 33.527
Longitude: -112.295
Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti-meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
09	0547	0	CLRs	20.00		63	17.0	50	9.8	36	2.0	37	6	060		28.57			M	AA		29.70
09	0647	0	FEW200	20.00		64	18.0	49	9.7	34	1.0	33	0	000		28.58			M	AA		29.71
09	0751	0	FEW200	20.00		66	19.0	51	10.5	36	2.0	33	3	VR		28.61			M	AA		29.74
09	0847	0	FEW200	20.00		72	22.0	54	12.0	36	2.0	27	3	VR		28.63			M	AA		29.76
09	0947	0	FEW200	20.00		77	25.0	56	13.1	36	2.0	23	3	180		28.63			M	AA		29.76
09	1050	0	FEW100 SCT200	20.00		79	26.0	57	13.7	37	3.0	22	11	190		28.63			M	AA		29.76
09	1152	0	FEW100 SCT200	20.00		82	28.0	61	16.0	45	7.0	27	9	150	17	28.60			M	AA		29.73
09	1247	0	FEW070 SCT200	20.00		82	28.0	61	16.2	46	8.0	28	17	170	25	28.57			M	AA		29.70
09	1347	0	FEW070 SCT200	20.00		82	28.0	62	16.7	48	9.0	31	16	220	25	28.55			M	AA		29.68
09	1447	0	FEW080 BKN150 BKN250	20.00		82	28.0	62	16.7	48	9.0	31	13	210	24	28.53			M	AA		29.66
09	1547	0	SCT080 BKN200 OVC250	10.00		82	28.0	61	16.2	46	8.0	28	18	220	23	28.53			M	AA		29.66
09	1647	0	SCT080 BKN150 BKN200	10.00		81	27.0	60	15.4	43	6.0	26	20	200	26	28.52			M	AA		29.65
09	1747	0	SCT080 SCT150 BKN200	15.00		79	26.0	59	14.9	43	6.0	28	11	210	20	28.53			M	AA		29.66
09	1847	0	SCT150	15.00		77	25.0	59	15.0	45	7.0	32	11	210	17	28.53			M	AA		29.66
09	1947	0	SCT150 SCT200	15.00		75	24.0	57	14.1	43	6.0	32	6	190		28.55			M	AA		29.68

Dynamically generated Mon Nov 18 12:22:43 EST 2013 via <http://cdo.ncdc.noaa.gov/qclcd/QCLCD>

U.S. Department of Commerce
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA**
(final)
HOURLY OBSERVATIONS TABLE
PHOENIX DEER VALLEY ARPT (03184)
PHOENIX, AZ
(10/2013)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

Elevation: 1455 ft. above sea level
Latitude: 33.688
Longitude: -112.081
Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti-meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
09	0053	12	CLR	10.00		70	21.1	52	11.1	34	1.1	27	9	080		28.17			29.66	AA		29.73
09	0153	12	CLR	10.00		68	20.0	51	10.6	34	1.1	29	6	090		28.17			29.65	AA		29.72
09	0253	12	CLR	10.00		71	21.7	51	10.4	29	-1.7	21	11	130		28.15			29.63	AA		29.70
09	0353	12	CLR	10.00		70	21.1	50	10.0	28	-2.2	21	13	130		28.14			29.62	AA		29.69
09	0453	12	CLR	10.00		68	20.0	49	9.7	29	-1.7	23	9	140		28.16			29.64	AA		29.71
09	0553	12	CLR	10.00		69	20.6	50	10.1	30	-1.1	23	8	110		28.15			29.64	AA		29.70
09	0653	12	CLR	10.00		68	20.0	50	9.8	30	-1.1	24	7	120		28.16			29.65	AA		29.71
09	0753	12	CLR	10.00		70	21.1	51	10.7	32	0.0	25	10	130		28.17			29.67	AA		29.73
09	0853	12	CLR	10.00		74	23.3	54	12.0	34	1.1	23	8	140		28.20			29.69	AA		29.75
09	0953	12	CLR	10.00		77	25.0	56	13.0	36	2.2	23	15	180	24	28.20			29.69	AA		29.75
09	1053	12	CLR	10.00		78	25.6	57	13.6	38	3.3	24	13	210	32	28.20			29.68	AA		29.75
09	1153	12	FEW048	10.00		81	27.2	59	14.9	41	5.0	24	13	190	21	28.17			29.66	AA		29.72
09	1253	12	CLR	10.00		81	27.2	59	15.1	42	5.6	25	7	210	22	28.15			29.63	AA		29.70
09	1353	12	CLR	10.00		82	27.8	62	16.4	47	8.3	29	13	240		28.12			29.60	AA		29.67
09	1453	12	CLR	10.00		80	26.7	61	16.0	47	8.3	31	17	250		28.10			29.59	AA		29.65
09	1553	12	CLR	10.00		79	26.1	60	15.6	46	7.8	31	16	230	26	28.11			29.59	AA		29.66
09	1653	12	BKN031	7.00		77	25.0	59	14.7	44	6.7	31	18	250	22	28.10			29.59	AA		29.65
09	1700	12	BKN029 BKN037	7.00		77	25.0	58	14.5	43	6.0	30	17	240	24	28.10			M	SP		29.65
09	1737	12	SCT029	9.00		77	25.0	58	14.5	43	6.0	30	15	240		28.10			M	SP		29.65
09	1753	12	FEW034	10.00		76	24.4	57	14.0	42	5.6	30	17	220	24	28.10			29.59	AA		29.65
09	1853	12	CLR	10.00		75	23.9	57	13.8	42	5.6	31	15	220		28.10			29.59	AA		29.65
09	1953	12	CLR	10.00		73	22.8	57	13.9	44	6.7	35	14	220		28.11			29.60	AA		29.66
09	2053	12	CLR	10.00		71	21.7	55	12.7	41	5.0	34	14	230		28.14			29.62	AA		29.69
09	2153	12	CLR	10.00		70	21.1	54	12.3	40	4.4	34	10	210		28.15			29.64	AA		29.70
09	2253	12	CLR	10.00		69	20.6	55	13.0	44	6.7	41	17	210	22	28.17			29.66	AA		29.72
09	2353	12	SCT055	10.00		67	19.4	57	14.1	50	10.0	55	11	210		28.17			29.66	AA		29.72

Dynamically generated Mon Nov 18 12:26:41 EST 2013 via <http://cdo.ncdc.noaa.gov/qclcd/QCLCD>

