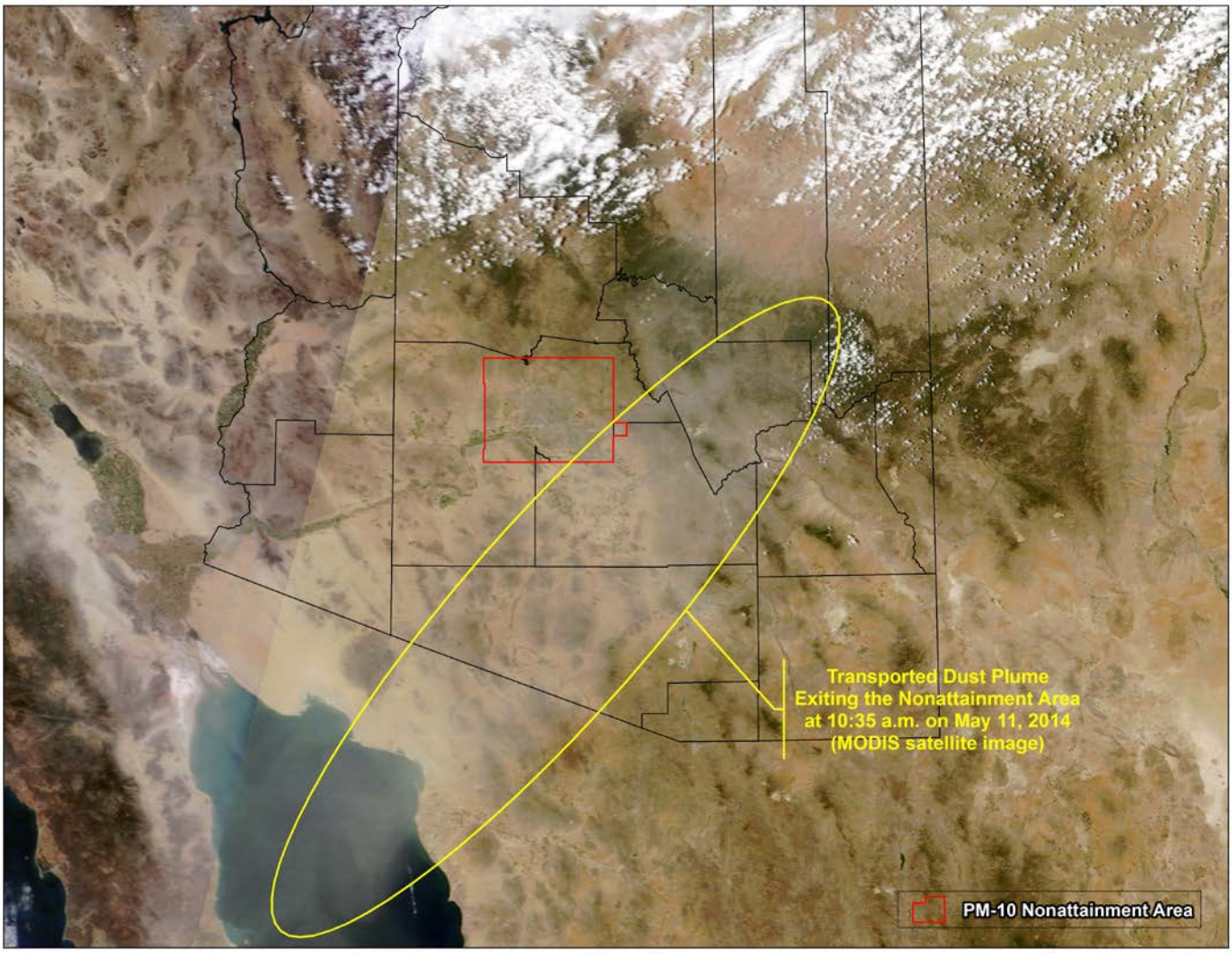
State of Arizona Exceptional Event Documentation for May 11, 2014, for the Maricopa County PM_{10} Nonattainment Area

Produced by:

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

FINAL Report
August, 2014



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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 May 11, 2014. More information on ADEQ's forecasting program can be found in Section IV. The forecast products that were issued for May 11, 2014, 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 will submit a letter to EPA Region 9 Air Division Director, Deborah Jordan, on September 8, 2014, notifying EPA of ADEQ's intent to flag data in AQS and submit documentation to EPA by October

2014 for the May 11, 2014, exceptional event. This assessment report serves as the demonstration supporting the flagging of these data. 12 Maricopa County monitors have been flagged as exceeding the 24-hour PM_{10} standard as a result of the high wind exceptional event:

Central Phoenix (04-013-3002-81102-4), **Durango Complex** (04-013-9812-81102-1), **Dysart** (04-013-4010-81102-1), **Glendale** (04-013-2001-81102-1), **Greenwood** (04-013-3010-81102-1), **JLG Supersite** (04-013-9997-81102-3), **North Phoenix** (04-013-1004-81102-1), **South Phoenix** (04-013-4003-81102-1), **South Scottsdale** (04-013-3003-81102-1), **West 43rd Avenue** (04-013-4009-81102-1), **West Phoenix** (04-013-0019-81102-1), and **Zuni Hills** (04-013-4016-81102-1).

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 September 8, 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 E 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 June 30, 2017.

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 transported dust event that transpired on May 11, 2014, 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 May 11, 2014, was not reasonably controllable or preventable.

Section V of this assessment establishes a clear causal relationship between the natural event on May 11, 2014, and the exceedances of the 24-hour PM_{10} standard at 12 monitoring stations. 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 May 11, 2014, produced PM_{10} 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 exceedances and concludes there would have been no exceedances on May 11, 2014, but for the presence of the natural event.

II. CONCEPTUAL MODEL

Geographic Setting and Climate

Geographic Setting

The Maricopa County PM_{10} nonattainment area 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 area, the topography of the area is generally flat. The 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 area 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 PM_{10} nonattainment area contains a fairly dense network of PM_{10} 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 the nonattainment area, as well as the locations of PM_{10} monitors in the nonattainment area and 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 PM_{10} 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.

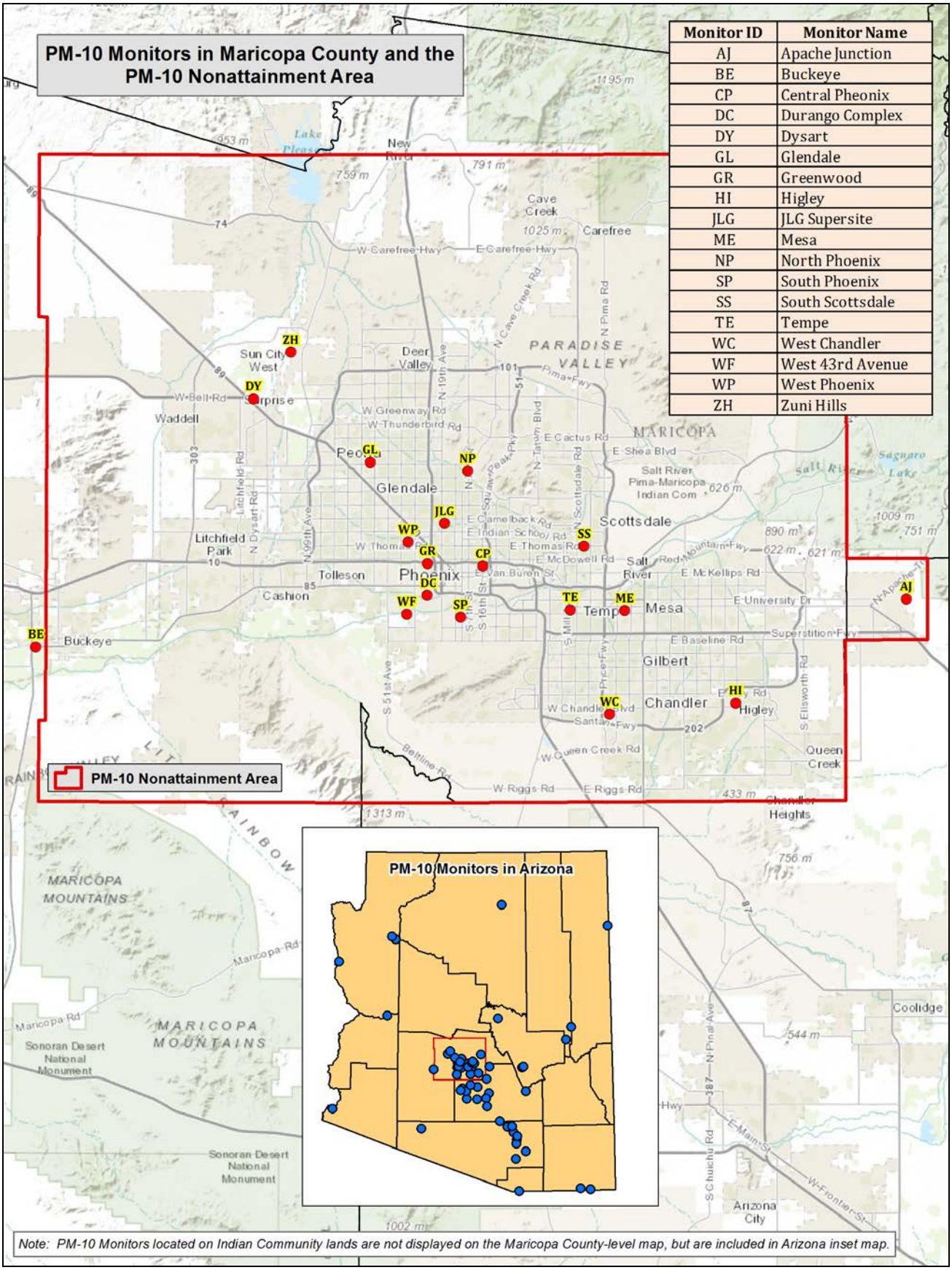

Figure 2-1. Maricopa County PM_{10} nonattainment area geographic setting and PM_{10} monitor locations.

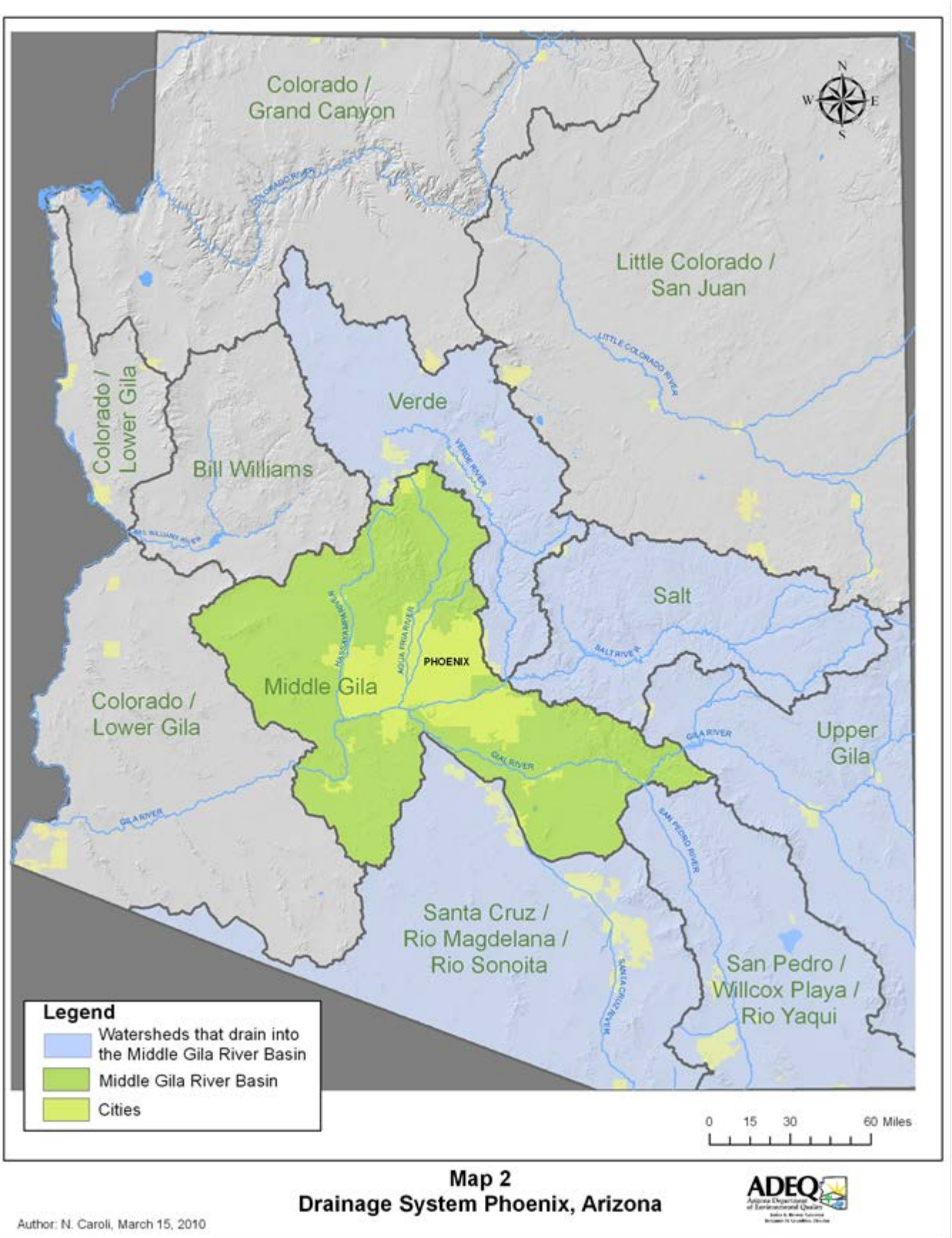

Figure 2-2. Drainage basins of the State of Arizona.

Climate

The Maricopa County PM_{10} nonattainment area 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 100ºF an average of 110 days during the year and highs top 110ºF an average of 18 days during the year. The area 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 the nonattainment area and the rest of Arizona. While these weather patterns describe the general climatology for the nonattainment area over a long period of time, the area and the entire state of Arizona is also prone to a high degree of variability in these weather patterns from year to year.

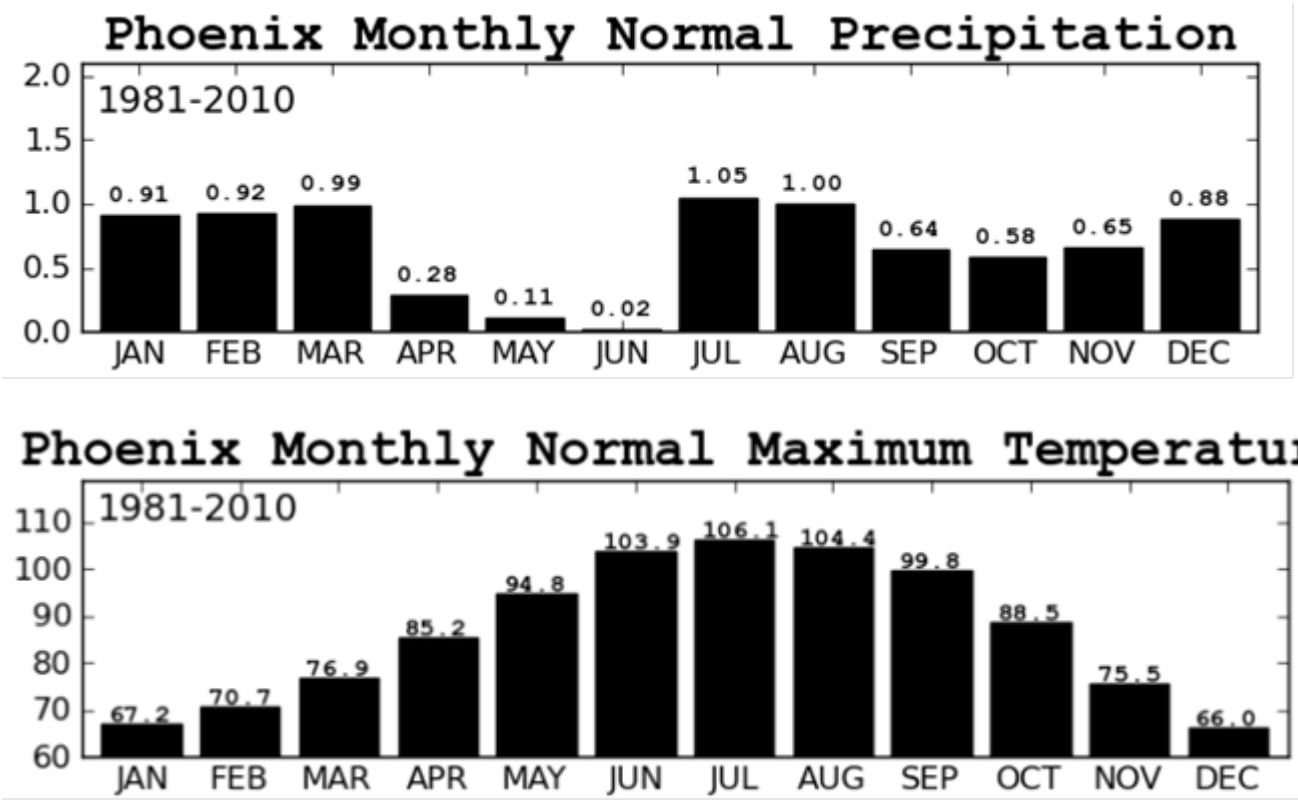

Figure 2-3 Phoenix monthly precipitation (top) and maximum temperature (bottom) climatology (source: National Weather Service).

Low Pressure System Transported Dust Event Summary

According to the National Weather Service (NWS), in the late evening hours of May 10, 2014, a low pressure system and associated dry cold front generated large amounts of dust due to gusts over 40 mph in the deserts of southeastern California and western Arizona (See Appendix B). Additional evidence that the dust was generated in these areas is verified in the PM_{10} exceedances recorded in Imperial County, California (May 10 and May 11, 2014) and Yuma, Arizona (May 11, 2014). This dust became lofted into the atmosphere due to vigorous mixing caused by the approaching cold front. In the early morning hours of May 11, 2014, the dust spread into the central deserts of Arizona and formed a thick haze. The dust layer was clearly visible on satellite imagery, per National Oceanic and Atmospheric Administration (NOAA) dust/smoke text reports (See Appendix B). Figure 2–4 displays the approaching low pressure system and cold front in Arizona on May 11, 2014. Wind fields associated with the passing of the low pressure system are displayed in Figure 2–5. Figure 2–6 shows a satellite image of the dust plume as it crosses Arizona.

At approximately 3:00 AM, the dust plume entered the western portion of the PM_{10} nonattainment area on prevailing south-southwest winds. Pre-frontal sustained winds were generally in the low teens with gusts up to 26 mph. While some local PM_{10} may have been generated with the approach of the cold front, the vast majority of the dust and PM_{10} was transported in from the deserts of southeastern California and western Arizona, as verified in satellite images of the event. From 3:00 AM until approximately 7:30 AM, the transported dust slowly made its way eastward across the PM_{10} nonattainment area. Visibilities as low as 2.0 miles were recorded at several airports throughout the nonattainment area during this period. Five-minute PM_{10} concentrations were as high as 1,257 $\mu g/m^3$, with seven different nonattainment monitors recording five-minute concentrations above 1,000 $\mu g/m^3$. The arrival of the transported dust plume resulted in the exceedance of 12 PM_{10} monitoring sites within the nonattainment area.

At approximately 8:00 AM, stronger west-northwest post-frontal winds sustained up to 28 mph and gusting as high as 39 mph entered the western portion of the PM_{10} nonattainment. These stronger winds persisted throughout the late morning and early afternoon, quickly pushing the dust plume eastward out of the PM_{10} nonattainment area. Some local dust was likely generated during the arrival of the stronger post-frontal winds, but PM_{10} monitoring sites were generally below 150 $\mu g/m^3$ as the post-frontal winds reached each monitoring site. By 12:30 PM, all monitors in the nonattainment area were recording normal PM_{10} concentrations and visibilities as high as 35 miles were registered at airports in the southeast portion of the nonattainment area. PM_{10} concentrations would remain at normal levels for the remainder of the day on May 11, 2014.

As seen in Figure 2–7, moderate to extreme drought conditions throughout California and Arizona likely exacerbated the amount of dust the low pressure system was able to entrain. No precipitation was recorded at PM_{10} nonattainment area NWS stations in conjunction with the passing of this low pressure system.

As a summary of the event, Figure 2–8 displays an hourly graph of PM_{10} concentrations throughout Maricopa County and the nonattainment area. Table 2–1 contains available PM_{10} concentration data from all recorded monitors throughout the state of Arizona.

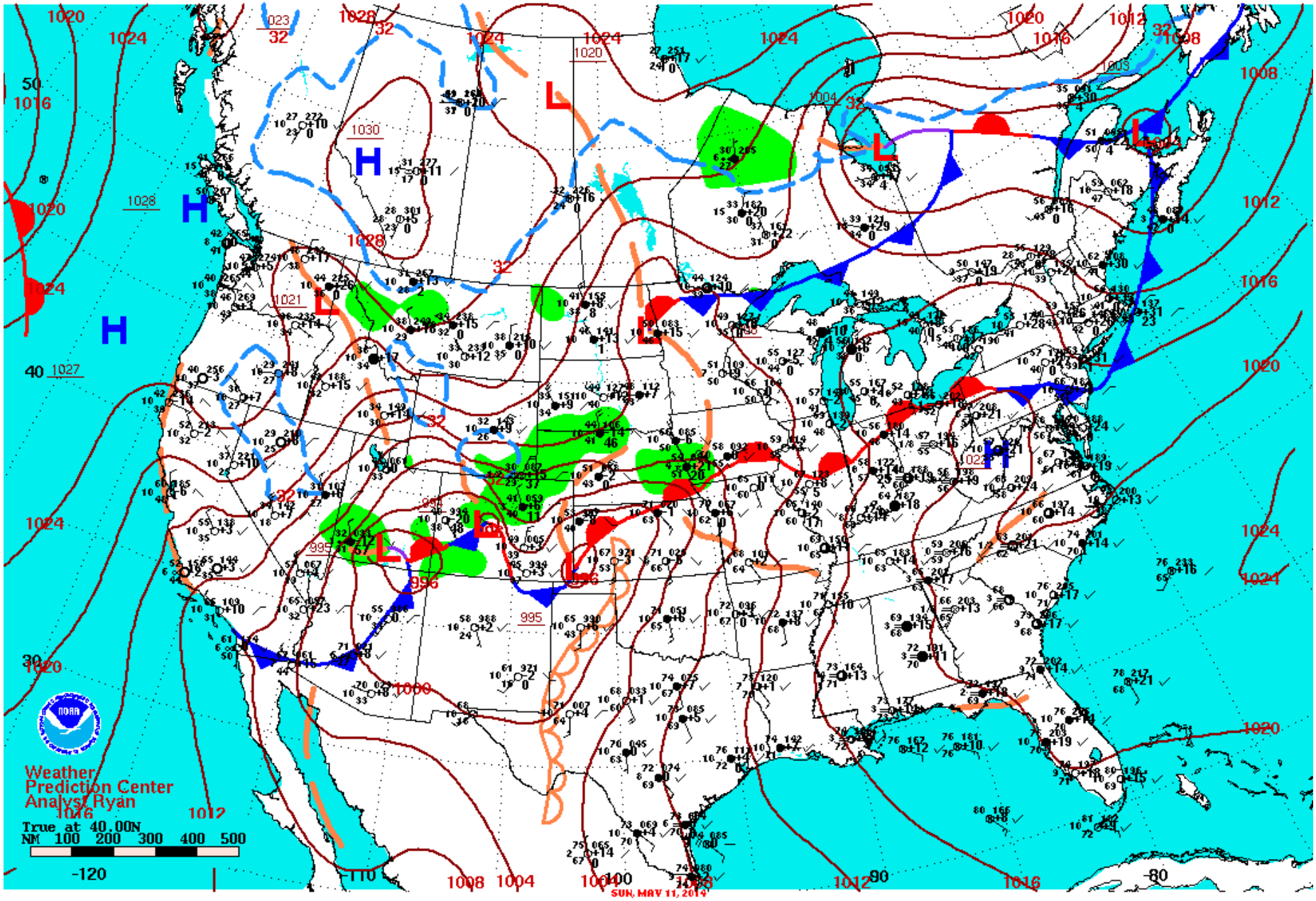

Figure 2-4 Location of low pressure system and cold front as of 4:00 AM Arizona time on May 11, 2014 (NOAA Daily Weather Map).

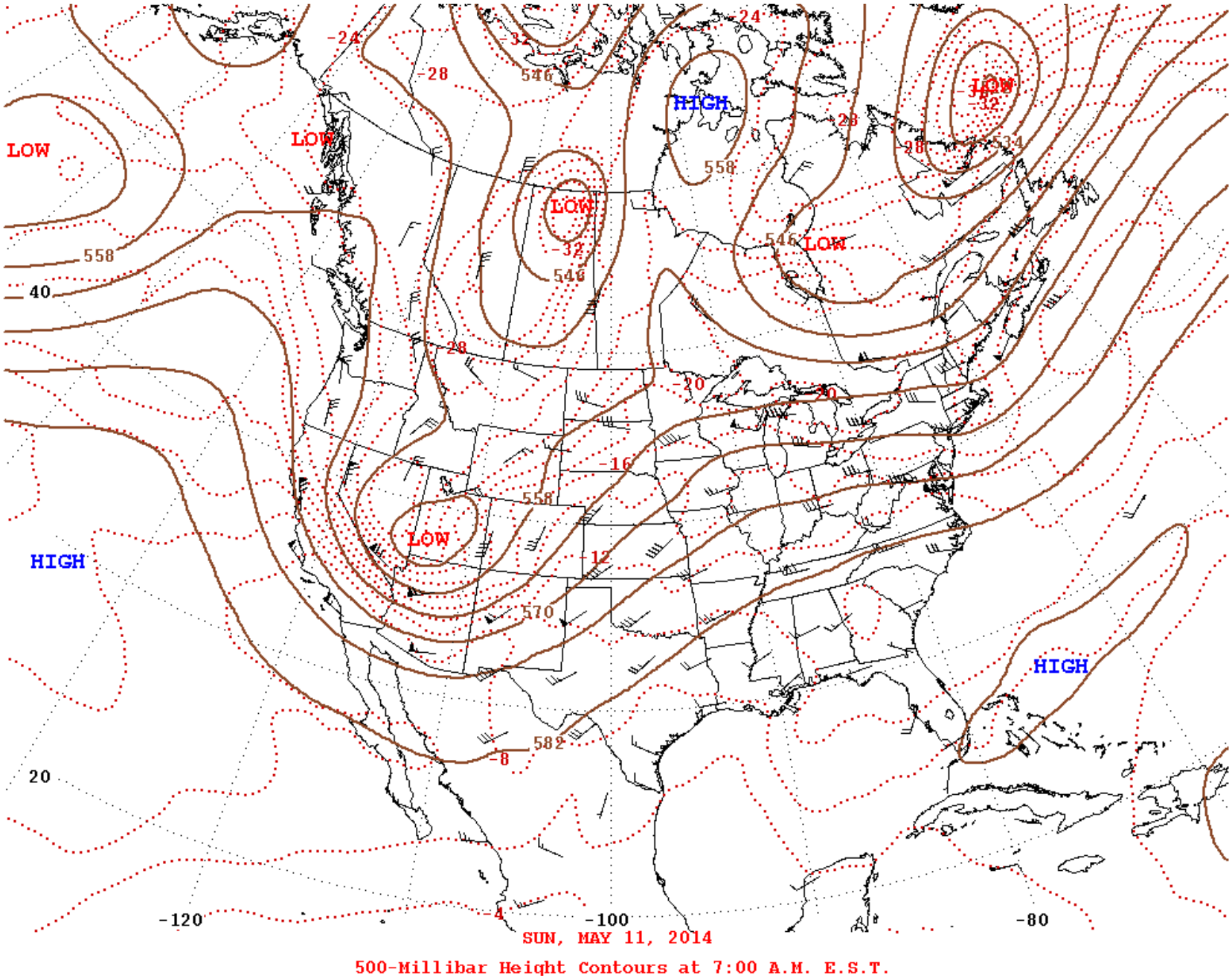

Figure 2-5. 500-Millibar wind field at 4:00 AM Arizona time on May 11, 2014. (NOAA Daily Weather Map).

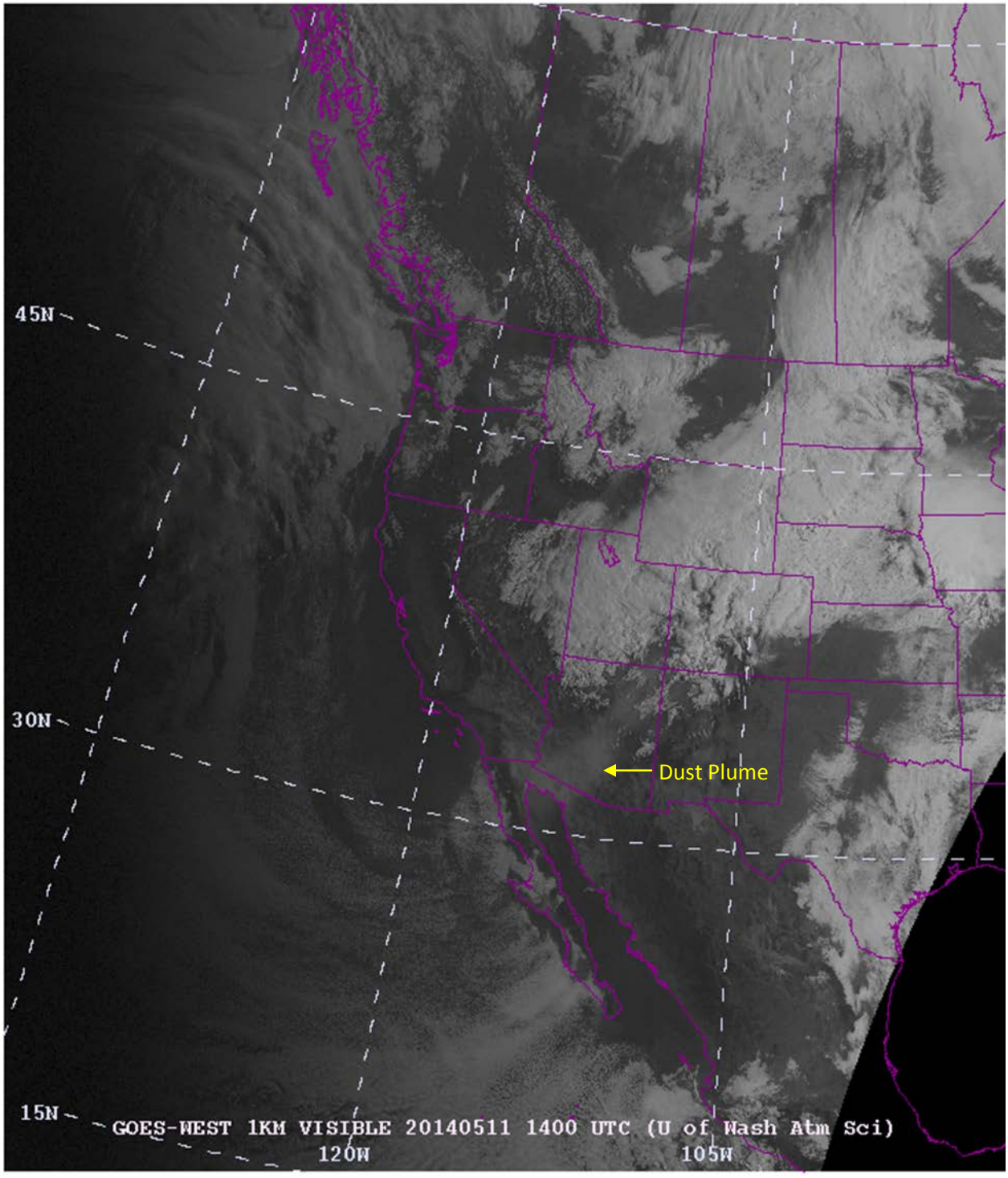

Figure 2-6. GOES-WEST satellite image at 7:00 AM Arizona time.

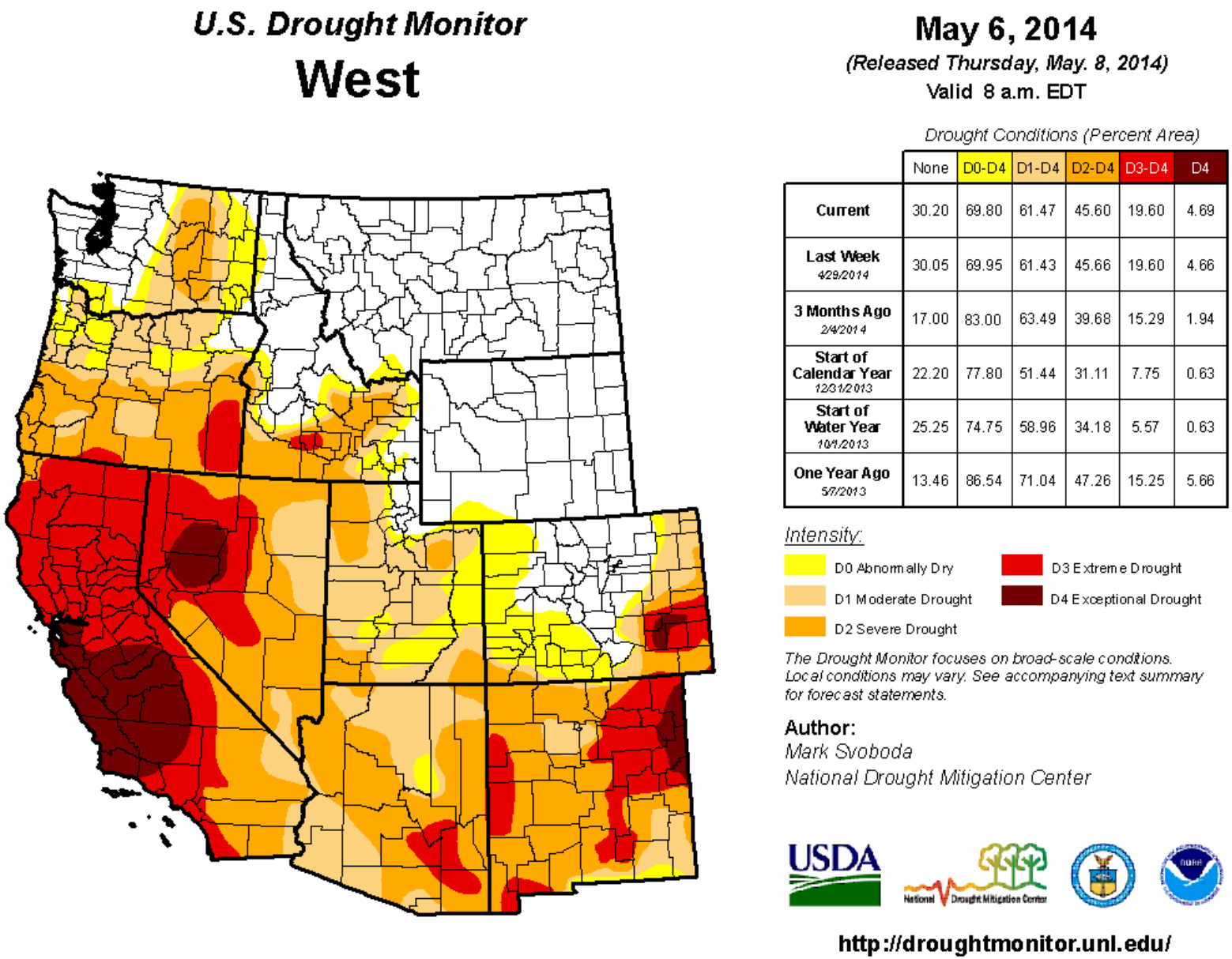

Figure 2-7. US Drought Monitor for western states issued on May 6, 2014.