AWS ID	WBAN ID	Name	Country	State	Latitude	Longitude	Elevation																						
720644	99999	BUCKEYE MUNI	UNITED STATES	ARIZONA	+33.417	-112.683	+0311.0 (meters)																						
USAF	WBAN	YR--MODAHRMN	DIR	SPD	GUS	CLG	SKC	L	M	H	VSB	MW	MW	MW	MW	AW	AW	AW	AW	W	TEMP	DEWP	SLP	ALT	STP	MAX	MIN	PCP01	PC
		GMT		MPH	MPH						Miles										F	F	mb	inches	mb	F	F	inches	in
720644	99999	201310090715	110	3	***	***	***	*	*	*	10.0	**	**	**	**	**	**	**	**	**	70	32	*****	29.70	*****	***	***	*****	**
720644	99999	201310090735	090	7	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	68	32	*****	29.70	*****	***	***	*****	**
720644	99999	201310090755	090	6	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	70	30	*****	29.70	*****	***	***	*****	**
720644	99999	201310090815	060	7	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	68	28	*****	29.70	*****	***	***	*****	**
720644	99999	201310090835	090	9	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	68	28	*****	29.70	*****	***	***	*****	**
720644	99999	201310090855	080	8	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	68	28	*****	29.70	*****	***	***	*****	**
720644	99999	201310090915	080	9	***	***	***	*	*	*	10.0	**	**	**	**	**	**	**	**	**	68	28	*****	29.70	*****	***	***	*****	**
720644	99999	201310090935	080	9	***	***	***	*	*	*	10.0	**	**	**	**	**	**	**	**	**	66	28	*****	29.69	*****	***	***	*****	**
720644	99999	201310090955	080	9	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	66	28	*****	29.69	*****	***	***	*****	**
720644	99999	201310091015	090	10	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	66	28	*****	29.69	*****	***	***	*****	**
720644	99999	201310091035	120	8	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	66	32	*****	29.69	*****	***	***	*****	**
720644	99999	201310091055	120	6	***	***	***	*	*	*	10.0	**	**	**	**	**	**	**	**	**	66	32	*****	29.69	*****	***	***	*****	**
720644	99999	201310091115	080	7	***	***	***	*	*	*	10.0	**	**	**	**	**	**	**	**	**	66	32	*****	29.69	*****	***	***	*****	**
720644	99999	201310091135	100	7	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	66	32	*****	29.69	*****	***	***	*****	**
720644	99999	201310091155	090	8	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	64	36	*****	29.68	*****	***	***	*****	**
720644	99999	201310091215	090	9	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	66	32	*****	29.68	*****	***	***	*****	**
720644	99999	201310091235	100	8	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	66	36	*****	29.69	*****	***	***	*****	**
720644	99999	201310091255	090	8	***	***	***	*	*	*	10.0	**	**	**	**	**	**	**	**	**	64	34	*****	29.70	*****	***	***	*****	**
720644	99999	201310091315	090	13	***	***	***	*	*	*	10.0	**	**	**	**	**	**	**	**	**	64	32	*****	29.69	*****	***	***	*****	**
720644	99999	201310091335	090	9	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	63	32	*****	29.70	*****	***	***	*****	**
720644	99999	201310091355	090	9	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	64	32	*****	29.70	*****	***	***	*****	**
720644	99999	201310091415	080	9	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	66	32	*****	29.71	*****	***	***	*****	**
720644	99999	201310091435	080	8	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	68	34	*****	29.72	*****	***	***	*****	**
720644	99999	201310091455	090	9	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	70	36	*****	29.73	*****	***	***	*****	**
720644	99999	201310091515	100	8	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	72	39	*****	29.73	*****	***	***	*****	**
720644	99999	201310091535	100	8	***	722	CLR	*	*	*	9.1	**	**	**	**	**	**	**	**	**	72	41	*****	29.74	*****	***	***	*****	**
720644	99999	201310091555	130	7	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	73	43	*****	29.74	*****	***	***	*****	**
720644	99999	201310091615	200	11	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	73	46	*****	29.75	*****	***	***	*****	**
720644	99999	201310091635	200	10	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	73	48	*****	29.75	*****	***	***	*****	**
720644	99999	201310091655	180	8	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	75	48	*****	29.76	*****	***	***	*****	**
720644	99999	201310091715	990	10	***	***	***	*	*	*	10.0	**	**	**	**	**	**	**	**	**	75	50	*****	29.76	*****	***	***	*****	**
720644	99999	201310091735	200	13	***	***	***	*	*	*	10.0	**	**	**	**	**	**	**	**	**	75	50	*****	29.75	*****	***	***	*****	**
720644	99999	201310091755	190	8	16	***	***	*	*	*	10.0	**	**	**	**	**	**	**	**	**	77	54	*****	29.75	*****	***	***	*****	**
720644	99999	201310091815	190	14	18	***	***	*	*	*	10.0	**	**	**	**	**	**	**	**	**	77	52	*****	29.74	*****	***	***	*****	**
720644	99999	201310091835	990	9	16	***	***	*	*	*	10.0	**	**	**	**	**	**	**	**	**	75	50	*****	29.74	*****	***	***	*****	**
720644	99999	201310091855	200	13	20	***	***	*	*	*	10.0	**	**	**	**	**	**	**	**	**	77	50	*****	29.74	*****	***	***	*****	**
720644	99999	201310091915	220	13	23	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	77	48	*****	29.73	*****	***	***	*****	**
720644	99999	201310091935	200	17	24	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	77	48	*****	29.72	*****	***	***	*****	**
720644	99999	201310091955	200	17	21	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	79	48	*****	29.71	*****	***	***	*****	**
720644	99999	201310092015	180	16	24	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	79	48	*****	29.70	*****	***	***	*****	**
720644	99999	201310092055	200	17	23	***	***	*	*	*	9.1	**	**	**	**	**	**	**	**	**	81	48	*****	29.69	*****	***	***	*****	**
720644	99999	201310092115	190	11	21	***	***	*	*	*	9.1	**	**	**	**	**	**	**	**	**	79	48	*****	29.68	*****	***	***	*****	**
720644	99999	201310092135	200	17	24	***	***	*	*	*	5.0	**	**	**	**	**	**	**	**	**	81	46	*****	29.67	*****	***	***	*****	**
720644	99999	201310092155	200	18	26	722	CLR	*	*	*	5.0	**	**	**	**	**	**	**	**	**	81	45	*****	29.67	*****	***	***	*****	**
720644	99999	201310092215	200	17	24	722	CLR	*	*	*	5.0	**	**	**	**	**	**	**	**	**	81	43	*****	29.67	*****	***	***	*****	**
720644	99999	201310092235	200	16	24	722	CLR	*	*	*	5.0	**	**	**	**	**	**	**	**	**	79	43	*****	29.67	*****	***	***	*****	**
720644	99999	201310092255	200	17	***	722	CLR	*	*	*	5.0	**	**	**	**	**	**	**	**	**	79	45	*****	29.66	*****	***	***	*****	**
720644	99999	201310092315	200	14	***	722	CLR	*	*	*	5.0	**	**	**	**	**	**	**	**	**	77	46	*****	29.66	*****	***	***	*****	**
720644	99999	201310092355	230	10	16	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	77	46	*****	29.66	*****	***	***	*****	**
720644	99999	201310100015	230	9	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	77	46	*****	29.65	*****	***	***	*****	**
720644	99999	201310100035	240	11	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	75	45	*****	29.66	*****	***	***	*****	**
720644	99999	201310100055	240	10	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	73	43	*****	29.66	*****	***	***	*****	**
720644	99999	201310100115	260	9	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	73	39	*****	29.66	*****	***	***	*****	**
720644	99999	201310100135	240	7	***	***	***	*	*	*	10.0	**	**	**	**	**	**	**	**	**	72	39	*****	29.66	*****	***	***	*****	**
720644	99999	201310100155	240	3	***	120	***	*	*	*	10.0	**	**	**	**	**	**	**	**	**	72	39	*****	29.67	*****	***	***	*****	**
720644	99999	201310100215	260	5	***	120	***	*	*	*	10.0	**	**	**	**	**	**	**	**	**	72	39	*****	29.67	*****	***	***	*****	**
720644	99999	201310100235	260	5	***	120	***	*	*	*	10.0	**	**	**	**	**	**	**	**	**	70	39	*****	29.68	*****	***	***	*****	**
720644	99999	201310100255	250	3	***	120	***	*	*	*	10.0	**	**	**	**	**	**	**	**	**	68	37	*****	29.68	*****	***	***	*****	