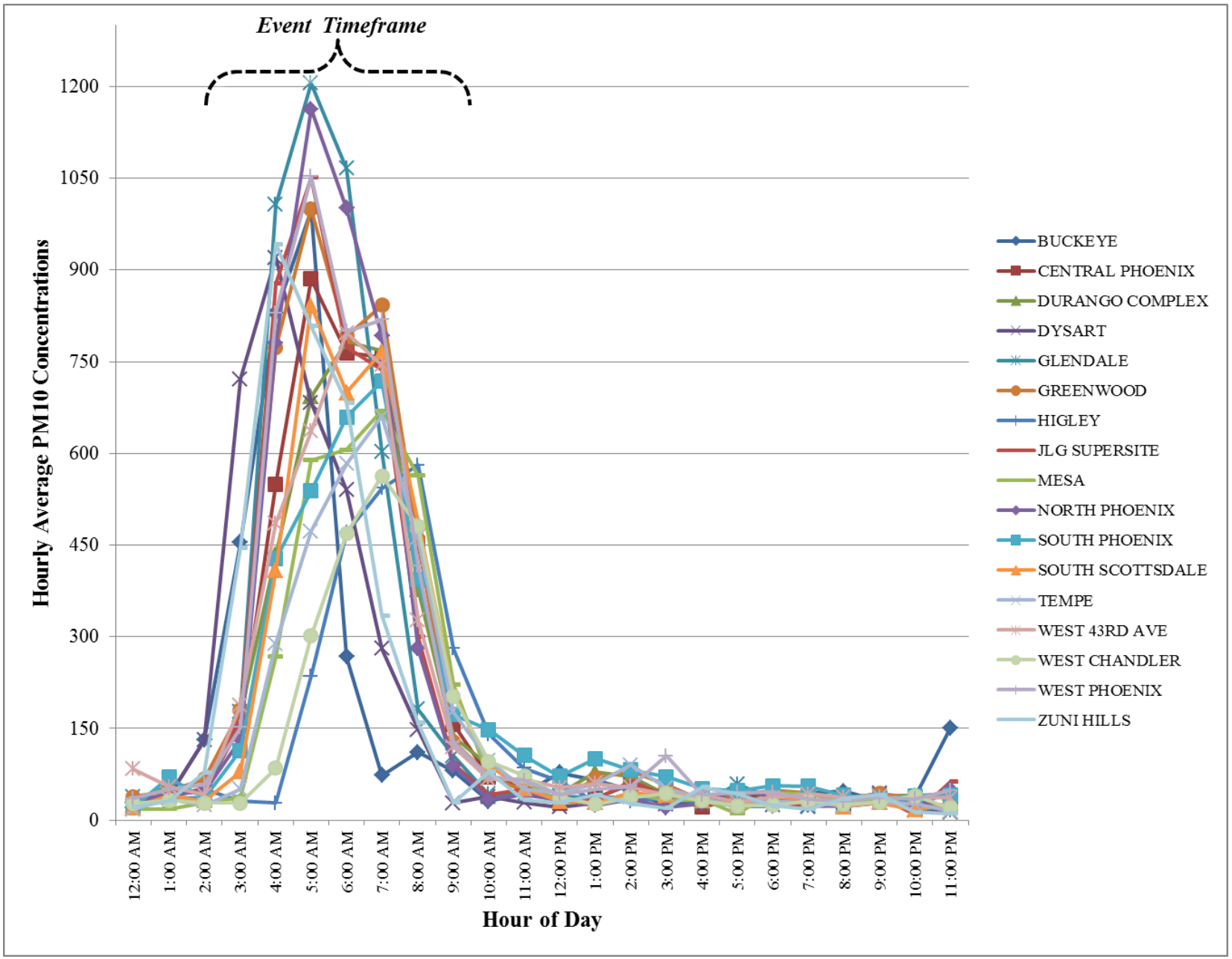

Figure 2-8. Timeline of PM_{10} concentrations at monitors in Maricopa County and the PM_{10} nonattainment area on May 11, 2014.

Table 2-1. Arizona PM_{10} Measurements on May 11, 2014.

Monitor	Monitor Type	Operator	AQS Monitor ID	24-hr Avg PM_{10} ($\mu g/m^3$)	1-hr Max PM_{10} ($\mu g/m^3$)	Max Time	AQS Qualifier Flag
Cochise County							
Douglas Red Cross	TEOM	ADEQ	04-003-1005-81102-3	72	231	1300	
Paul Spur Chemical Lime	TEOM	ADEQ	04-003-0011-81102-3	47	116	1000	
Gila County							
Hayden Old Jail	TEOM	ADEQ	04-007-1001-81102-3	120	454	1000	
Miami Golf Course	TEOM	ADEQ	04-007-8000-81102-3	124	472	1000	
La Paz County							
Alamo Lake	BAM	ADEQ	04-012-8000-81102-1	92	480	0200	
Maricopa County							
Buckeye	TEOM	MCAQD	04-013-4011-81102-1	154	997	0500	
Central Phoenix	**TEOM**	**MCAQD**	**04-013-3002-81102-4**	**182**	**885**	**0500**	**RJ**
Durango Complex	**TEOM**	**MCAQD**	**04-013-9812-81102-1**	**173**	**783**	**0600**	**RJ**
Dysart	**TEOM**	**MCAQD**	**04-013-4010-81102-1**	**164**	**920**	**0400**	**RJ**
Glendale	**TEOM**	**MCAQD**	**04-013-2001-81102-1**	**205**	**1205**	**0500**	**RJ**
Greenwood	**TEOM**	**MCAQD**	**04-013-3010-81102-1**	**208**	**999**	**0500**	**RJ**
Higley	TEOM	MCAQD	04-013-4006-81102-1	120	581	0800	
JLG Supersite	**BAM**	**ADEQ**	**04-013-9997-81102-3**	**193**	**1051**	**0500**	**RJ**
Mesa	TEOM	MCAQD	04-013-1003-81102-1	147	669	0700	
North Phoenix	**BAM**	**MCAQD**	**04-013-1004-81102-1**	**200**	**1163**	**0500**	**RJ**
South Phoenix	**TEOM**	**MCAQD**	**04-013-4003-81102-1**	**170**	**718**	**0700**	**RJ**
South Scottsdale	**TEOM**	**MCAQD**	**04-013-3003-81102-1**	**170**	**841**	**0500**	**RJ**
Tempe	TEOM	MCAQD	04-013-4005-81102-1	140	660	0700	
West Chandler	TEOM	MCAQD	04-013-4004-81102-1	114	563	0700	
West Forty Third	**TEOM**	**MCAQD**	**04-013-4009-81102-1**	**171**	**797**	**0600**	**RJ**
West Phoenix	**BAM**	**MCAQD**	**04-013-0019-81102-1**	**210**	**1052**	**0500**	**RJ**
Zuni Hills	**TEOM**	**MCAQD**	**04-013-4016-81102-1**	**166**	**942**	**0400**	**RJ**
Mohave County							
Bullhead City	TEOM	ADEQ	04-015-1003-81102-3	30	277	0000	
Pima County							
Ajo	TEOM	ADEQ	04-019-0001-81102-3	122	630	0600	
Green Valley	TEOM	PCDEQ	04-019-1030-81102-1	57	216	1600	
Geronimo	BAM	PCDEQ	04-019-1113-81102-1	121	366	1200	
Rillito	TEOM	ADEQ	04-019-0020-81102-3	140	432	1100	
Pinal County							
Apache Junction Fire Station	FRM	PCAQCD	04-021-3002-81102-1	99	N/A	N/A	
Casa Grande Downtown	TEOM	PCAQCD	04-021-0001-81102-3	123	589	0700	
Coolidge	FRM	PCAQCD	04-021-3004-81102-1	109	N/A	N/A	
Coolidge	FRM	PCAQCD	04-021-3004-81102-2	131	N/A	N/A	
Combs School	TEOM	PCAQCD	04-021-3009-81102-3	132	551	0800	
Cowtown	TEOM	PCAQCD	04-021-3013-81102-3	226	694	0700	
Eloy	FRM	PCAQCD	04-021-3014-81102-1	80	N/A	N/A	
Maricopa	TEOM	PCAQCD	04-021-3010-81102-3	152	662	0700	
Pinal Air Park	TEOM	PCAQCD	04-021-3007-81102-1	103	N/A	N/A	
Pinal Air Park	TEOM	PCAQCD	04-021-3007-81102-3	129	497	0900	
Pinal County Housing	TEOM	PCAQCD	04-021-3011-81102-3	136	594	0800	
Stanfield	TEOM	PCAQCD	04-021-3008-81102-3	230	1103	2000	
Santa Cruz County							
Nogales Post Office	BAM	ADEQ	04-023-0004-81102-3	47	211	1800	
Yuma County							
Yuma Supersite	**TEOM**	**ADEQ**	**04-027-8011-81102-3**	**246**	**1523**	**0000**	**RJ**

SOURCE: ADEQ's and MCAQD's AirVision Databases, PCAQCD and PCDEQ available data.

TEOM: Tapered Element Oscillating Microbalance monitor
BAM: Beta Attenuation monitor
FRM: Federal Reference Method
PCAQCD: Pinal County Air Quality District
PCDEQ: Pima County Department of Environmental Quality
RJ: qualifier flag for high winds
N/A: Not available at time of report preparation
MCAQD: Maricopa County Air Quality Department
ADEQ: Arizona Department of Environmental Quality

III. HISTORICAL FLUCTUATIONS

PM_{10} concentrations measured at monitors in the PM_{10} nonattainment area on May 11, 2014, were unusual and in excess of normal historical fluctuations. Figure 3–1 displays a time series plot of the 24-hour average PM_{10} concentrations for the period of January 1, 2009, through May 15, 2014, for the exceeding West Phoenix monitor; the monitor that recorded the highest 24-hour average PM_{10} concentration during the May 11, 2014, exceptional event. The figure indicates that the PM_{10} concentration seen at the monitor on May 11, 2014, was in excess of normal historical fluctuations. Figures showing the historical fluctuations for the other monitors in the PM_{10} nonattainment area that exceeded on May 11, 2014, are included in Appendix C.

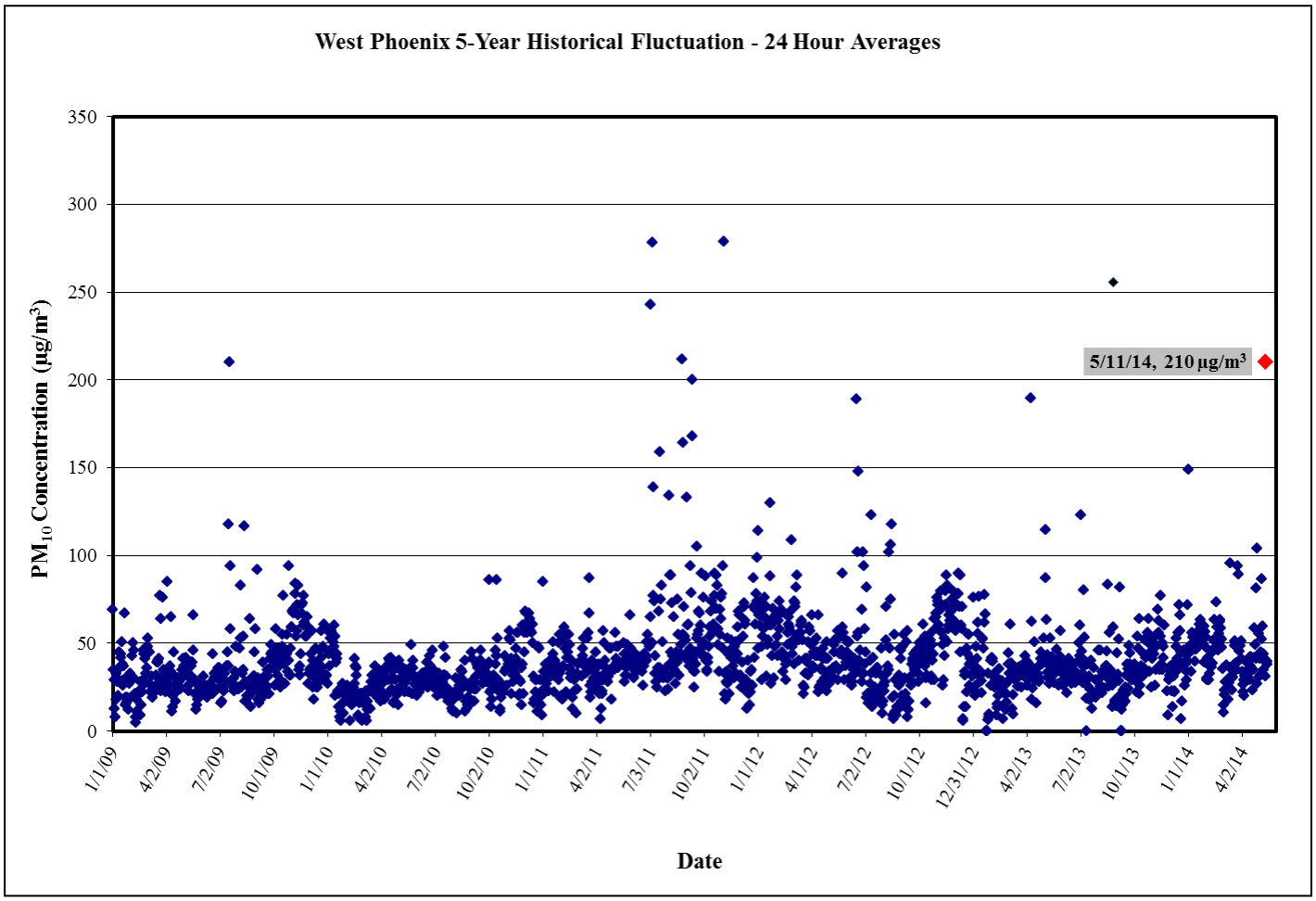

Figure 3-1. Plot of 24-hour average PM_{10} concentrations (January 2009 – May 15, 2014) at the West Phoenix monitor.

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, transported dust overwhelmed all reasonably available controls. The event occurring on May 11, 2014, was directly related to transported dust from southeastern California and western Arizona generated by a low pressure storm system.

As explained in Sections II and V, a dry cold front and low pressure system generated substantial dust in the desert regions of southeastern California and western Arizona and subsequently transported windblown dust throughout the nonattainment area. Transported windblown dust from the desert source regions of southeastern California and western Arizona ultimately caused 12 PM_{10} nonattainment area monitors to exceed the PM_{10} standard on May 11, 2014.

Strict controls on local sources of fugitive dust were in place and enforced during the event on May 11, 2014, but were ultimately overwhelmed by the transported dust. The following sections describe the BACM- and MSM-level PM_{10} control measures in place on May 11, 2014, and the robustness of the programs designed to enforce these measures. Inspections of local sources performed before, during and after May 11, 2014, confirmed that no unusual anthropogenic PM_{10}-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 mobile sources, 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 PM_{10} 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 PM_{10} plan for the

Maricopa County portion of the PM_{10} 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 § 49-457[1] . Maricopa County regulations of PM_{10} 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.
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.

[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 R18-2-610.01 **Agricultural PM_{10} General Permit for Crop Operations** and R18-2-611.01, **Animal Operations PM_{10} 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
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 PM_{10} 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 PM_{10} reducing control measures (e.g., paving of unpaved roads, PM_{10} certified street sweepers, controlling unpaved parking lots, etc.) have been committed to, and implemented by, local jurisdictions throughout the PM_{10} nonattainment area, and incorporated into the Arizona SIP through PM_{10} plans such as the Revised MAG 1999 Serious Area Particulate Plan for PM_{10} 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 PM_{10} 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 PM_{10} 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 PM_{10} 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 PM_{10} 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

PM_{10} 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 PM_{10} emissions-related violations. As a basis for comparison, the percentage of sources that did not receive a PM_{10} 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 PM_{10} State Implementation Plan for the Salt River Area and the Maricopa Association of Governments (MAG) 2007 Five Percent Plan for PM_{10} 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 PM_{10} 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.