720644	99999	201310100315	***	0	***	120	***	*	*	10.0	**	**	**	**	**	**	**	**	70	37	*****	29.68	*****	***	***	*****	**
720644	99999	201310100335	***	0	***	120	***	*	*	10.0	**	**	**	**	**	**	**	**	68	37	*****	29.69	*****	***	***	*****	**
720644	99999	201310100355	130	3	***	120	***	*	*	10.0	**	**	**	**	**	**	**	**	68	37	*****	29.69	*****	***	***	*****	**
720644	99999	201310100415	160	9	***	120	***	*	*	10.0	**	**	**	**	**	**	**	**	66	41	*****	29.70	*****	***	***	*****	**
720644	99999	201310100455	180	8	***	120	***	*	*	10.0	**	**	**	**	**	**	**	**	68	46	*****	29.71	*****	***	***	*****	**
720644	99999	201310100515	210	9	***	120	***	*	*	10.0	**	**	**	**	**	**	**	**	66	45	*****	29.71	*****	***	***	*****	**
720644	99999	201310100535	230	11	***	120	***	*	*	10.0	**	**	**	**	**	**	**	**	68	39	*****	29.72	*****	***	***	*****	**
720644	99999	201310100555	240	10	***	120	***	*	*	10.0	**	**	**	**	**	**	**	**	66	39	*****	29.72	*****	***	***	*****	**
720644	99999	201310100615	250	14	***	120	***	*	*	10.0	**	**	**	**	**	**	**	**	66	39	*****	29.72	*****	***	***	*****	**
720644	99999	201310100635	240	15	18	120	***	*	*	10.0	**	**	**	**	**	**	**	**	66	37	*****	29.73	*****	***	***	*****	**
720644	99999	201310100655	250	11	***	55	***	*	*	10.0	**	**	**	**	**	**	**	**	66	37	*****	29.74	*****	***	***	*****	**
720644	99999	201310100715	270	9	***	55	***	*	*	10.0	**	**	**	**	**	**	**	**	64	37	*****	29.74	*****	***	***	*****	**
720644	99999	201310100735	260	6	***	55	***	*	*	10.0	**	**	**	**	**	**	**	**	64	37	*****	29.75	*****	***	***	*****	**
720644	99999	201310100755	220	7	***	55	***	*	*	10.0	**	**	**	**	**	**	**	**	63	37	*****	29.75	*****	***	***	*****	**

NWS Storm Reports

WWUS75 KPSR 091429

NPWPSR

URGENT - WEATHER MESSAGE

NATIONAL WEATHER SERVICE PHOENIX AZ

729 AM MST WED OCT 9 2013

AZZO20>023-025>028-CAZ031-032-100400-

/O. CON. KPSR. DU. Y. 0039. 131009T1800Z-131010T0400Z/

/O. CON. KPSR. WI. Y. 0013. 131009T1800Z-131010T0400Z/

LOWER COLORADO RIVER VALLEY AZ-WEST CENTRAL DESERTS-

NORTHWEST MARI COPA COUNTY-GREATER PHOENIX AREA-

YUMA/MARTINEZ LAKE AND VICINITY-SOUTHWEST DESERTS-

SOUTHWEST MARI COPA COUNTY-

NORTHWEST AND NORTH CENTRAL PINAL COUNTY-

LOWER COLORADO RIVER VALLEY CA-RIVERSIDE COUNTY/EASTERN DESERTS-

INCLUDING THE CITIES OF... EHRENBERG... PARKER... QUARTZSITE...

SALOME... BUCKEYE... NEW RIVER... WICKENBURG... MESA... PHOENIX...

FORTUNA FOOTHILLS... YUMA... TACNA... WELLTON... GILA BEND...

APACHE JUNCTION... CASA GRANDE... FLORENCE... BLYTHE...

CHIRIACO SUMMIT... DESERT CENTER

729 AM MST WED OCT 9 2013 /729 AM PDT WED OCT 9 2013/

... BLOWING DUST ADVISORY REMAINS IN EFFECT FROM 11 AM MST /11 AM
PDT/ THIS MORNING TO 9 PM MST /9 PM PDT/ THIS EVENING...

... WIND ADVISORY REMAINS IN EFFECT FROM 11 AM MST /11 AM PDT/
THIS MORNING TO 9 PM MST /9 PM PDT/ THIS EVENING...

A BLOWING DUST ADVISORY REMAINS IN EFFECT FROM 11 AM MST /11 AM
PDT/ THIS MORNING TO 9 PM MST /9 PM PDT/ THIS EVENING. A WIND
ADVISORY REMAINS IN EFFECT FROM 11 AM MST /11 AM PDT/ THIS
MORNING TO 9 PM MST /9 PM PDT/ THIS EVENING.

* AFFECTED AREA... THE LOWER DESERTS OF SOUTHEAST CALIFORNIA...
SOUTHWEST AND SOUTH CENTRAL ARIZONA. GUSTY SOUTHWEST WINDS
WILL BE PARTICULARLY STRONG IN SOUTH CENTRAL ARIZONA NEAR
PHOENIX... GILA BEND... AND CASA GRANDE.

* TIMING... INCREASING WINDS TODAY FROM LATE MORNING THROUGH
EARLY EVENING... PEAKING DURING THE LATE AFTERNOON.

* WINDS... SOUTHWEST WIND 25 TO 35 MPH WITH ISOLATED GUSTS TO 45
MPH.

* VISIBILITY... DROPPING TO 1 MILE OR LOWER AT TIMES IN BLOWING DUST... ESPECIALLY
NEAR OPEN FIELDS.

* IMPACTS... STRONG CROSSWINDS ARE POSSIBLE ALONG WITH REDUCED
VISIBILITIES IN BLOWING DUST. THIS WILL LEAD TO
DANGEROUS DRIVING CONDITIONS AT TIMES LATER TODAY.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

A WIND ADVISORY MEANS THAT SUSTAINED WIND SPEEDS OF BETWEEN
30 AND 40 MPH ARE EXPECTED... OR WIND GUSTS OF BETWEEN 40 AND
58 MPH. WINDS THIS STRONG CAN MAKE DRIVING DIFFICULT... ESPECIALLY
FOR HIGH PROFILE VEHICLES. IN ADDITION... STRONG WINDS OVER DESERT
AREAS COULD RESULT IN BRIEFLY LOWERED VISIBILITIES TO WELL UNDER
A MILE AT TIMES IN BLOWING DUST OR BLOWING SAND. USE EXTRA
CAUTION.

BE READY FOR A SUDDEN DROP IN VISIBILITY. IF YOU ENCOUNTER
BLOWING DUST OR BLOWING SAND ON THE ROADWAY OR SEE IT
APPROACHING... PULL OFF THE ROAD AS FAR AS POSSIBLE AND PUT YOUR
VEHICLE IN PARK. TURN THE LIGHTS ALL THE WAY OFF AND KEEP YOUR
FOOT OFF THE BRAKE PEDAL.

REMEMBER... PULL ASIDE... STAY ALIVE.