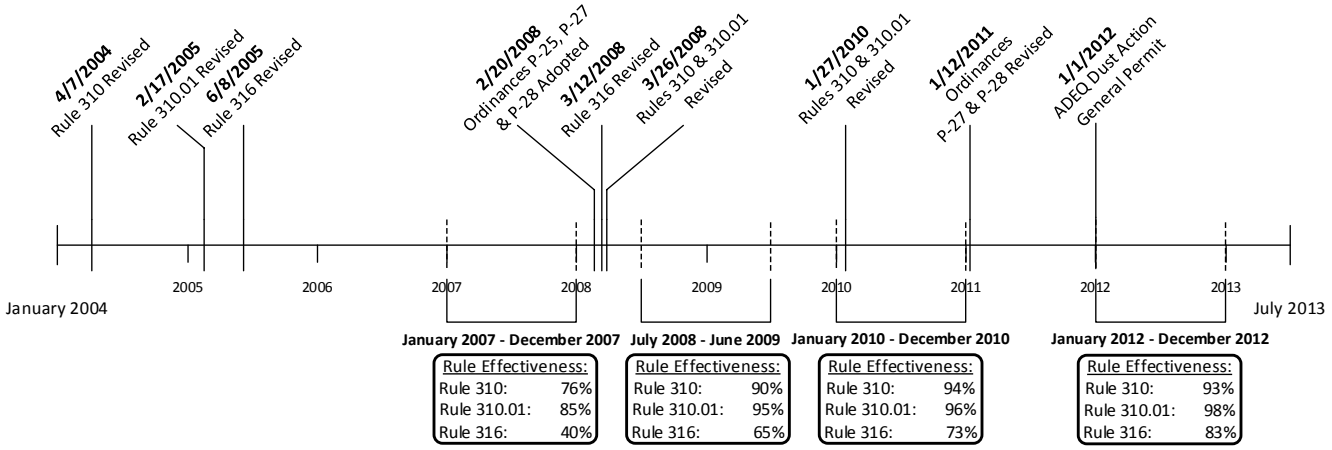

Figure 4-1. Timeline of Maricopa County fugitive dust rules and ordinances.

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 PM_{10} 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 PM_{10} 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 PM_{10} concentrations.

On May 9, 2014, a Maricopa County Dust Control Forecast was issued for May 11, 2014, indicating a low risk level for unhealthy PM_{10}. The Dust Control Forecast indicated southwest winds of 5 to 15 mph in the morning. ADEQ also issued an Air Quality Forecast on May 11, 2014, that indicated an unhealthy level of PM_{10} and encouraged people to consider limiting outdoor physical activity due to unhealthy air quality.

An evaluation of all inspection reports, air quality complaints, compliance reports, and other documentation indicate no evidence of unusual anthropogenic-based PM_{10} emissions. During the time period of May 8 through May 14, 2014, MCAQD inspectors conducted a total of 273 inspections of permitted facilities, of which 201 were at fugitive dust sources. Additionally, MCAQD conducted 41 inspections on vacant lots and unpaved parking lots during this period.

During this 7-day period, a total of 41 violations were issued county-wide for PM_{10} and non-PM_{10}-related violations. Violations were issued to one PM_{10} fugitive dust source within a 4-mile radius of the exceeding Central Phoenix and JLG Supersite monitors.

MCAQD issued a violation to a fugitive dust source on May 9, 2014, for failing to obtain an earthmoving permit and failing to implement dust controls. The site was located approximately 1.8 miles to the north of the Central Phoenix monitor and 3.2 miles to the southeast of the JLG Supersite monitor. The violation would not have contributed to the exceedances because it was not in the wind profile of either the Central Phoenix or JLG Supersite monitors.

MCAQD was prepared for any complaints received due to the high wind event. During the 7 day period from May 8 through May 14, 2014, MCAQD received 9 complaints, of which none were windblown dust or PM_{10} related.

Based on a review of the agricultural inspection reports and site visit documentation, there is no evidence to suggest that agricultural activities produced unusual PM_{10} emissions. From May 6 through May 15, 2014, the ADEQ Ag BMP inspector received one complaint of agricultural dust occurring on May 11, 2014. Investigation of the complaint revealed that the farmer was planting sorghum. The field is located at Val Vista Road and Appleby Road in Gilbert, Arizona. The nearest monitor from this field is the Higley monitor (which did not exceed on May 11, 2014), approximately 4.25 miles northeast of the field. Given that the field is located downwind of all PM_{10} nonattainment area monitors, any dust emissions from the planting activity would not have contributed to the exceedance on May 11, 2014.

Conclusions

A low pressure system and dry cold front on May 11, 2014, transported windblown dust from the deserts of southeastern California and western Arizona, overwhelming local controls and causing 12 nonattainment area monitors to exceed the PM_{10} standard. The Maricopa County area is designated as a serious nonattainment area for PM_{10} and is required to have BACM for all significant sources of PM_{10}. BACM-approved control measures on significant anthropogenic sources were in place and enforced during the event, and pro-active tracking and response to the event 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, dust from southeastern California and western Arizona deserts was transported into the nonattainment area by a low pressure system and dry cold front, causing 12 monitoring sites to exceed the PM_{10} standard. The

fact that this was a natural event involving a low pressure storm system and dry cold front that transported PM_{10} emissions into the nonattainment area provides strong evidence that the exceedances on May 11, 2014, were not reasonably controllable or preventable.

V. CLEAR CAUSAL RELATIONSHIP

Introduction

A demonstration of the clear causal relationship between windblown dust transported by low pressure system winds and the exceedances at the 12 nonattainment monitors on May 11, 2014, is provided in this section. A strong low pressure system and dry cold front generated gusts over 40 mph in the desert regions of southeastern California and western Arizona in the late evening hours of May 10, 2014. This dust was then lofted into the atmosphere in the early morning hours on May 11, 2014, and subsequently transported into the PM_{10} nonattainment area with the arrival of the cold front, as verified by satellite images of the transported dust plume shown in Section II. The transported dust from the desert source regions of southeastern California and western Arizona caused 12 monitors in the PM_{10} nonattainment area to exceed the PM_{10} standard.

A detailed description of the meteorology that transported the low pressure system dust to the nonattainment area monitors 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 transported dust from the low pressure system and high PM_{10} concentrations. The weight of evidence from these sources provides the clear causal relationship between the windblown dust transported by the low pressure system and dry cold front winds and the exceedances at the 12 PM_{10} nonattainment monitors on May 11, 2014.

Time Series Maps and Visibility Photos.

Figures 5–1 through 5–11 provide a time series GIS-based visualization of the meteorology and PM_{10} 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 PM_{10} 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 PM_{10} Concentrations, Wind Speed, Wind Direction, and Wind Gusts (hourly data used when 5-minute was unavailable)
Pinal County Air Quality Control District (PCAQCD)	5-Minute and Hourly PM_{10} 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 PM_{10} concentrations through time. Taken as a whole, the maps and

associated explanatory text describe the clear causal relationship between the windblown dust transported by the low pressure system winds and the exceedances at the monitors.

2:30 AM – 8:00 AM: Pre-Frontal Winds Transport Dust into the Nonattainment Area

The first signs of transported dust from the cold front and low pressure system are noted at the Buckeye Municipal Airport around 2:30 AM as indicated by a visibility measurement of 4.0 miles. Over the next five hours, pre-frontal west-southwest winds in the mid-teens with gusts as high as 25 mph will transport the dust eastward across the nonattainment area. Visibilities will drop to as low as 2.0 miles at many airports in the nonattainment area. Every monitor in the nonattainment area is affected by the transported dust, with recorded five-minute PM_{10} concentrations as high as 1,257 $\mu g/m^3$. During the period between 5:30 AM and 7:00 AM, the haze from the transported dust is the thickest with all monitors in the nonattainment area recording concentrations above 270 $\mu g/m^3$.

12 of the 17 PM_{10} monitors in the nonattainment area recorded exceedances of the PM_{10} standard as a result of the transported dust. NWS forecasts indicate that the dust from the plume would begin mixing out under constant winds as the day progressed (See Appendix B). Since the five southeastern-most monitors in the nonattainment area were exposed to the dust plume approximately two hours later than the western monitors, the density of the dust plume was likely less and not concentrated enough to cause an exceedance at these five monitors. Of the five southeast PM_{10} nonattainment area monitors that did not exceed the PM_{10} standard, the lowest 24-hour PM_{10} average was still very high at 99 $\mu g/m^3$ (Apache Junction monitor). The highest 24-hour average of the five monitors that did not exceed the standard was almost an exceedance at 147 $\mu g/m^3$ (Mesa monitor).

8:30 AM – 1:00 PM: Post-Frontal Winds Transport the Dust Southeast of the Nonattainment Area

By 8:30 AM, strong post-frontal winds begin to clear out the transported dust from the western portion of the nonattainment area. Sustained west-northwest winds up to 28 mph with gusts of 39 mph push the dust plume southeast of the nonattainment area. Visibilities and PM_{10} concentrations largely return to normal by 12:30 PM and will remain so for the rest of the day. While the elevated post-frontal winds may have raised some windblown dust of their own, it is clear from the PM_{10} concentrations at the monitors that these dust emissions are minimal and the winds primarily serve to clear the nonattainment area of the transported dust plume.

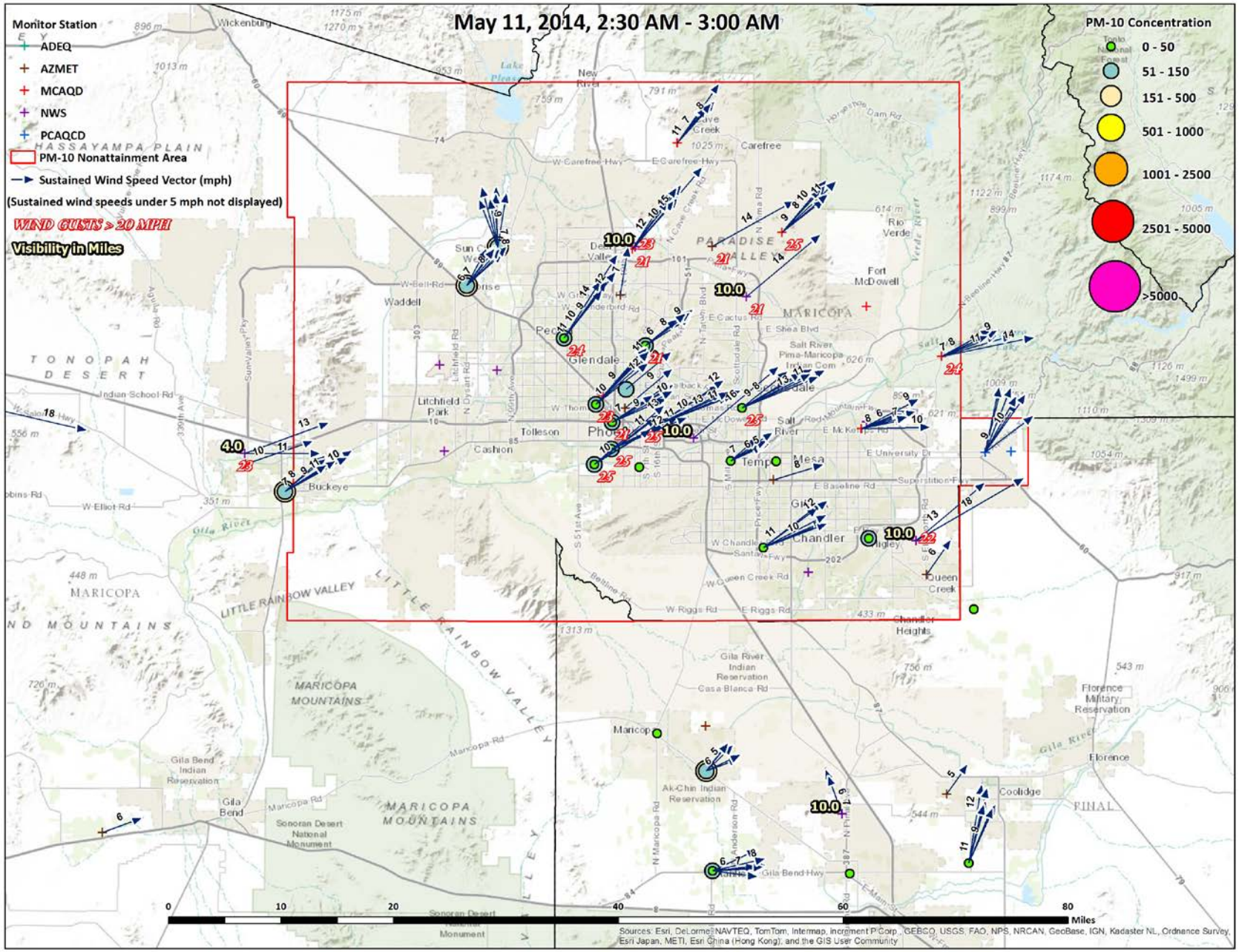

Figure 5-1. May 11, 2014, 2:30 AM – 3:00 AM.

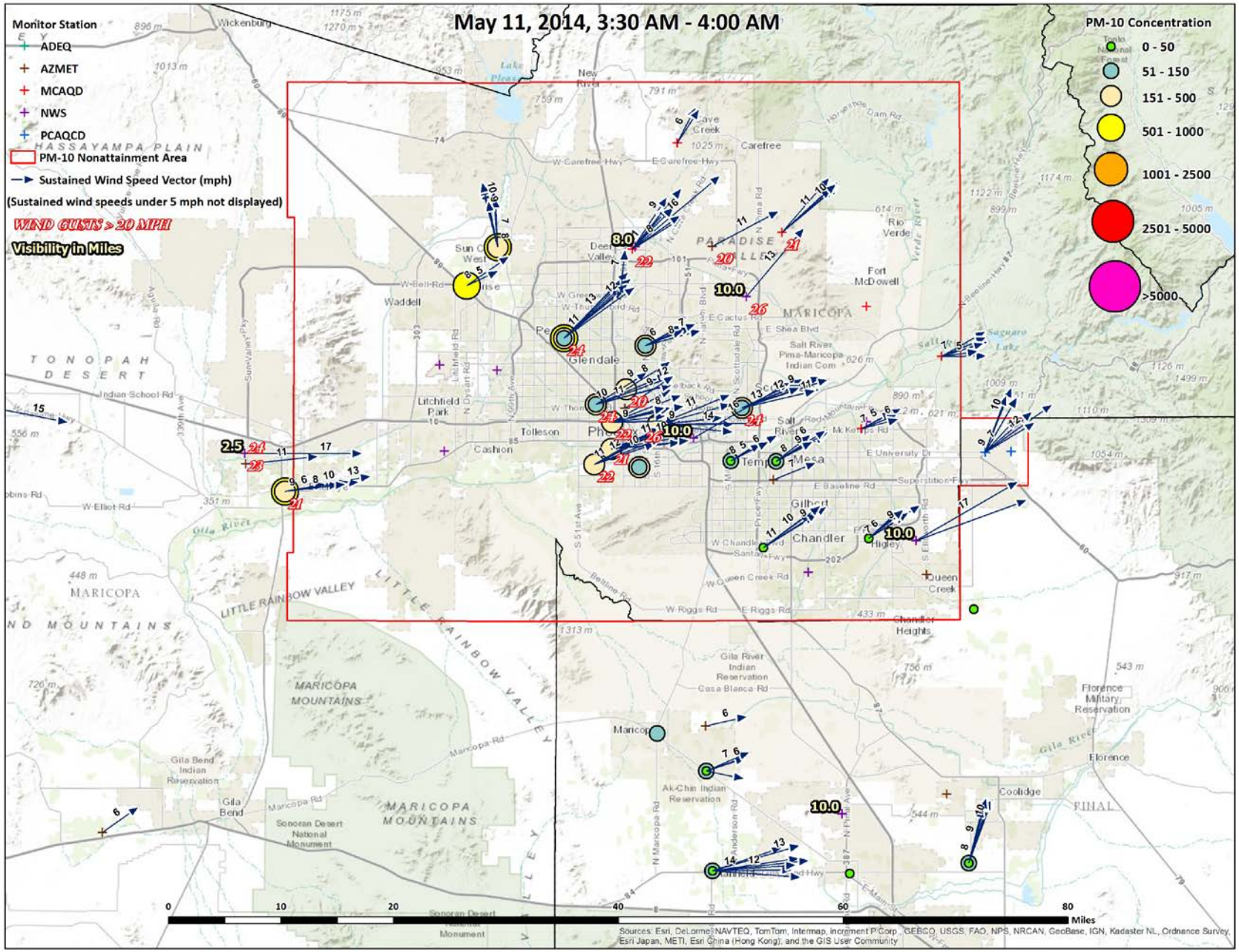

Figure 5-2. May 11, 2014, 3:30 AM – 4:00 AM.

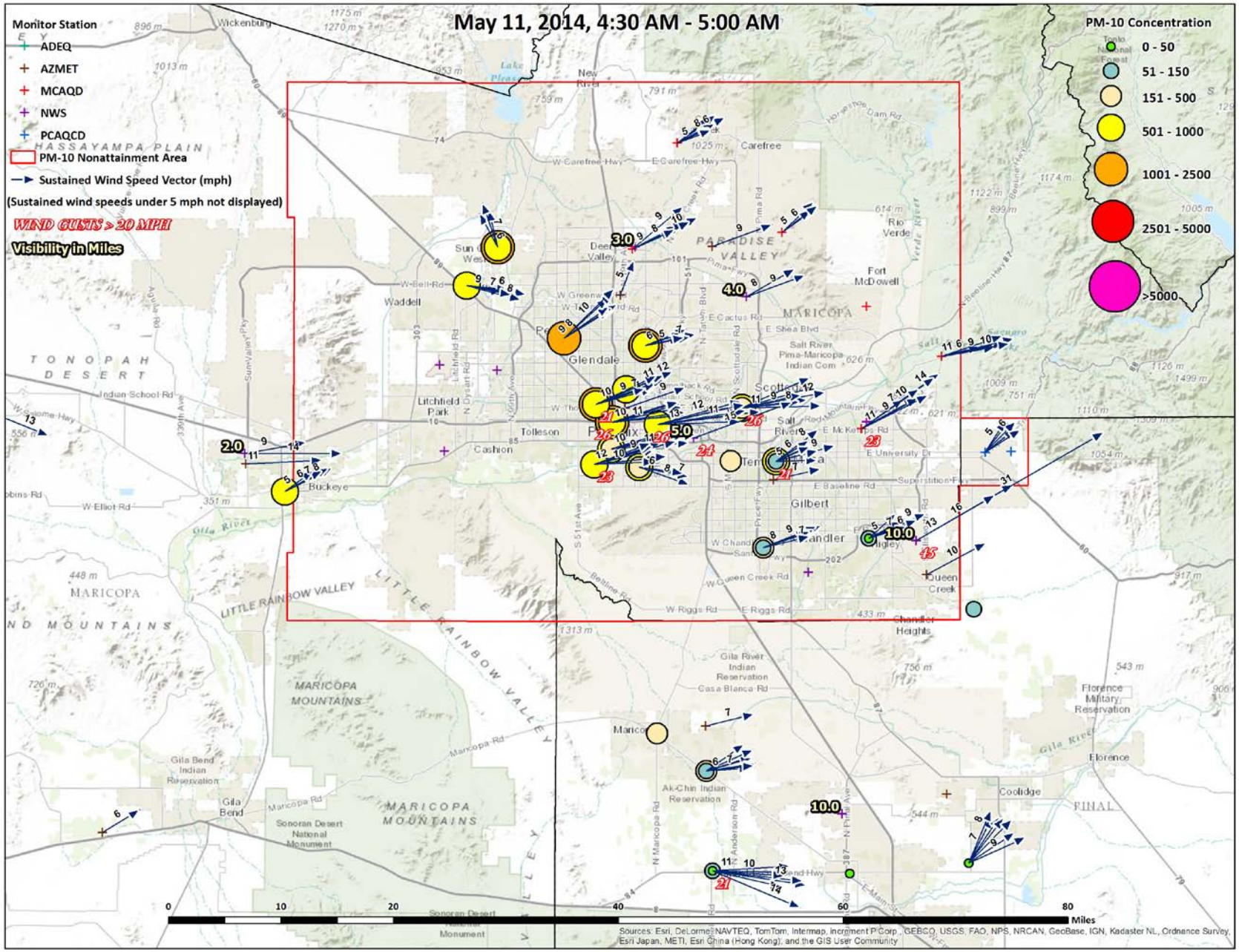

Figure 5-3. May 11, 2014, 4:30 AM – 5:00 AM.

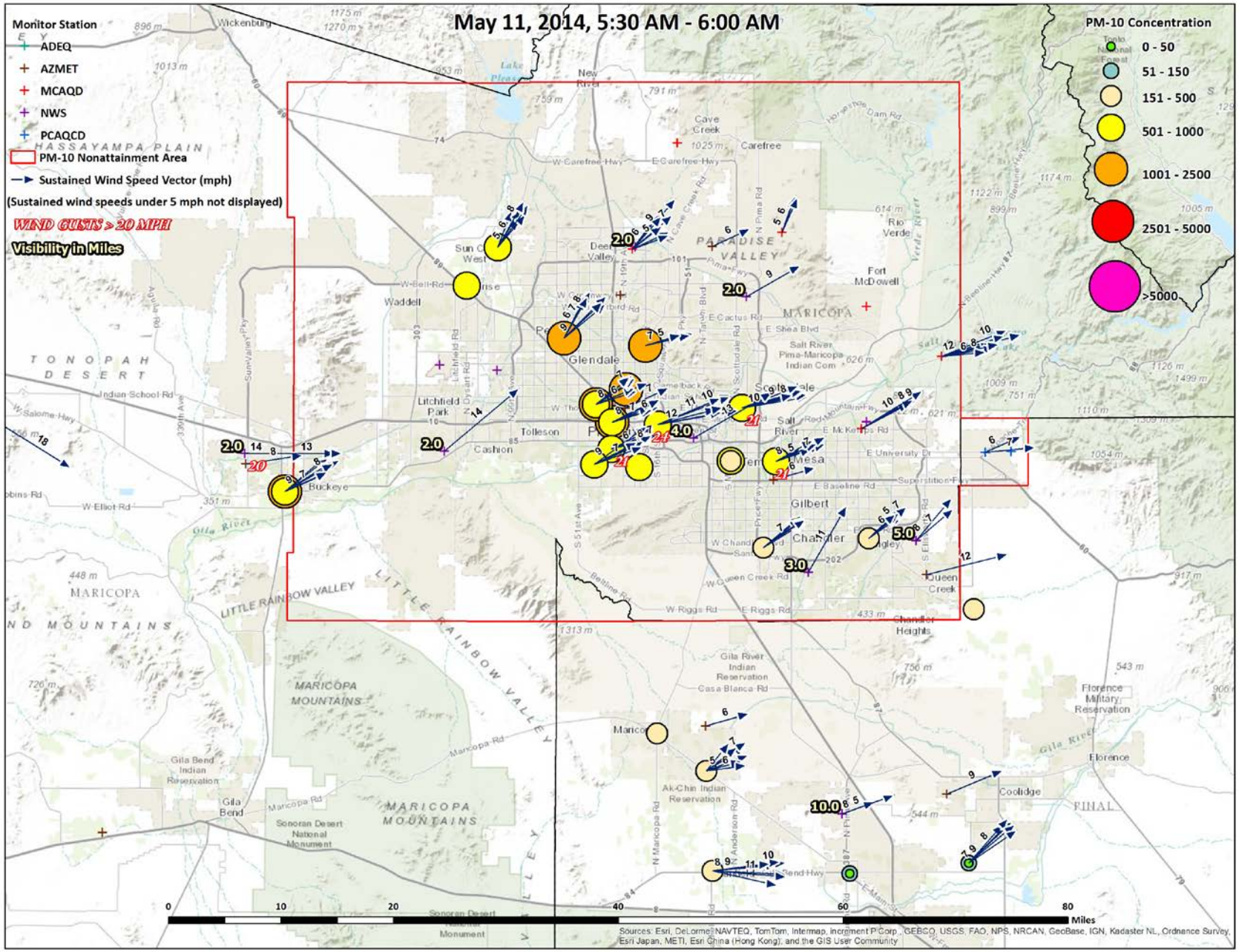

Figure 5-4. May 11, 2014, 5:30 AM – 6:00 AM.

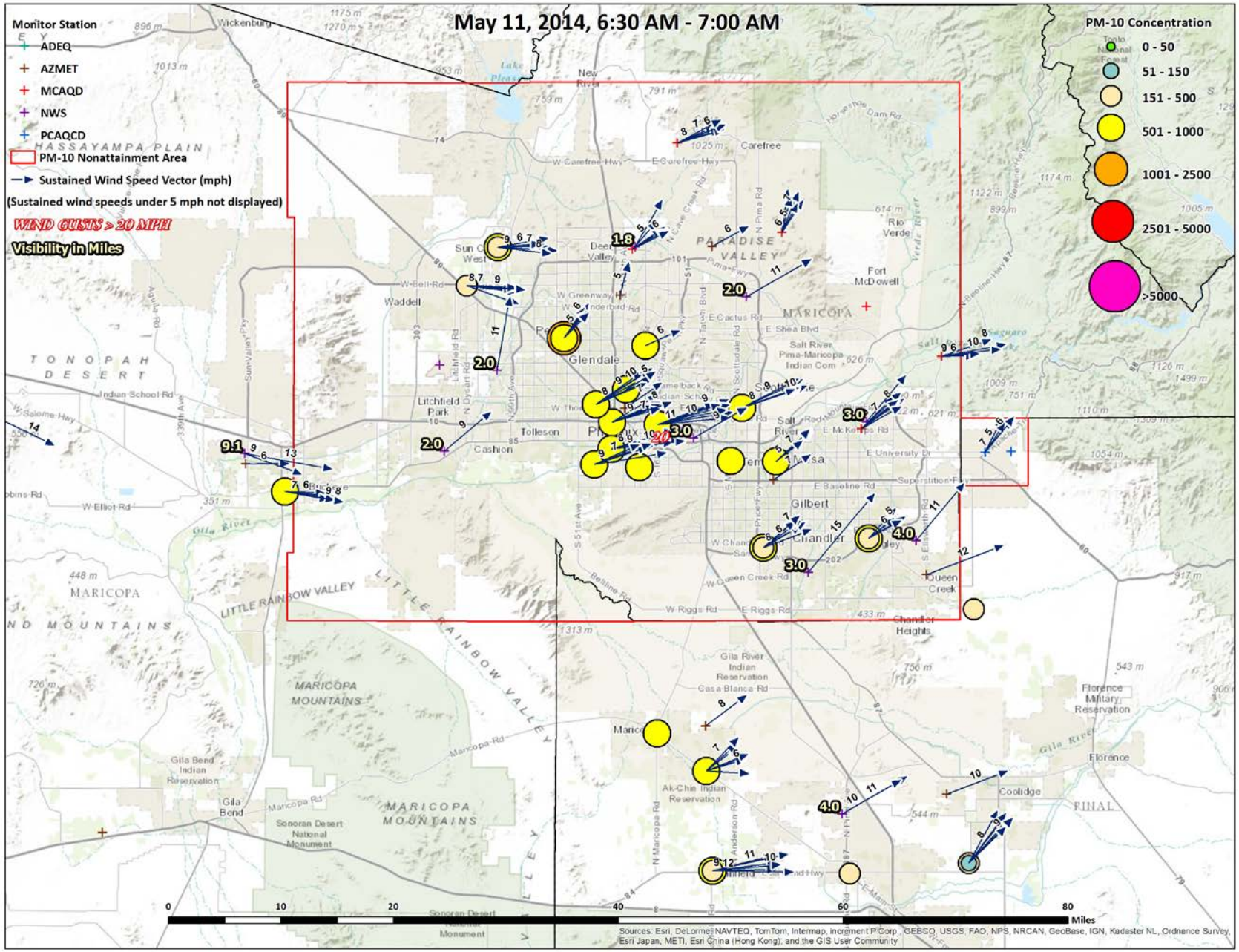

Figure 5-5. May 11, 2014, 6:30 AM – 7:00 AM.

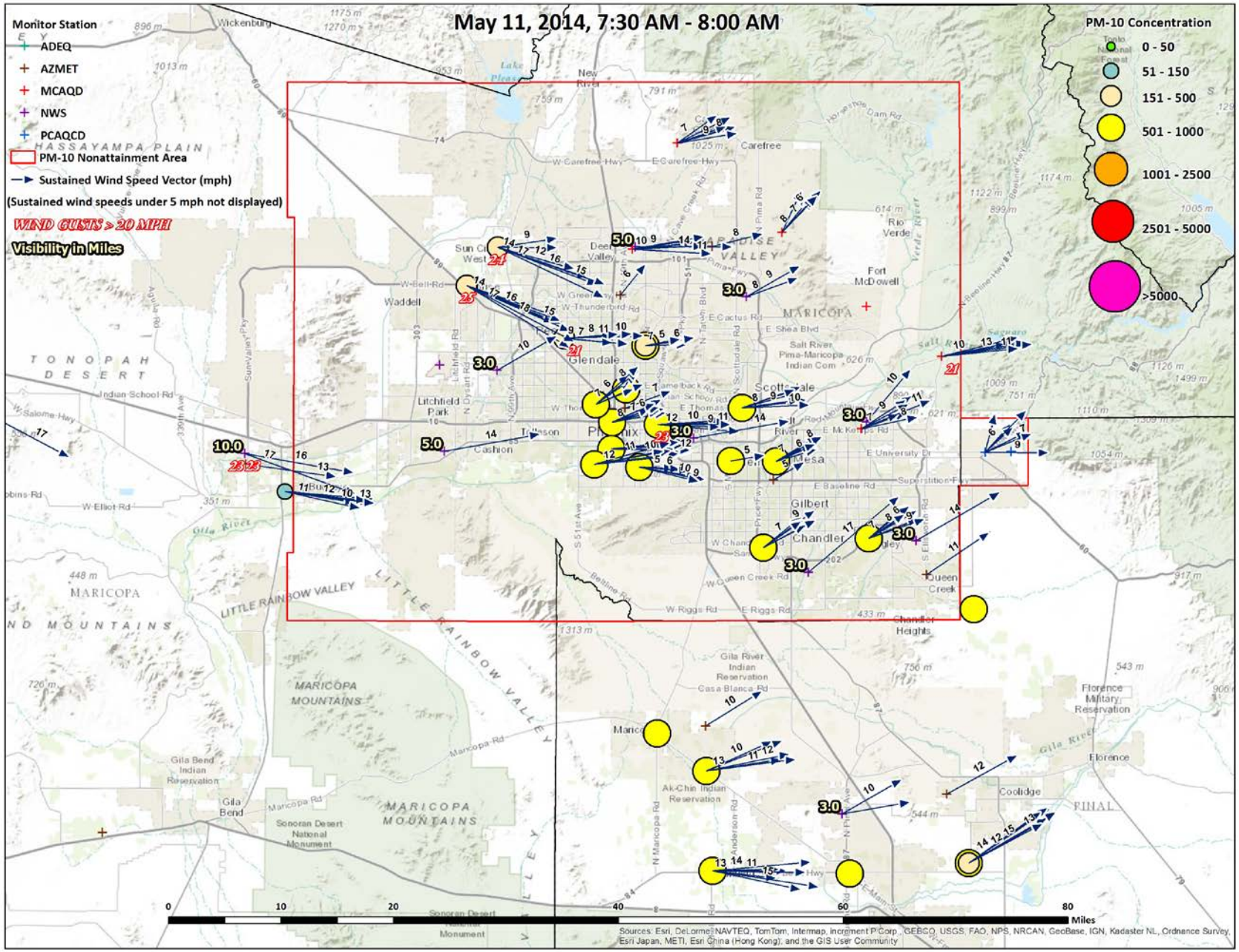

Figure 5-6. May 11, 2014, 7:30 AM – 8:00 AM.

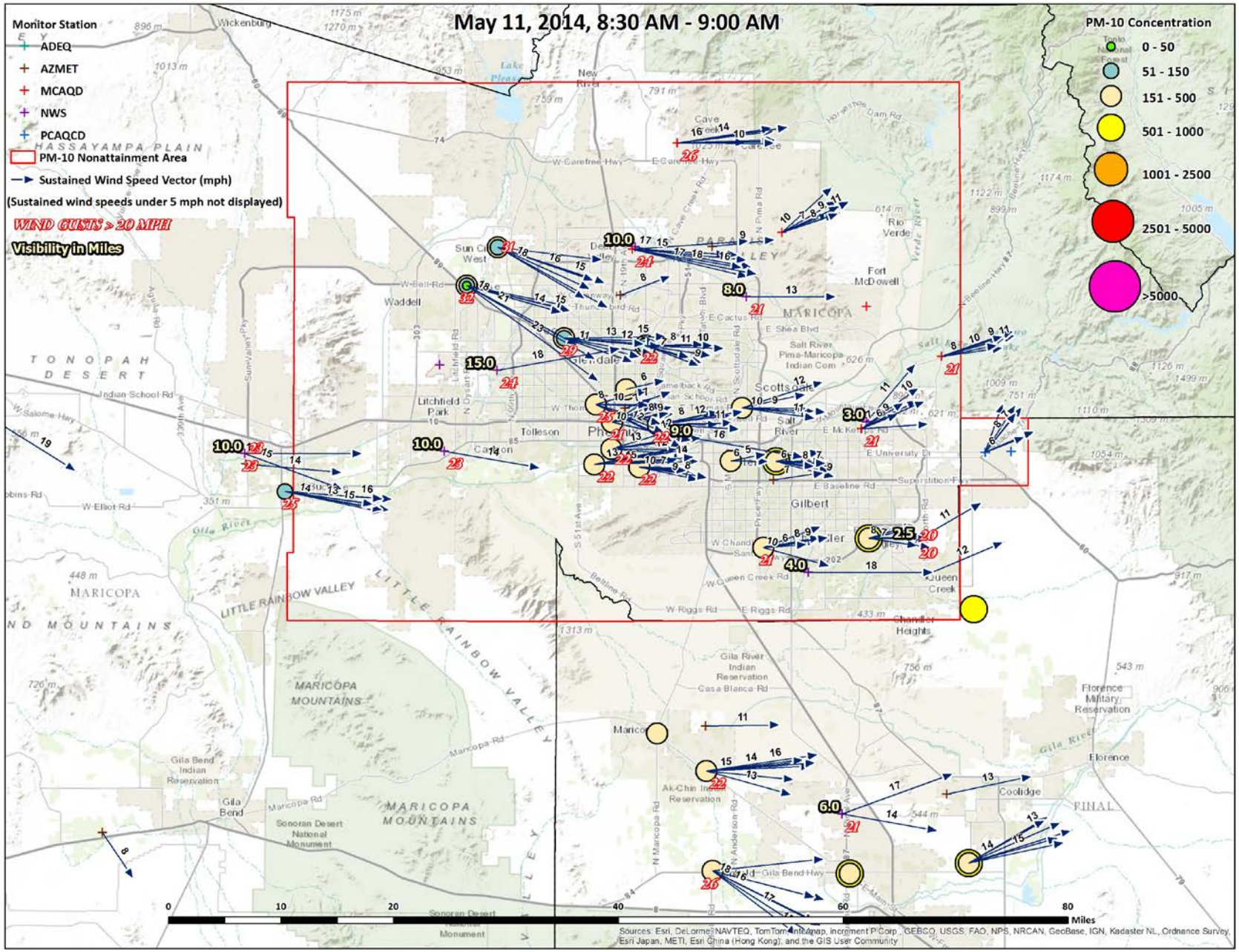

Figure 5-7. May 11, 2014, 8:30 AM – 9:00 AM.