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WWUS75 KPSR 092028

NPWPSR

URGENT - WEATHER MESSAGE

NWS Storm Reports

NATIONAL WEATHER SERVICE PHOENIX AZ

128 PM MST WED OCT 9 2013

AZZO28-100400-

/O. UPG. KPSR. DU. Y. 0039. 000000T0000Z-131010T0400Z/

/O. NEW. KPSR. DS. W. 0011. 131009T2028Z-131009T2300Z/

/O. NEW. KPSR. DU. Y. 0040. 131009T2300Z-131010T0400Z/

/O. CON. KPSR. WI. Y. 0013. 000000T0000Z-131010T0400Z/

NORTHWEST AND NORTH CENTRAL PINAL COUNTY-

INCLUDING THE CITIES OF... APACHE JUNCTION... CASA GRANDE...

FLORENCE

128 PM MST WED OCT 9 2013

... DUST STORM WARNING IN EFFECT UNTIL 4 PM MST THIS AFTERNOON...

... WIND ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST THIS EVENING...

... BLOWING DUST ADVISORY IN EFFECT UNTIL 9 PM MST THIS EVENING...

THE NATIONAL WEATHER SERVICE IN PHOENIX HAS UPGRADED THE BLOWING DUST ADVISORY TO A DUST STORM WARNING... WHICH IS IN EFFECT UNTIL 4 PM MST THIS AFTERNOON. A WIND ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST THIS EVENING.

* AFFECTED AREA... PINAL COUNTY INCLUDING CASA GRANDE... FLORENCE AND AREAS ALONG STATE ROAD 347.

* TIMING... STRONG WINDS WILL PRODUCE DENSE BLOWING DUST THIS AFTERNOON AND THIS EVENING.

* WINDS... SOUTHWEST WIND 25 TO 35 MPH WITH ISOLATED GUSTS TO 45 MPH.

* VISIBILITY... DROPPING AS LOW AS A QUARTER OF A MILE AT TIMES IN BLOWING DUST... ESPECIALLY NEAR OPEN FIELDS.

* IMPACTS... STRONG CROSSWINDS ARE POSSIBLE ALONG WITH REDUCED VISIBILITIES IN BLOWING DUST. THIS WILL LEAD TO DANGEROUS DRIVING CONDITIONS AT TIMES LATER TODAY.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

BE READY FOR A SUDDEN DROP IN VISIBILITY TO NEAR ZERO. IF YOU ENCOUNTER BLOWING DUST OR BLOWING SAND ON THE ROADWAY OR SEE IT APPROACHING... PULL OFF THE ROAD AS FAR AS POSSIBLE AND PUT YOUR VEHICLE IN PARK. TURN THE LIGHTS ALL THE WAY OFF AND KEEP YOUR FOOT OFF THE BRAKE PEDAL.

REMEMBER... PULL ASIDE... STAY ALIVE.

BE READY FOR A SUDDEN DROP IN VISIBILITY. IF YOU ENCOUNTER BLOWING DUST OR BLOWING SAND ON THE ROADWAY OR SEE IT APPROACHING... PULL OFF THE ROAD AS FAR AS POSSIBLE AND PUT YOUR VEHICLE IN PARK. TURN THE LIGHTS ALL THE WAY OFF AND KEEP YOUR FOOT OFF THE BRAKE PEDAL.

REMEMBER... PULL ASIDE... STAY ALIVE.

A WIND ADVISORY MEANS THAT SUSTAINED WIND SPEEDS OF BETWEEN 30 AND 40 MPH ARE EXPECTED... OR WIND GUSTS OF BETWEEN 40 AND 58 MPH. WINDS THIS STRONG CAN MAKE DRIVING DIFFICULT... ESPECIALLY FOR HIGH PROFILE VEHICLES. IN ADDITION... STRONG WINDS OVER DESERT AREAS COULD RESULT IN BRIEFLY LOWERED VISIBILITIES TO WELL UNDER A MILE AT TIMES IN BLOWING DUST OR BLOWING SAND. USE EXTRA CAUTION.

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NWUS55 KPSR 092038

LSRPSR

PRELIMINARY LOCAL STORM REPORT

NATIONAL WEATHER SERVICE PHOENIX AZ

138 PM MST WED OCT 09 2013

.. TIME... .. EVENT... .. CITY LOCATION... .. LAT. LON... ..

.. DATE... .. MAG... .. COUNTY LOCATION.. ST... .. SOURCE... ..

.. REMARKS..

0115 PM DUST STORM 5 N MARI COPA 33.13N 112.05W
10/09/2013 PINAL AZ LAW ENFORCEMENT

NWS Storm Reports
0 TO 0.25 MI. VSBY IN BLOWING DUST ON HWY. 347 WITH
AUTO ACCIDENT.

NWUS55 KPSR 092153

LSRPSR

PRELIMINARY LOCAL STORM REPORT
NATIONAL WEATHER SERVICE PHOENIX AZ
252 PM MST WED OCT 09 2013

.. TIME... .. EVENT... .. CITY LOCATION... .. LAT. LON...
.. DATE... .. MAG... .. COUNTY LOCATION.. ST... .. SOURCE...
.. REMARKS..

0230 PM DUST STORM 8 N MARI COPA 33.17N 112.05W
10/09/2013 PINAL AZ NWS EMPLOYEE

VARIABLE VISIBILTY DECREASING TO NEAR ZERO AT TIMES
ALONG STATE ROUTE 347 FROM NEAR RIGGS ROAD TO THE GILA
RIVER.

WWUS75 KPSR 092159

NPWPSR

URGENT - WEATHER MESSAGE
NATIONAL WEATHER SERVICE PHOENIX AZ
259 PM MST WED OCT 9 2013

AZZ028-100400-

/O. EXT. KPSR. DS. W. 0011. 000000T0000Z-131010T0200Z/

/O. EXT. KPSR. DU. Y. 0040. 131010T0200Z-131010T0400Z/

/O. CON. KPSR. WI. Y. 0013. 000000T0000Z-131010T0400Z/

NORTHWEST AND NORTH CENTRAL PINAL COUNTY-
INCLUDING THE CITIES OF... APACHE JUNCTION... CASA GRANDE...
FLORENCE

259 PM MST WED OCT 9 2013

... DUST STORM WARNING NOW IN EFFECT UNTIL 7 PM MST THIS
EVENING...

... WIND ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST THIS EVENING...

... BLOWING DUST ADVISORY NOW IN EFFECT FROM 7 PM TO 9 PM MST THIS
EVENING...

THE DUST STORM WARNING IS NOW IN EFFECT UNTIL 7 PM MST THIS
EVENING. THE BLOWING DUST ADVISORY IS NOW IN EFFECT FROM 7 PM TO
9 PM MST THIS EVENING. A WIND ADVISORY REMAINS IN EFFECT UNTIL
9 PM MST THIS EVENING.

* AFFECTED AREA... PINAL COUNTY INCLUDING CASA GRANDE... FLORENCE
AND AREAS ALONG HIGHWAY 347.

* TIMING... STRONG WINDS WILL PRODUCE DENSE BLOWING DUST THIS
AFTERNOON AND THIS EVENING.

* WINDS... SOUTHWEST WIND 25 TO 35 MPH WITH ISOLATED GUSTS TO 45
MPH.

* VISIBILITY... DROPPING AS LOW AS A QUARTER OF A MILE AT TIMES
IN BLOWING DUST... ESPECIALLY NEAR OPEN FIELDS.