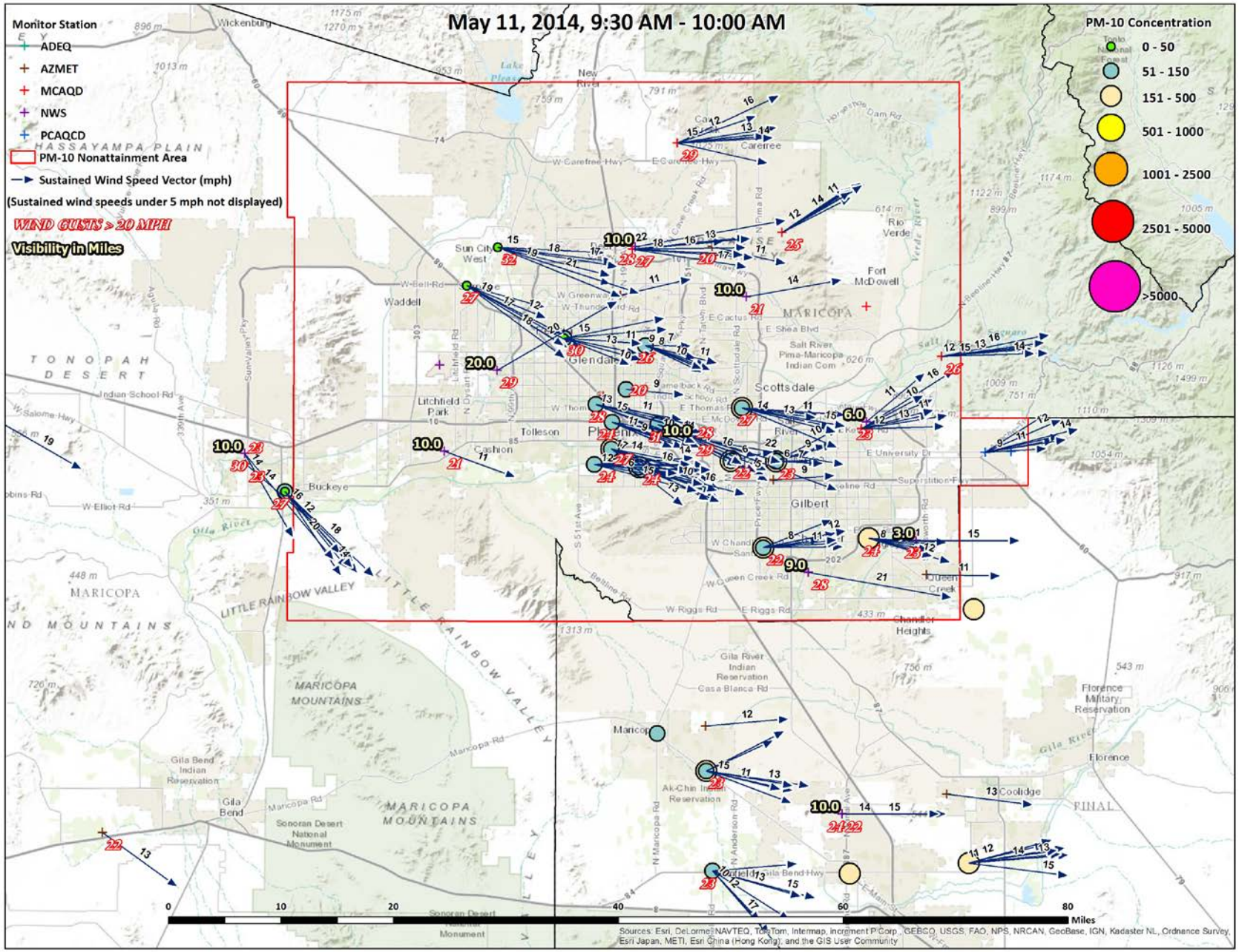

Figure 5-8. May 11, 2014, 9:30 AM – 10:00 AM.

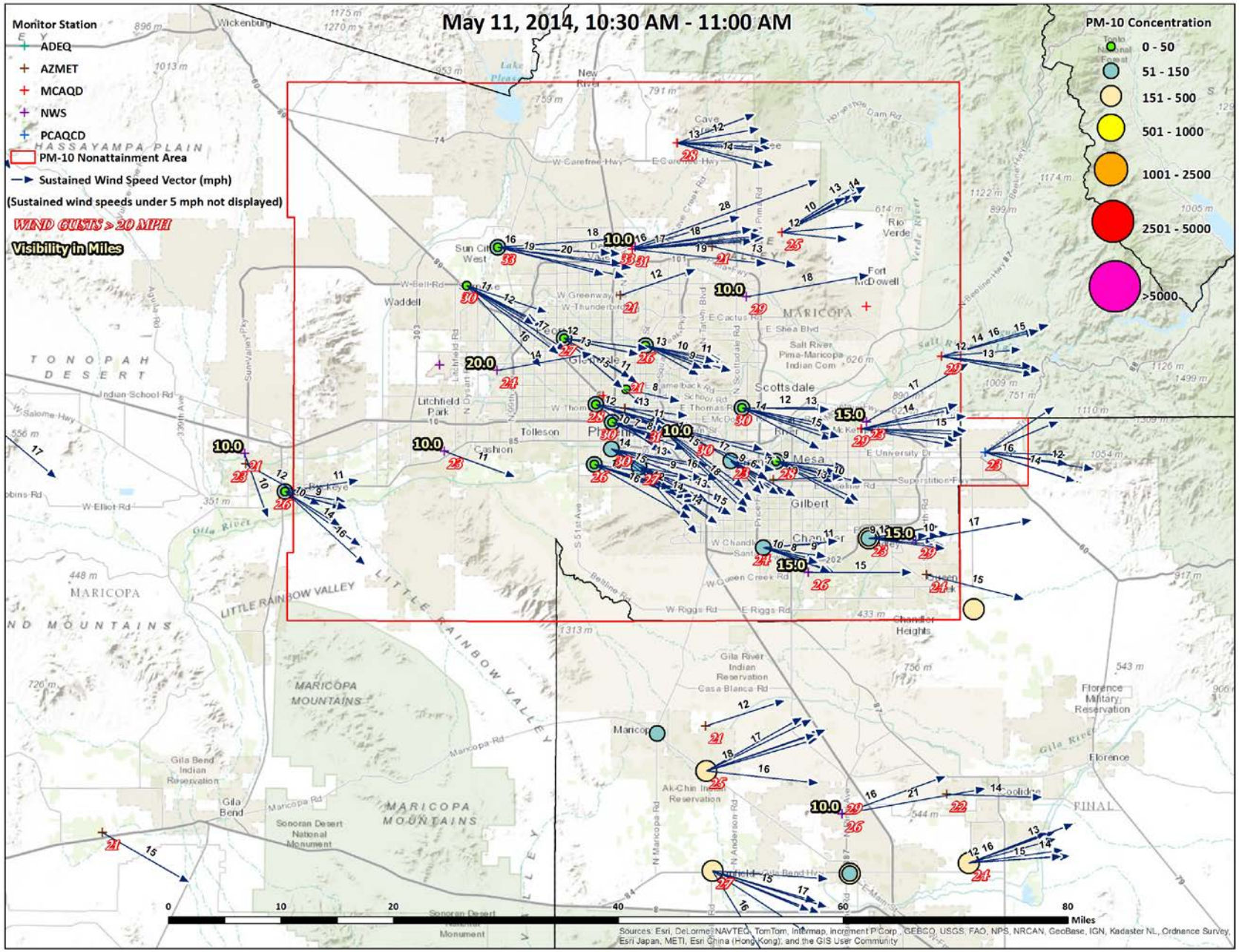

Figure 5-9. May 11, 2014, 10:30 AM – 11:00 AM.

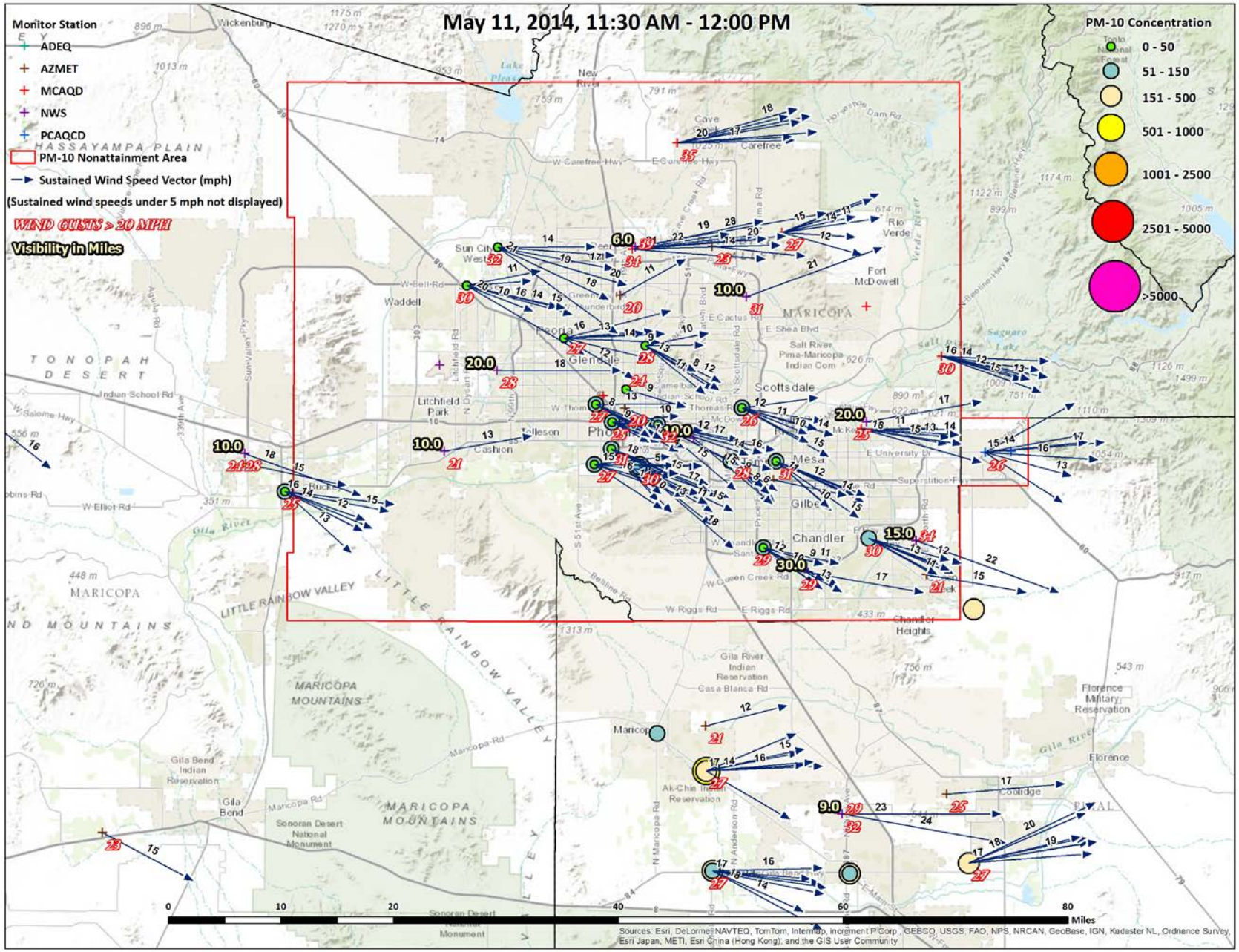

Figure 5-10. May 11, 2014, 11:30 AM – 12:00 PM.

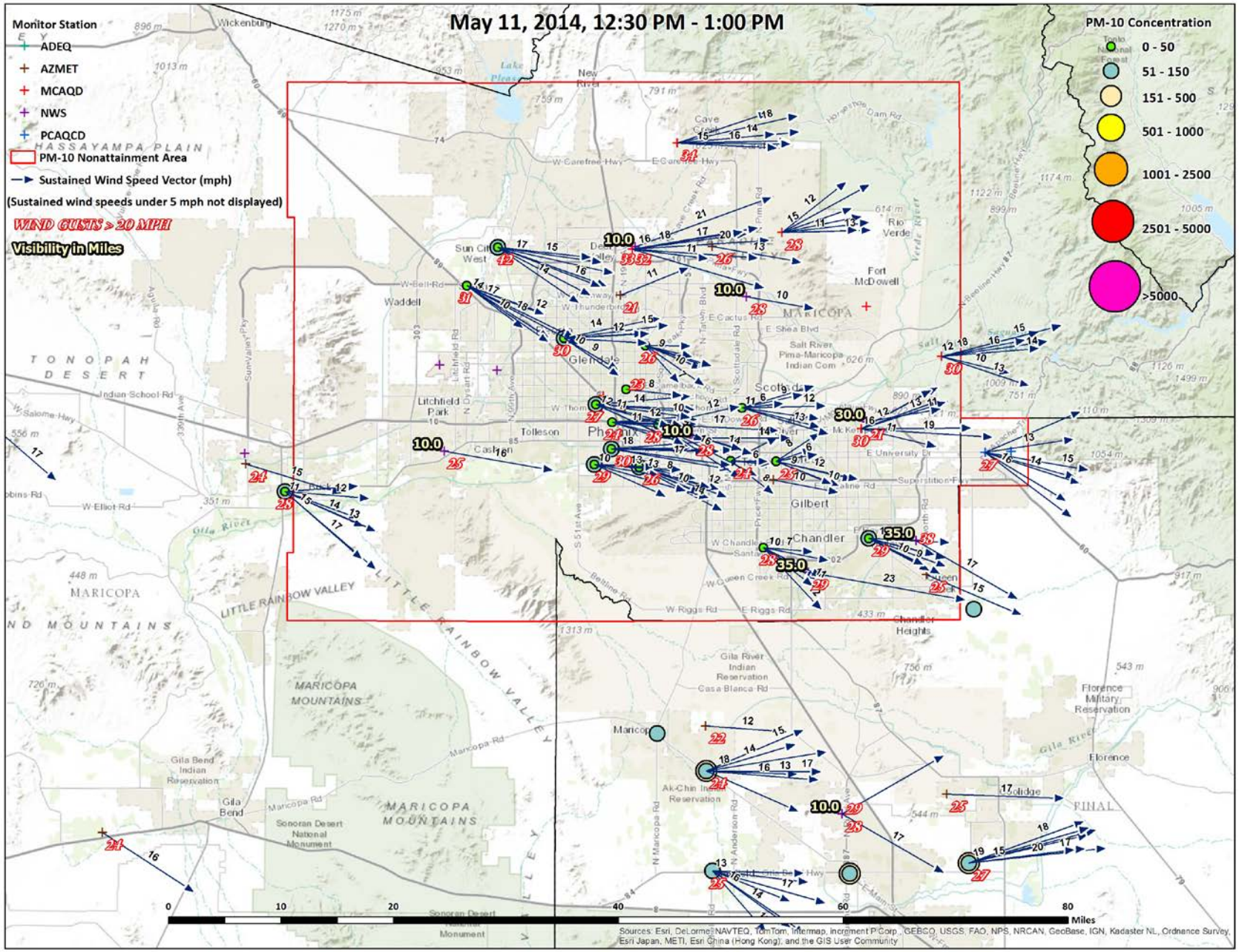

Figure 5-11. May 11, 2014, 12:30 PM – 1:00 PM.

Visibility Photos

Visibility photos taken in the PM_{10} nonattainment area clearly show the approach of the windblown dust transported by the low pressure system and the decreased visibility associated with the transported dust. Figure 5-12 shows visibility conditions before daylight hours looking south towards downtown Phoenix (1) before the transported dust arrives (12:00 AM) and (2) while the transported plume was over the downtown Phoenix area (4:20 AM). Figure 5-13 shows visibility conditions during daylight hours looking south towards downtown Phoenix (1) while the transported plume was over the downtown Phoenix area (5:20 AM) and (2) after the plume has exited the nonattainment area (1:00 PM).

A link to a time series video of visibility photos from the South Mountain camera on May 11, 2014 can be accessed here: http://www.phoenixvis.net/tlapse_camera.aspx?site=SOMT1

Conclusion

The information presented within this section has adequately demonstrated a clear causal relationship between the uncontrollable windblown dust emissions transported by the low pressure system and dry cold front and the exceedances measured at the 12 PM_{10} nonattainment area monitors. 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 transported dust as they move throughout Maricopa County and the nonattainment area. These maps and visibility photos show a clear causal relationship between the windblown dust transported by the low pressure system winds and the exceedances at the monitors. It is clear from these data that uncontrollable windblown PM_{10} emissions were transported into the PM_{10} nonattainment area by low pressure system and dry cold front winds and that the transported PM_{10} was the cause of the exceedances at the 12 PM_{10} nonattainment area monitors.

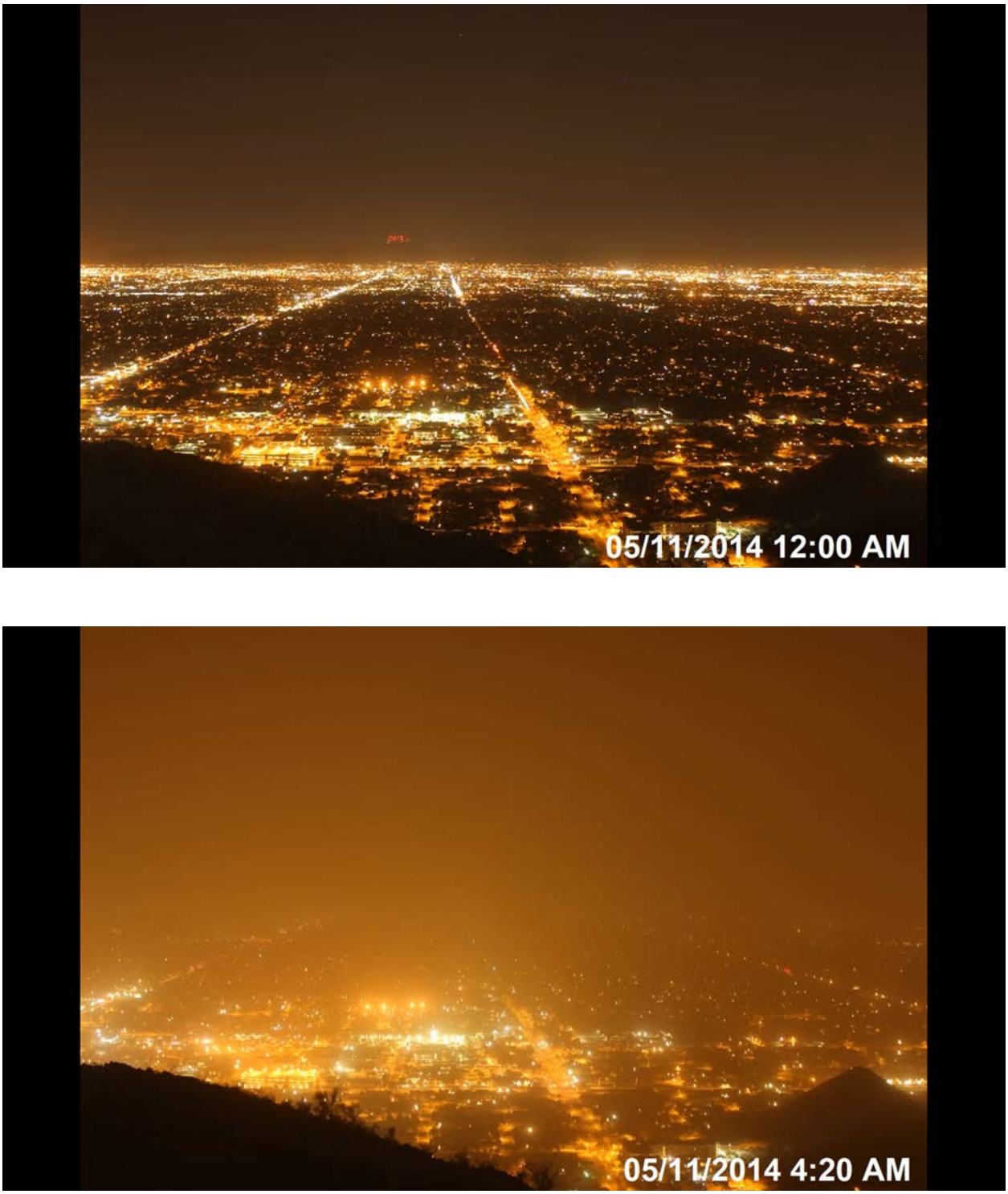

Figure 5-12. Visibility photos from the South Mountain camera at 12:00 AM and 4:20 AM on May 11, 2014.

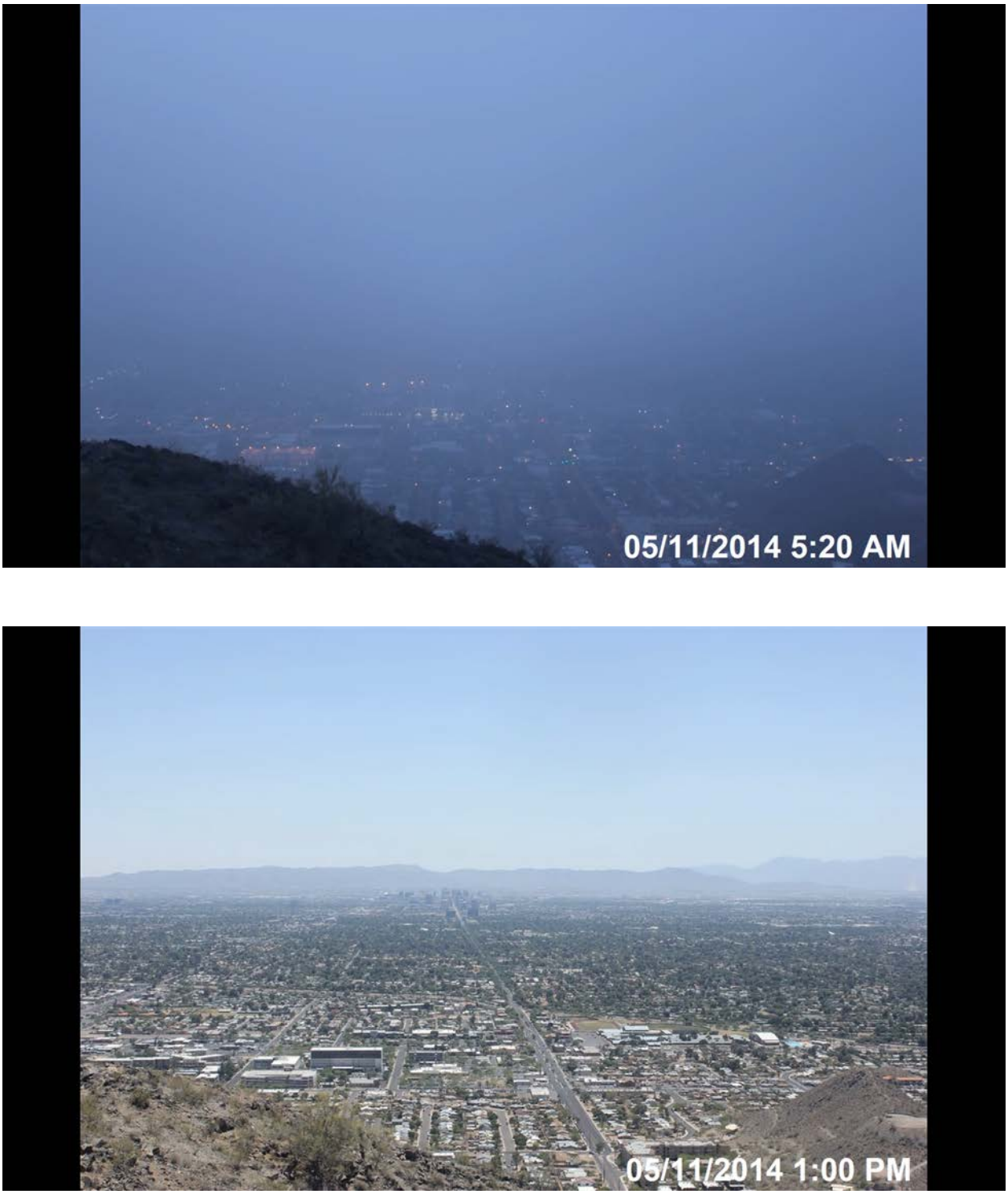

Figure 5-13. Visibility photos from the South Mountain camera at 5:20 AM and 1:00 PM on May 11, 2014.

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 exceedances on May 11, 2014, were not reasonably controllable or preventable and that there is a clear causal relationship between the windblown dust transported by low pressure system and dry cold front winds and the exceedance at the 12 PM_{10} nonattainment area monitors. The weight of evidence in these sections demonstrates that but for the existence of windblown dust emissions transported by low pressure system and dry cold front winds, there would have been no exceedance of the 24-hour PM_{10} standard.

As detailed in Section IV, all reasonable control measures were in place and actively enforced before, during, and after the exceedances on May 11, 2014. Inspection and compliance data of local fugitive dust sources during this time period revealed that PM_{10} 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. Real-time surveillance of PM_{10} monitoring stations during the event established a clear link between rapidly rising PM_{10} concentrations and the arrival of the transported dust on low pressure system winds. As shown in Figure 6–1, PM_{10} concentrations in the hours before the event at the exceeding West Phoenix monitor (the monitor with the highest 24-hour PM_{10} average concentration) were at normal levels, indicating no significant anthropogenic activities. PM_{10} concentrations in the hours after the event show a quick return to low levels once transported dust from the low pressure system exited the nonattainment area. Graphs for all of the exceeding monitors are displayed in Appendix D.

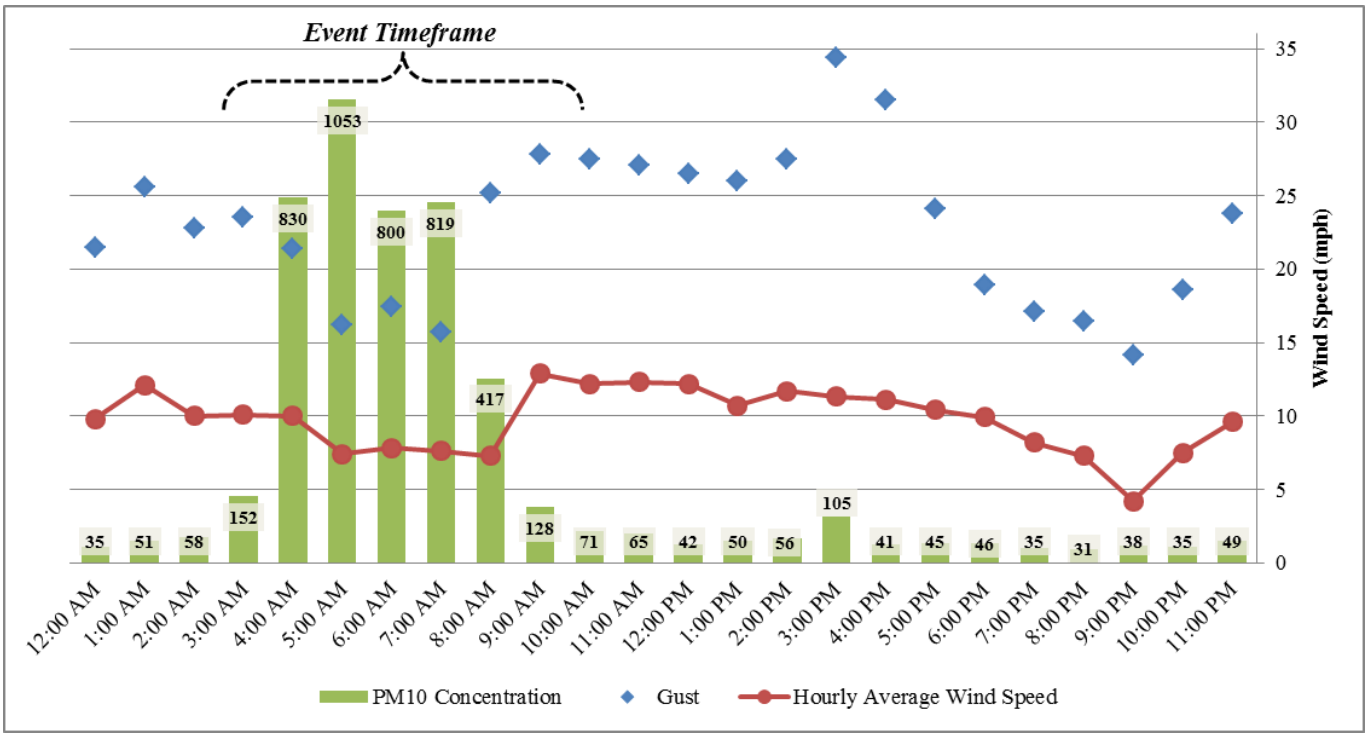

Figure 6-1. Hourly PM_{10} concentration, wind gust, and average wind speed as recorded at the exceeding West Phoenix monitor.

As shown in Section V, detailed, time series maps establish a clear causal relationship between the arrival of transported windblown dust by low pressure system winds, elevated PM_{10} concentrations at the monitors, and the exceedances at 12 PM_{10} nonattainment area monitors. The body of evidence presented in this submittal confirms that the exceedances on May 11, 2014, were the result of a natural event and that there would have been no exceedance but for the presence of the uncontrollable windblown dust transported by low pressure system winds.

VII. CONCLUSIONS

The exceedances that occurred on May 11, 2014, satisfy the criteria of 40 CFR 50.1(j) and meet 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, transported windblown dust overwhelmed all reasonably available controls. Despite the deployment of comprehensive control measures and sophisticated response programs, transported windblown dust associated with low pressure system winds caused high concentrations of PM_{10} and overwhelmed controls within the nonattainment area. The fact that this was a natural event involving low pressure system winds that transported PM_{10} emissions in Maricopa County and the nonattainment area provides strong evidence that the exceedances on May 11, 2014, recorded at 12 monitors were not reasonably controllable or preventable.

C. Natural Event

As discussed above, the event shown to cause the exceedances was windblown PM_{10} emissions transported by low pressure system winds on May 11, 2014. The event therefore qualifies as a natural event.

In summary, the exceedances of the federal 24-hour PM_{10} standard on May 11, 2014, would not have occurred but for the uncontrollable windblown dust emissions 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 system contained strong and gusty winds which in turn generated significant quantities of windblown dust in the deserts of southeastern California and western Arizona. The windblown dust was then transported into the nonattainment area by the low pressure system and associated dry cold front winds.

- The Historical Fluctuation analysis in Section III, showing five years of 24-hour average data for the West Phoenix monitor, demonstrates the atypical values recorded at the monitor on May 11, 2014. Graphs of the other exceeding monitors are included in Appendix C.

- 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 PM_{10} concentrations at the monitors are tied to the arrival of the transported dust on low pressure system winds. Satellite photos in Section II also confirm the existence and path of a large transported dust plume across Arizona.

- Visibility camera imagery displayed in Section V indicates the widespread nature of the transported windblown dust and provides evidence that high PM_{10} concentrations are linked to natural sources as opposed to specific anthropogenic sources of dust.

APPENDIX A

ADEQ FORECAST PRODUCTS FOR PHOENIX AND MARICOPA COUNTY

MARICOPA COUNTY DUST CONTROL FORECAST

ISSUED Friday, May 9, 2014

Five-day weather outlook:

Another wind-generating trough of low pressure will sweep through Arizona Saturday. Phoenix could see gusts higher than 20 mph at times. It's also possible that some dust will be transported into the forecast area from the southwest. Winds turn out of the northwest by midday Sunday which should help clear any lingering particles. High pressure will move in next week pushing daytime highs towards the triple-digit mark by Wednesday.
The risk of exceeding the 24-hour PM10 health standard in Phoenix is forecast to be Low through next Wednesday.

R I S K F A C T O R S

	WINDS		STAGNATION		UNHEALTHY PM-10 RISK LEVEL
Day 1: Sat. 5/10/2014	Southwest winds between 10 and 20 mph are expected during the afternoon with a few stronger gusts possible.	+	No stagnation is expected due to strong lower and upper-level winds.	=	***LOW***
Day 2: Sun. 5/11/2014	Southwest winds between 5 and 15 mph are expected early, turning out of the northwest by the afternoon.	+	No stagnation is expected due to strong lower and upper-level winds.	=	***LOW***
Day 3: Mon. 5/12/2014	North-northeast winds between 5 and 10 mph are expected.	+	No stagnation is expected due to strong lower and upper-level winds.	=	***LOW***
EXTENDED OUTLOOK					
Day 4: Tue. 5/13/2014	East winds between 5 and 10 mph are expected.	+	No stagnation is expected due to breezy lower-level winds.	=	***LOW***
Day 5: Wed. 5/14/2014	Mostly light winds are expected during the afternoon.	+	Stagnant conditions are expected.	=	***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.

JRP 04/28/2011

MARICOPA COUNTY DUST CONTROL FORECAST

ISSUED Sunday, May 11, 2014

Five-day weather outlook:

Another cold front is currently marching through Arizona. Stronger winds along and ahead of the cold front have kicked up an impressive plume of dust, stretching from the northern Gulf of California to the Four-Corners region! The dust is being carried west to east with the western extent now entering Maricopa County. Overall, the dust plume now seems to be dissipating. Visibility has improved compared to early morning readings, but additional dust is still possible today under gusty winds this afternoon. The storm systems will clear the state today.