* IMPACTS... STRONG CROSSWINDS ARE POSSIBLE ALONG WITH REDUCED
VISIBILITIES IN BLOWING DUST. THIS WILL LEAD TO DANGEROUS
DRIVING CONDITIONS AT TIMES LATER TODAY.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

BE READY FOR A SUDDEN DROP IN VISIBILITY TO NEAR ZERO. IF YOU
ENCOUNTER BLOWING DUST OR BLOWING SAND ON THE ROADWAY OR SEE IT
APPROACHING... PULL OFF THE ROAD AS FAR AS POSSIBLE AND PUT YOUR
VEHICLE IN PARK. TURN THE LIGHTS ALL THE WAY OFF AND KEEP YOUR
FOOT OFF THE BRAKE PEDAL.

REMEMBER... PULL ASIDE... STAY ALIVE.

BE READY FOR A SUDDEN DROP IN VISIBILITY. IF YOU ENCOUNTER
BLOWING DUST OR BLOWING SAND ON THE ROADWAY OR SEE IT
APPROACHING... PULL OFF THE ROAD AS FAR AS POSSIBLE AND PUT YOUR
VEHICLE IN PARK. TURN THE LIGHTS ALL THE WAY OFF AND KEEP YOUR

NWS Storm Reports

FOOT OFF THE BRAKE PEDAL.

REMEMBER... PULL ASIDE... STAY ALIVE.

A WIND ADVISORY MEANS THAT SUSTAINED WIND SPEEDS OF BETWEEN 30 AND 40 MPH ARE EXPECTED... OR WIND GUSTS OF BETWEEN 40 AND 58 MPH. WINDS THIS STRONG CAN MAKE DRIVING DIFFICULT... ESPECIALLY FOR HIGH PROFILE VEHICLES. IN ADDITION... STRONG WINDS OVER DESERT AREAS COULD RESULT IN BRIEFLY LOWERED VISIBILITIES TO WELL UNDER A MILE AT TIMES IN BLOWING DUST OR BLOWING SAND. USE EXTRA CAUTION.

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AZZ020>023-025>027-CAZ031>033-100400-

/O. CON. KPSR. DU. Y. 0039. 000000T0000Z-131010T0400Z/

/O. CON. KPSR. WI. Y. 0013. 000000T0000Z-131010T0400Z/

LOWER COLORADO RIVER VALLEY AZ-WEST CENTRAL DESERTS-

NORTHWEST MARICOPA COUNTY-GREATER PHOENIX AREA-

YUMA/MARTINEZ LAKE AND VICINITY-SOUTHWEST DESERTS-

SOUTHWEST MARICOPA COUNTY-LOWER COLORADO RIVER VALLEY CA-

RIVERSIDE COUNTY/EASTERN DESERTS-IMPERIAL COUNTY-

INCLUDING THE CITIES OF... EHRENBERG... PARKER... QUARTZSITE...

SALOME... BUCKEYE... NEW RIVER... WICKENBURG... MESA... PHOENIX...

FORTUNA FOOTHILLS... YUMA... TACNA... WELLTON... GILA BEND...

BLYTHE... CHIRIACO SUMMIT... DESERT CENTER... BRAWLEY... CALEXICO...

EL CENTRO

259 PM MST WED OCT 9 2013 /259 PM PDT WED OCT 9 2013/

... BLOWING DUST ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST /9 PM PDT/ THIS EVENING...

... WIND ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST /9 PM PDT/ THIS EVENING...

A BLOWING DUST ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST /9 PM PDT/ THIS EVENING. A WIND ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST /9 PM PDT/ THIS EVENING.

* AFFECTED AREA... THE LOWER DESERTS OF SOUTHEAST CALIFORNIA... SOUTHWEST AND SOUTH CENTRAL ARIZONA. GUSTY SOUTHWEST WINDS WILL BE PARTICULARLY STRONG IN SOUTH CENTRAL ARIZONA NEAR PHOENIX AND GILA BEND.

* TIMING... WINDS PEAKING DURING LATE AFTERNOON... SUBSIDING SOMEWHAT THIS EVENING.

* WINDS... SOUTHWEST WIND 25 TO 35 MPH WITH ISOLATED GUSTS TO 45 MPH.

* VISIBILITY... DROPPING TO 1 MILE OR LOWER AT TIMES IN BLOWING DUST... ESPECIALLY NEAR OPEN FIELDS.

* IMPACTS... STRONG CROSSWINDS ARE POSSIBLE ALONG WITH REDUCED VISIBILITIES IN BLOWING DUST. THIS WILL LEAD TO DANGEROUS DRIVING CONDITIONS AT TIMES LATER TODAY.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

A WIND ADVISORY MEANS THAT SUSTAINED WIND SPEEDS OF BETWEEN 30 AND 40 MPH ARE EXPECTED... OR WIND GUSTS OF BETWEEN 40 AND 58 MPH. WINDS THIS STRONG CAN MAKE DRIVING DIFFICULT... ESPECIALLY FOR HIGH PROFILE VEHICLES. IN ADDITION... STRONG WINDS OVER DESERT AREAS COULD RESULT IN BRIEFLY LOWERED VISIBILITIES TO WELL UNDER A MILE AT TIMES IN BLOWING DUST OR BLOWING SAND. USE EXTRA CAUTION.

BE READY FOR A SUDDEN DROP IN VISIBILITY. IF YOU ENCOUNTER BLOWING DUST OR BLOWING SAND ON THE ROADWAY OR SEE IT APPROACHING... PULL OFF THE ROAD AS FAR AS POSSIBLE AND PUT YOUR VEHICLE IN PARK. TURN THE LIGHTS ALL THE WAY OFF AND KEEP YOUR FOOT OFF THE BRAKE PEDAL.

REMEMBER... PULL ASIDE... STAY ALIVE.

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NWS Storm Reports

WWUS75 KPSR 100158

NPWPSR

URGENT - WEATHER MESSAGE

NATIONAL WEATHER SERVICE PHOENIX AZ

658 PM MST WED OCT 9 2013

AZZ028-100400-

/O. CAN. KPSR. DS. W. 0011. 000000T0000Z-131010T0200Z/

/O. CON. KPSR. WI. Y. 0013. 000000T0000Z-131010T0400Z/

/O. CON. KPSR. DU. Y. 0040. 131010T0200Z-131010T0400Z/

NORTHWEST AND NORTH CENTRAL PINAL COUNTY-

INCLUDING THE CITIES OF... APACHE JUNCTION... CASA GRANDE...

FLORENCE... MARI COPA

658 PM MST WED OCT 9 2013

... WIND ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST THIS EVENING...

... BLOWING DUST ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST THIS

EVENING...

... DUST STORM WARNING IS CANCELLED...

THE NATIONAL WEATHER SERVICE IN PHOENIX HAS CANCELLED THE DUST STORM WARNING. A WIND ADVISORY AND BLOWING DUST ADVISORY REMAIN IN EFFECT UNTIL 9 PM MST THIS EVENING.

* AFFECTED AREA... NORTHWEST PINAL COUNTY INCLUDING CASA GRANDE... FLORENCE... MARI COPA AND AREAS ALONG HIGHWAY 347.

* TIMING... STRONG WINDS WILL CONTINUE TO PRODUCE AREAS OF DENSE BLOWING DUST THIS EVENING.

* WINDS... SOUTHWEST WIND 25 TO 35 MPH WITH ISOLATED GUSTS TO 40 MPH.

* VISIBILITY... DROPPING TO 1 MILE OR LOWER AT TIMES IN BLOWING DUST... ESPECIALLY NEAR OPEN FIELDS AND DESERT AREAS.

* IMPACTS... STRONG CROSSWINDS ARE POSSIBLE ALONG WITH REDUCED VISIBILITIES IN BLOWING DUST. THIS WILL LEAD TO DANGEROUS DRIVING CONDITIONS AT TIMES.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

BE READY FOR A SUDDEN DROP IN VISIBILITY. IF YOU ENCOUNTER BLOWING DUST OR BLOWING SAND ON THE ROADWAY OR SEE IT APPROACHING... PULL OFF THE ROAD AS FAR AS POSSIBLE AND PUT YOUR VEHICLE IN PARK. TURN THE LIGHTS ALL THE WAY OFF AND KEEP YOUR FOOT OFF THE BRAKE PEDAL. REMEMBER... PULL ASIDE... STAY ALIVE.

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AZZ020>023-025-026-CAZ031>033-100400-

/O. EXT. KPSR. DU. Y. 0039. 000000T0000Z-131010T0200Z/

/O. CON. KPSR. WI. Y. 0013. 000000T0000Z-131010T0400Z/

LOWER COLORADO RIVER VALLEY AZ-WEST CENTRAL DESERTS-

NORTHWEST MARI COPA COUNTY-GREATER PHOENIX AREA-

YUMA/MARTINEZ LAKE AND VICINITY-SOUTHWEST DESERTS-

LOWER COLORADO RIVER VALLEY CA-RIVERSIDE COUNTY/EASTERN DESERTS-

IMPERIAL COUNTY-

INCLUDING THE CITIES OF... EHRENBERG... PARKER... QUARTZSITE...

SALOME... BUCKEYE... NEW RIVER... WICKENBURG... MESA... PHOENIX...

FORTUNA FOOTHILLS... YUMA... TACNA... WELLTON... BLYTHE...

CHIRIACO SUMMIT... DESERT CENTER... BRAWLEY... CALEXICO... EL CENTRO

658 PM MST WED OCT 9 2013 /658 PM PDT WED OCT 9 2013/

... BLOWING DUST ADVISORY WILL EXPIRE AT 7 PM MST /7 PM PDT/ THIS EVENING...

... WIND ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST /9 PM

PDT/ THIS EVENING...

THE BLOWING DUST ADVISORY WILL EXPIRE AT 7 PM MST /7 PM PDT/ THIS EVENING. A WIND ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST /9 PM PDT/ THIS EVENING.

* AFFECTED AREA... THE LOWER DESERTS OF SOUTHEAST CALIFORNIA...

NWS Storm Reports

SOUTHWEST AND SOUTH CENTRAL ARIZONA.

- * TIMING... WINDS WILL CONTINUE TO REMAIN ELEVATED BEFORE SUBSIDING FURTHER INTO THE EVENING.
- * WINDS... SOUTHWEST WIND 20 TO 30 MPH WITH ISOLATED GUSTS TO 40 MPH.
- * IMPACTS... VEHICLE CROSSWINDS ARE POSSIBLE ALONG WITH REDUCED VISIBILITIES IN BLOWING DUST. VISIBILITIES COULD BE AS LOW AS 1 MILE... ESPECIALLY NEAR OPEN FIELDS AND OPEN DESERT AREAS. THIS WILL LEAD TO DANGEROUS DRIVING CONDITIONS AT TIMES.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

A WIND ADVISORY MEANS THAT SUSTAINED WIND SPEEDS OF BETWEEN 30 AND 40 MPH ARE EXPECTED... OR WIND GUSTS OF BETWEEN 40 AND 58 MPH. WINDS THIS STRONG CAN MAKE DRIVING DIFFICULT... ESPECIALLY FOR HIGH PROFILE VEHICLES. IN ADDITION... STRONG WINDS OVER DESERT AREAS COULD RESULT IN BRIEFLY LOWERED VISIBILITIES TO WELL UNDER A MILE AT TIMES IN BLOWING DUST OR BLOWING SAND. USE EXTRA CAUTION.

REMEMBER... PULL ASIDE... STAY ALIVE.

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AZZ027-100400-

/O. CON. KPSR. DU. Y. 0039. 000000T0000Z-131010T0400Z/

/O. CON. KPSR. WI. Y. 0013. 000000T0000Z-131010T0400Z/

SOUTHWEST MARICOPA COUNTY-

INCLUDING THE CITY OF... GILA BEND

658 PM MST WED OCT 9 2013

... BLOWING DUST ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST THIS EVENING...

... WIND ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST THIS EVENING...

A BLOWING DUST ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST THIS EVENING. A WIND ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST THIS EVENING.

- * AFFECTED AREA... THE LOWER DESERTS OF SOUTHWEST AND SOUTH CENTRAL ARIZONA. GUSTY SOUTHWEST WINDS WILL BE PARTICULARLY STRONG IN SOUTH CENTRAL ARIZONA NEAR PHOENIX AND GILA BEND.
- * TIMING... WINDS PEAKING SUBSIDING LATER INTO THIS EVENING.
- * WINDS... SOUTHWEST WIND 25 TO 35 MPH WITH ISOLATED GUSTS TO 45 MPH.
- * VISIBILITY... DROPPING TO 1 MILE OR LOWER AT TIMES IN BLOWING DUST... ESPECIALLY NEAR OPEN FIELDS AND OPEN DESERT AREAS.
- * IMPACTS... STRONG CROSSWINDS ARE POSSIBLE ALONG WITH REDUCED VISIBILITIES IN BLOWING DUST. THIS WILL LEAD TO DANGEROUS DRIVING CONDITIONS AT TIMES.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

A WIND ADVISORY MEANS THAT SUSTAINED WIND SPEEDS OF BETWEEN 30 AND 40 MPH ARE EXPECTED... OR WIND GUSTS OF BETWEEN 40 AND 58 MPH. WINDS THIS STRONG CAN MAKE DRIVING DIFFICULT... ESPECIALLY FOR HIGH PROFILE VEHICLES. IN ADDITION... STRONG WINDS OVER DESERT AREAS COULD RESULT IN BRIEFLY LOWERED VISIBILITIES TO WELL UNDER A MILE AT TIMES IN BLOWING DUST OR BLOWING SAND. USE EXTRA CAUTION.

REMEMBER... PULL ASIDE... STAY ALIVE.

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WWUS75 KPSR 100217

NPWPSR

URGENT - WEATHER MESSAGE

NATIONAL WEATHER SERVICE PHOENIX AZ

717 PM MST WED OCT 9 2013

AZZ020>023-025-026-CAZ031>033-100400-

NWS Storm Reports

/O. EXP. KPSR. DU. Y. 0039. 000000T0000Z-131010T0200Z/
/O. CON. KPSR. WI. Y. 0013. 000000T0000Z-131010T0400Z/
LOWER COLORADO RIVER VALLEY AZ-WEST CENTRAL DESERTS-
NORTHWEST MARI COPA COUNTY-GREATER PHOENIX AREA-
YUMA/MARTINEZ LAKE AND VICINITY-SOUTHWEST DESERTS-
LOWER COLORADO RIVER VALLEY CA-RIVERSIDE COUNTY/EASTERN DESERTS-
IMPERIAL COUNTY-
INCLUDING THE CITIES OF... EHRENBERG... PARKER... QUARTZSITE...
SALOME... BUCKEYE... NEW RIVER... WICKENBURG... MESA... PHOENIX...
FORTUNA FOOTHILLS... YUMA... TACNA... WELLTON... BLYTHE...
CHIRIACO SUMMIT... DESERT CENTER... BRAWLEY... CALEXICO... EL CENTRO
717 PM MST WED OCT 9 2013 /717 PM PDT WED OCT 9 2013/
... WIND ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST /9 PM PDT/ THIS
EVENING...
... BLOWING DUST ADVISORY HAS EXPIRED...
THE BLOWING DUST ADVISORY IS NO LONGER IN EFFECT. A WIND ADVISORY
REMAINS IN EFFECT UNTIL 9 PM MST /9 PM PDT/ THIS EVENING.
* AFFECTED AREA... THE LOWER DESERTS OF SOUTHEAST CALIFORNIA...
SOUTHWEST AND SOUTH CENTRAL ARIZONA.
* TIMING... WINDS WILL CONTINUE TO REMAIN ELEVATED BEFORE
SUBSIDING FURTHER INTO THE EVENING.
* WINDS... SOUTHWEST WIND 20 TO 30 MPH WITH ISOLATED GUSTS TO 40
MPH.
* IMPACTS... VEHICLE CROSSWINDS ARE POSSIBLE ALONG WITH REDUCED
VISIBILITIES IN BLOWING DUST. VISIBILITIES COULD BE AS LOW AS 1
MILE... ESPECIALLY NEAR OPEN FIELDS AND OPEN DESERT AREAS. THIS WILL
LEAD TO DANGEROUS DRIVING CONDITIONS AT TIMES.
PRECAUTIONARY/PREPAREDNESS ACTIONS...
A WIND ADVISORY MEANS THAT SUSTAINED WIND SPEEDS OF BETWEEN
30 AND 40 MPH ARE EXPECTED... OR WIND GUSTS OF BETWEEN 40 AND
58 MPH. WINDS THIS STRONG CAN MAKE DRIVING DIFFICULT... ESPECIALLY
FOR HIGH PROFILE VEHICLES. IN ADDITION... STRONG WINDS OVER DESERT
AREAS COULD RESULT IN BRIEFLY LOWERED VISIBILITIES TO WELL UNDER
A MILE AT TIMES IN BLOWING DUST OR BLOWING SAND. USE EXTRA
CAUTION.
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AZZ027-100400-
/O. CON. KPSR. DU. Y. 0039. 000000T0000Z-131010T0400Z/
/O. CON. KPSR. WI. Y. 0013. 000000T0000Z-131010T0400Z/
SOUTHWEST MARI COPA COUNTY-
INCLUDING THE CITY OF... GILA BEND
717 PM MST WED OCT 9 2013
... BLOWING DUST ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST THIS
EVENING...
... WIND ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST THIS EVENING...
A BLOWING DUST ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST THIS
EVENING. A WIND ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST THIS
EVENING.
* AFFECTED AREA... THE LOWER DESERTS OF SOUTHWEST AND SOUTH
CENTRAL ARIZONA. GUSTY SOUTHWEST WINDS WILL BE PARTICULARLY
STRONG IN SOUTH CENTRAL ARIZONA NEAR PHOENIX AND GILA BEND.
* TIMING... WINDS PEAKING SUBSIDING LATER INTO THIS EVENING.
* WINDS... SOUTHWEST WIND 25 TO 35 MPH WITH ISOLATED GUSTS TO 45
MPH.
* VISIBILITY... DROPPING TO 1 MILE OR LOWER AT TIMES IN BLOWING
DUST... ESPECIALLY NEAR OPEN FIELDS AND OPEN DESERT AREAS.
* IMPACTS... STRONG CROSSWINDS ARE POSSIBLE ALONG WITH REDUCED
VISIBILITIES IN BLOWING DUST. THIS WILL LEAD TO DANGEROUS
DRIVING CONDITIONS AT TIMES.
PRECAUTIONARY/PREPAREDNESS ACTIONS...

NWS Storm Reports

A WIND ADVISORY MEANS THAT SUSTAINED WIND SPEEDS OF BETWEEN 30 AND 40 MPH ARE EXPECTED...OR WIND GUSTS OF BETWEEN 40 AND 58 MPH. WINDS THIS STRONG CAN MAKE DRIVING DIFFICULT...ESPECIALLY FOR HIGH PROFILE VEHICLES. IN ADDITION...STRONG WINDS OVER DESERT AREAS COULD RESULT IN BRIEFLY LOWERED VISIBILITIES TO WELL UNDER A MILE AT TIMES IN BLOWING DUST OR BLOWING SAND. USE EXTRA CAUTION.

REMEMBER...PULL ASIDE...STAY ALIVE.

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AZZ028-100400-

/O. CON. KPSR. DU. Y. 0040. 000000T0000Z-131010T0400Z/

/O. CON. KPSR. WI. Y. 0013. 000000T0000Z-131010T0400Z/

NORTHWEST AND NORTH CENTRAL PINAL COUNTY-
INCLUDING THE CITIES OF...APACHE JUNCTION...CASA GRANDE...

FLORENCE

717 PM MST WED OCT 9 2013

...BLOWING DUST ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST THIS EVENING...

...WIND ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST THIS EVENING...

A BLOWING DUST ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST THIS EVENING. A WIND ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST THIS EVENING.

* AFFECTED AREA...NORTHWEST PINAL COUNTY INCLUDING CASA GRANDE... FLORENCE...MARI COPA AND AREAS ALONG HIGHWAY 347.

* TIMING...STRONG WINDS WILL CONTINUE TO PRODUCE AREAS OF DENSE BLOWING DUST THIS EVENING.

* WINDS...SOUTHWEST WIND 25 TO 35 MPH WITH ISOLATED GUSTS TO 40 MPH.

* VISIBILITY...DROPPING TO 1 MILE OR LOWER AT TIMES IN BLOWING DUST...ESPECIALLY NEAR OPEN FIELDS AND DESERT AREAS.

* IMPACTS...STRONG CROSSWINDS ARE POSSIBLE ALONG WITH REDUCED VISIBILITIES IN BLOWING DUST. THIS WILL LEAD TO DANGEROUS DRIVING CONDITIONS AT TIMES.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

BE READY FOR A SUDDEN DROP IN VISIBILITY. IF YOU ENCOUNTER BLOWING DUST OR BLOWING SAND ON THE ROADWAY OR SEE IT APPROACHING...PULL OFF THE ROAD AS FAR AS POSSIBLE AND PUT YOUR VEHICLE IN PARK. TURN THE LIGHTS ALL THE WAY OFF AND KEEP YOUR FOOT OFF THE BRAKE PEDAL.

REMEMBER...PULL ASIDE...STAY ALIVE.

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WWUS75 KPSR 100349

NPWPSR

URGENT - WEATHER MESSAGE

NATIONAL WEATHER SERVICE PHOENIX AZ

849 PM MST WED OCT 9 2013

AZZ027-100500-

/O. CAN. KPSR. DU. Y. 0039. 000000T0000Z-131010T0400Z/

/O. CAN. KPSR. WI. Y. 0013. 000000T0000Z-131010T0400Z/

SOUTHWEST MARI COPA COUNTY-
INCLUDING THE CITY OF...GILA BEND

849 PM MST WED OCT 9 2013

...BLOWING DUST ADVISORY IS CANCELLED...

...WIND ADVISORY IS CANCELLED...

THE NATIONAL WEATHER SERVICE IN PHOENIX HAS CANCELLED THE BLOWING DUST ADVISORY AND THE WIND ADVISORY.

THE STRONGEST WINDS ASSOCIATED WITH THE COLD FRONT HAVE DECREASED

NWS Storm Reports

THROUGH THE EVENING... FALLING BELOW ADVISORY LEVELS. BREEZY WEST TO
SOUTHWEST WINDS WILL CONTINUE THROUGH THE EVENING... WITH ISOLATED
GUSTS OF 20 TO 25 MPH POSSIBLE. WHILE THE THREAT FOR WIDESPREAD
BLOWING DUST HAS DIMINISHED... ISOLATED PATCHES OF BLOWING DUST MAY
STILL OCCUR WITH THE STRONGEST GUSTS... ESPECIALLY NEAR OPEN FIELDS OR
OPEN DESERT AREAS.
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AZZ028-100500-

/O. CAN. KPSR. DU. Y. 0040. 000000T0000Z-131010T0400Z/

/O. CAN. KPSR. WI. Y. 0013. 000000T0000Z-131010T0400Z/

NORTHWEST AND NORTH CENTRAL PINAL COUNTY-

INCLUDING THE CITIES OF... APACHE JUNCTION... CASA GRANDE...
FLORENCE

849 PM MST WED OCT 9 2013

... BLOWING DUST ADVISORY IS CANCELLED...

... WIND ADVISORY IS CANCELLED...

THE NATIONAL WEATHER SERVICE IN PHOENIX HAS CANCELLED THE BLOWING
DUST ADVISORY AND THE WIND ADVISORY.

THE STRONGEST WINDS ASSOCIATED WITH THE COLD FRONT HAVE DECREASED
THROUGH THE EVENING... FALLING BELOW ADVISORY LEVELS. BREEZY WEST TO
SOUTHWEST WINDS WILL CONTINUE THROUGH THE EVENING... WITH ISOLATED
GUSTS OF 20 TO 25 MPH POSSIBLE. WHILE THE THREAT FOR WIDESPREAD
BLOWING DUST HAS DIMINISHED... ISOLATED PATCHES OF BLOWING DUST MAY
STILL OCCUR WITH THE STRONGEST GUSTS... ESPECIALLY NEAR OPEN FIELDS OR
OPEN DESERT AREAS.

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AZZ020>026-CAZ030>033-100500-

/O. CAN. KPSR. WI. Y. 0013. 000000T0000Z-131010T0400Z/

LOWER COLORADO RIVER VALLEY AZ-WEST CENTRAL DESERTS-

NORTHWEST MARICOPA COUNTY-GREATER PHOENIX AREA-

SOUTHERN GILA COUNTY/TONTO NATIONAL FOREST FOOTHILLS-

YUMA/MARTINEZ LAKE AND VICINITY-SOUTHWEST DESERTS-

JOSHUA TREE NATIONAL PARK-LOWER COLORADO RIVER VALLEY CA-

RIVERSIDE COUNTY/EASTERN DESERTS-IMPERIAL COUNTY-

INCLUDING THE CITIES OF... EHRENBERG... PARKER... QUARTZSITE...
SALOME... BUCKEYE... NEW RIVER... WICKENBURG... MESA... PHOENIX...
GLOBE... MIAMI... SAN CARLOS... SUPERIOR... TOP-OF-THE-WORLD... FORTUNA
FOOTHILLS... YUMA... TACNA... WELLTON... COTTONWOOD VISITOR
CENTER... BLYTHE... CHIRIACO SUMMIT... DESERT
CENTER... BRAWLEY... CALEXICO... EL CENTRO

849 PM MST WED OCT 9 2013 /849 PM PDT WED OCT 9 2013/

... WIND ADVISORY IS CANCELLED...

THE NATIONAL WEATHER SERVICE IN PHOENIX HAS CANCELLED THE WIND
ADVISORY.

THE STRONGEST WINDS ASSOCIATED WITH THE COLD FRONT HAVE GREATLY
DIMINISHED AND HAVE FALLEN BELOW ADVISORY THRESHOLDS. ELEVATED WEST
TO SOUTHWEST WINDS WILL CONTINUE OVERNIGHT... WITH ISOLATED GUSTS UP
TO 25 MPH POSSIBLE.

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VISIT US ON FACEBOOK... TWITTER... AND AT WEATHER.GOV/PHOENIX

APPENDIX C

NOTICE OF PUBLIC COMMENT PERIOD

Request for Public Comments on Exceptional Events in the Greater Phoenix Area

In 2005, Congress identified a need to account for events that result in exceedances of the National Ambient Air Quality Standards (NAAQS) that are exceptional in nature (e.g., not expected to reoccur or caused by acts of nature beyond man-made controls.) In response, EPA promulgated the Exceptional Events Rule (EER) to address exceptional events in 40 CFR Parts 50 and 51 on March 22, 2007 (72 FR 13560). On May 10, 2013, EPA released interim guidance documents to State, tribal and local air agencies for review. These guidance documents clarify key provisions of the 2007 EER in response to questions and issues that have arisen since the rule was promulgated. The EER allows for states and tribes to “flag” air quality monitoring data as an exceptional event. If flagged, these data can be excluded from consideration in air quality planning if EPA concurs with the demonstration submitted by the flagging agency documenting that all procedural and technical requirements have been met.

Pursuant to 40 CFR 50.14(c)(3)(i), the Arizona Department of Environmental Quality (ADEQ) is soliciting comments on its final demonstrations of events that have caused elevated concentrations of PM₁₀ and PM_{2.5} in the Greater Phoenix Area on June 30, and elevated concentrations of PM₁₀ on July 2, August 17, August 26, and October 9, 2013. ADEQ has decided to flag these episodes based on these analyses. Copies of the demonstrations are available for review beginning Monday, January 13, 2014 on the ADEQ website at www.azdeq.gov/environ/air/plan/nee.html. Interested parties can submit written comments throughout the comment period which will end at 5:00 p.m. on Tuesday, February 11, 2014. Any comments received will be responded to and forwarded to EPA with the final demonstrations.

Written comments should be addressed, faxed, or e-mailed to:

Andra Juniel, Air Assessment Section, Arizona Department of Environmental Quality, 1110 W. Washington Street, 3415-A, Phoenix, AZ 85007, PHONE: (602) 771-4417; FAX: (602) 771-2366, E-mail: juniel.andra@azdeq.gov.

In addition to being available on-line, copies of the analyses are available for review, Monday through Friday, 8:30 a.m. to 4:30 p.m., at the ADEQ Records Management Center, 1110 W. Washington St., Phoenix, AZ, 85007, Attn: Records Center, (602) 771-4380, email: recordscenter@azdeq.gov.

Persons with a disability may request reasonable accommodation, such as a sign language interpreter, by contacting Alicia Pollard at (602) 771-4791 or at pollard.alicia@azdeq.gov. The TDD line for hearing impaired individuals is (602) 771-4829. Requests should be made as early as possible to allow time to arrange for the accommodation.