For tomorrow and Tuesday, breezy conditions persist, especially on Tuesday, but the direction turns more northeasterly. Winds will tend to be strongest during the morning hours with very localized dust possible. By Wednesday afternoon, the pressure gradient relaxes as a high-pressure ridge axis over the Pacific Ocean encroaches on the Southwest. As a result, winds become lighter and high temperatures heat up towards the end of the week into the low 100s under clear skies. There is a Low risk for excceding the PM-10 health standard Monday through Friday.

Enjoy the day and check back tomorrow for an updated outlook! -J. Malloy

R I S K F A C T O R S

	WINDS		STAGNATION		UNHEALTHY PM-10 RISK LEVEL
Day 1: Mon. 5/12/2014	Northeasterly winds 10 mph during the morning becoming northerly 5 mph.	+	No stagnation expected due to stronger upper-level and surface winds.	=	***LOW***
Day 2: Tue. 5/13/2014	Northeasterly winds 10 to 20 mph.	+	No stagnation expected due to stronger upper-level and surface winds.	=	***LOW***
Day 3: Wed. 5/14/2014	Northeasterly winds 10 to 15 mph during the morning becoming easterly around 5 mph.	+	No stagnation expected due to stronger upper-level and surface winds.	=	***LOW***
EXTENDED OUTLOOK					
Day 4: Thu. 5/15/2014	East-northeast winds around 5 mph early becoming light.	+	Stagnant conditions expected.	=	***LOW***
Day 5: Fri. 5/16/2014	Light winds early becoming westerly 5 to 10 mph for the afternoon.	+	Stagnant conditions expected.	=	***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.

ADEQ Arizona Department of Environmental Quality

VERY UNHEALTHY (201-300)

UNHEALTHY (151-200)

UNHEALTHY FOR SENSITIVE GROUPS (101-150)

MODERATE (51-100)

GOOD (0-50)

For more information visit:
http://www.airnow.gov/index.cfm?action=aqibasics.aqi

AIR QUALITY FORECAST FOR Saturday, May 10, 2014

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 **NOTICES** (*SEE BELOW FOR DETAILS) **AIR POLLUTANT**	YESTERDAY Thu 05/08/2014 Highest AQI Reading/Site (*Preliminary data only*)	TODAY Fri 05/09/2014	TOMORROW Sat 05/10/2014	EXTENDED Sun 05/11/2014
O3*	**64** **Queen Valley**	**54** ***Moderate***	**58** ***Moderate***	**48** ***Good***
CO*	**7** **West Phoenix**	**8** ***Good***	**5** ***Good***	**6** ***Good***
PM-10*	**37** **South Phoenix**	**45** ***Good***	**57** ***Moderate***	**50** ***Good***
PM-2.5*	**51** **South Phoenix**	**38** ***Good***	**40** ***Good***	**35** ***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	
Friday, 05/09/2014	Unusually sensitive people should consider reducing prolonged or heavy exertion outdoors.
Saturday, 05/10/2014	Unusually sensitive people should consider reducing prolonged or heavy exertion outdoors.

SYNOPSIS AND DISCUSSION

Another wind-generating trough of low pressure will move through the region Saturday, bringing gusty winds to the deserts of Arizona. Wind speeds above 15 mph, gusting 20 mph a times can be expected after 11am lasting through the early morning hours on Sunday. It's possible that some dust from southwest of Yuma could become airborne and transported into the forecast area. Thus, a hazy Sunday morning is possible. Winds turn out of the northwest after noon on Sunday, beginning the clearing process of any suspended particles.

Look for ozone levels to reach the lower Moderate range Friday and Saturday, improving on Sunday with the winds turning out of the northwest. PM10 levels may reach the lower Moderate range on Saturday, improving by Sunday as well.

For those waiting for the Summer heat, it will be next week with triple digits Wednesday through Friday.

Check back on Sunday for a look ahead at next week's weather and air quality. Until then, have a great weekend! -J.Paul

MONITORING SITE MAPS	
INTERACTIVE MAPS	http://alert.fcd.maricopa.gov/alert/Google/v3/air.html http://www.airnow.gov/

POLLUTION MONITOR READINGS FOR Thursday, May 8, 2014

O3 (OZONE)

SITE NAME	MAX 8-HR VALUE (PPB)	MAX AQI	AQI COLOR CODE
Alamo Lake	60	51	
Apache Junction	58	49	
Blue Point	62	58	
Buckeye	47	40	
Casa Grande	56	47	
Cave Creek	56	47	
Central Phoenix	56	47	
Dysart	53	45	
Falcon Field	59	50	
Fountain Hills	NOT AVBL	NOT AVBL	NOT AVBL
Glendale	57	48	
Humboldt Mountain	58	49	
Phoenix Supersite	57	48	
Mesa	62	58	
North Phoenix	59	50	
Pinal Air Park	59	50	
Pinnacle Peak	61	54	
Queen Valley	64	64	
Rio Verde	60	51	
South Phoenix	59	50	
South Scottsdale	51	43	
Tempe	55	47	
Tonto Nat'l Mon.	62	58	

West Chandler	56	47	
West Phoenix	57	48	
Yuma	60	51	

CO (CARBON MONOXIDE)

SITE NAME	MAX 8-HR VALUE (PPM)	MAX AQI	AQI COLOR CODE
Central Phoenix	0.4	5	
Greenwood	0.3	3	
Phoenix Supersite	0.5	6	
West Phoenix	0.6	7	

PM-10 (PARTICLES)

SITE NAME	MAX 24-HR VALUE (µg/m3)	MAX AQI	AQI COLOR CODE
Buckeye	17.9	17	
Central Phoenix	32.9	30	
Combs School (Pinal County)	42.5	39	
Durango	33.2	31	
Dysart	32.5	30	
Glendale	33.1	31	
Greenwood	38.4	36	
Higley	32.9	30	
Maricopa (Pinal County)	42.9	40	
Phoenix Supersite	29.2	27	
Mesa	34.8	32	
North Phoenix	30.5	28	
South Phoenix	40.3	37	
South Scottsdale	36.0	33	
Tempe	31.9	30	
West Chandler	38.8	36	
West Forty Third	37.7	35	
West Phoenix	34.8	32	
Zuni Hills	30.4	28	

PM-2.5 (PARTICLES)

SITE NAME	MAX 24-HR VALUE (µg/m3)	MAX AQI	AQI COLOR CODE
Durango	7.6	32	
Glendale	6.9	29	
Phoenix Supersite	6.7	28	
Mesa	9.0	38	
North Phoenix	7.9	33	
South Phoenix	12.2	51	
Tempe	8.8	37	
West Phoenix	8.4	35	

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 NOx (Nitrogen Oxides) in the presence of heat and sunlight.
Sources – VOCs are emitted from motor vehicles, chemical plants, refineries, factories, and other industrial sources. NOx 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.

{**Updated 12/19/2011**}

ADEQ Arizona Department of Environmental Quality

VERY UNHEALTHY (201-300)

UNHEALTHY (151-200)

UNHEALTHY FOR SENSITIVE GROUPS (101-150)

MODERATE (51-100)

GOOD (0-50)

For more information visit:
http://www.airnow.gov/index.cfm?action=aqibasics.aqi

AIR QUALITY FORECAST FOR Monday, May 11, 2014

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 NOTICES (*SEE BELOW FOR DETAILS) AIR POLLUTANT	YESTERDAY Sat 05/10/2014 Highest AQI Reading/Site (*Preliminary data only*)	TODAY Sun 05/11/2014 Dust and Haze	TOMORROW Mon 05/12/2014	EXTENDED Sat 05/13/2014
O3*	**77** **Alamo Lake**	**48** ***Good***	**51** ***Moderate***	**53** ***Moderate***
CO*	**6** **Central Phoenix**	**8** ***Good***	**7** ***Good***	**8** ***Good***
PM-10*	**41** **West Forty Third**	**170** ***Unhealthy***	**70** ***Moderate***	**50** ***Good***
PM-2.5*	**38** **Mesa South Phoenix**	**85** ***Moderate***	**55** ***Moderate***	**45** ***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

Sunday, 05/11/2014	**Increased respiratory symptoms and aggravation of lung disease, such as astma; possible respiratory effects in general population.**
Monday, 05/12/2014	**Unusually sensitive people should consider reducing prolonged or heavy exertion outdoors.**

SYNOPSIS AND DISCUSSION

Another cold front is currently marching through Arizona. Stronger winds along and ahead of the cold front have kicked up an impressive plume of dust, stretching from the northern Gulf of California to the Four-Corners region! The dust is being carried west to east with the western extent now entering Maricopa County. Overall, the dust plume now seems to be dissipating. Visibility has improved compared to early morning readings, but additional dust is still possible today under gusty winds this afternoon. The large amount of long-range dust transport overnight from the lower deserts of southeastern California and Arizona have pushed PM-10 readings into the Unhealthy category. Very high hourly average PM-10 concentrations this morning will likely result in exccedances of the federal standard at multiple monitors today. People should consider limiting outdoor physical activity due to unhealthy air quality.

For tomorrow and Tuesday, breezy conditions persist, especially on Tuesday, but the direction turns more northeasterly allowing PM concentrations to fall into the upper Good to lower Moderate category. As the disturbance clears the area, ozone will drop with levels remaining near or slightly above Moderate thresholds. Clear skies and high temps in the mid 80s to lower 90s are expected.

Enjoy the day and check back tomorrow for an updated forecast! -J. Malloy

MONITORING SITE MAPS	
STATIC MAP	http://www.azdeq.gov/environ/air/monitoring/images/map.jpg
INTERACTIVE MAPS	http://alert.fcd.maricopa.gov/alert/Google/v3/air.html http://www.airnow.gov/

POLLUTION MONITOR READINGS FOR Saturday, May 10, 2014

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
Alamo Lake	68	77	
Apache Junction	49	42	
Blue Point	54	46	
Buckeye	47	40	
Casa Grande	51	43	
Cave Creek	57	48	
Central Phoenix	53	45	
Dysart	56	47	
Falcon Field	53	45	
Fountain Hills	NOT AVBL	NOT AVBL	
Glendale	57	48	
Humboldt Mountain	59	50	
Phoenix Supersite	56	47	
Mesa	55	47	
North Phoenix	58	49	
Pinal Air Park	51	43	
Pinnacle Peak	60	51	
Queen Valley	52	44	
Rio Verde	57	48	
South Phoenix	56	47	

South Scottsdale	53	45	
Tempe	51	43	
Tonto Nat'l Mon.	55	47	
West Chandler	50	42	
West Phoenix	56	47	
Yuma	67	74	

CO (CARBON MONOXIDE)

SITE NAME	MAX 8-HR VALUE (PPM)	MAX AQI	AQI COLOR CODE
Central Phoenix	0.5	6	
Greenwood	0.6	7	
Phoenix Supersite	0.6	7	
West Phoenix	0.8	9	

PM-10 (PARTICLES)

SITE NAME	MAX 24-HR VALUE (µg/m3)	MAX AQI	AQI COLOR CODE
Buckeye	38.1	35	
Central Phoenix	33.4	31	
Combs School (Pinal County)	40.4	37	
Durango	37.1	34	
Dysart	31.8	29	
Glendale	32.6	30	
Greenwood	42.4	39	
Higley	35.5	33	
Maricopa (Pinal County)	47.9	44	
Phoenix Supersite	32.4	30	
Mesa	34.9	32	
North Phoenix	31.0	29	
South Phoenix	36.2	34	
South Scottsdale	31.1	29	
Tempe	32.2	30	
West Chandler	36.3	34	
West Forty Third	43.9	41	
West Phoenix	41.2	38	
Zuni Hills	31.3	29	

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	8.2	34	
Glendale	8.0	33	
Phoenix Supersite	5.8	24	
Mesa	9.1	38	
North Phoenix	8.0	33	
South Phoenix	9.0	38	
Tempe	7.9	33	
West Phoenix	8.9	37	

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 NOx (Nitrogen Oxides) in the presence of heat and sunlight.
Sources – VOCs are emitted from motor vehicles, chemical plants, refineries, factories, and other industrial sources. NOx 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.

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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.

{**Updated 12/19/2011**}

APPENDIX B

NATIONAL WEATHER SERVICE METEOROLOGICAL OBSERVATIONS, FORECASTS AND STORM REPORTS; NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION DUST/SMOKE REPORTS

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

QUALITY CONTROLLED LOCAL CLIMATOLOGICAL DATA
(final)
HOURLY OBSERVATIONS TABLE
WILLIAMS GATEWAY AIRPORT (23104)
PHOENIX, AZ
(05/2014)

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

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
11	0015	0	CLR	10.00		77	25.0	54	12.3	32	0.0	19	8	200		28.21			M	AA		29.66
11	0035	0	CLR	10.00		73	23.0	53	11.4	32	0.0	22	7	210		28.21			M	AA		29.66
11	0055	0	CLR	10.00		72	22.0	52	11.2	32	0.0	23	8	220		28.22			M	AA		29.67
11	0115	0	CLR	10.00		72	22.0	52	11.2	32	0.0	23	8	220		28.21			M	AA		29.66
11	0135	0	CLR	10.00		70	21.0	52	11.1	34	1.0	27	9	220		28.21			M	AA		29.66
11	0155	0	CLR	10.00		72	22.0	52	11.2	32	0.0	23	11	240		28.21			M	AA		29.66
11	0215	0	CLR	10.00		72	22.0	53	11.5	34	1.0	25	14	230		28.21			M	AA		29.66
11	0235	0	CLR	10.00		72	22.0	54	11.9	36	2.0	27	13	230		28.21			M	AA		29.66
11	0255	0	CLR	10.00		72	22.0	54	11.9	36	2.0	27	18	240	22	28.21			M	AA		29.66
11	0315	0	CLR	10.00		72	22.0	54	11.9	36	2.0	27	17	240		28.22			M	AA		29.67
11	0335	0	CLR	10.00		72	22.0	54	12.1	37	3.0	28	17	240		28.21			M	AA		29.66
11	0355	0	CLR	10.00		70	21.0	53	11.7	37	3.0	30	17	250		28.21			M	AA		29.66
11	0415	0	CLR	10.00		70	21.0	54	12.1	39	4.0	32	15	240		28.22			M	AA		29.67
11	0435	0	CLR	10.00		70	21.0	54	12.1	39	4.0	32	16	240		28.22			M	AA		29.68
11	0447	0	CLR250	20.00		70	21.0	M	M	39	4.0	M	31	240	45	M			M	AA		29.68
11	0455	0	CLR	10.00		68	20.0	52	11.2	37	3.0	32	13	240	18	28.23			M	AA		29.69
11	0515	0	CLR	10.00		66	19.0	51	10.7	37	3.0	34	11	240		28.25			M	AA		29.70
11	0535	0	CLR	7.00		64	18.0	50	10.0	36	2.0	36	7	230		28.25			M	AA		29.71
11	0547	0	FEW250	5.00	HZ	66	19.0	51	10.7	37	3.0	34	8	220		28.25			M	AA		29.71
11	0647	0	CLRs	4.00	HZ	66	19.0	51	10.7	37	3.0	34	11	220		28.26			M	AA		29.72
11	0747	0	CLRs	3.00	HZ	72	22.0	54	12.1	37	3.0	28	14	240		28.29			M	AA		29.75
11	0835	0	CLRs	2.50	HZ	73	23.0	53	11.8	34	1.0	24	11	240	20	28.30			M	AA		29.76
11	0851	0	CLRs	2.50	HZ	73	23.0	51	10.7	28	-2.0	19	11	240	20	28.30			M	AA		29.76
11	0928	0	CLRs	M	HZ	75	24.0	52	11.0	27	-3.0	17		M		28.30			M	AA		29.76
11	0954	0	CLRs	3.00	HZ	79	26.0	52	11.2	21	-6.0	11	15	270	23	28.31			M	AA		29.77
11	1047	0	CLRs	15.00		75	24.0	51	10.8	25	-4.0	15	17	260	29	28.33			M	AA		29.79
11	1149	0	CLRs	15.00		79	26.0	52	10.8	18	-8.0	10	22	290	34	28.33			M	AA		29.79
11	1247	0	CLRs	35.00		77	25.0	51	10.3	18	-8.0	11	17	300	38	28.33			M	AA		29.79
11	1347	0	CLRs	35.00		77	25.0	51	10.5	19	-7.0	11	18	270	24	28.34			M	AA		29.80
11	1447	0	CLRs	35.00		79	26.0	51	10.6	16	-9.0	9	17	270	31	28.34			M	AA		29.80
11	1547	0	CLRs	35.00		79	26.0	51	10.6	16	-9.0	9	17	260	30	28.33			M	AA		29.79
11	1650	0	CLRs	35.00		79	26.0	51	10.4	14	-10.0	8	9	250	24	28.34			M	AA		29.80
11	1747	0	CLRs	35.00		79	26.0	51	10.6	16	-9.0	9	14	280	26	28.34			M	AA		29.80
11	1847	0	FEW200	35.00		75	24.0	49	9.2	12	-11.0	9	14	270		28.35			M	AA		29.81
11	1955	0	CLR	10.00		72	22.0	48	8.9	16	-9.0	12	8	270		28.38			M	AA		29.84
11	2015	0	CLR	10.00		72	22.0	48	9.1	18	-8.0	13	8	260		28.39			M	AA		29.85
11	2035	0	CLR	10.00		70	21.0	48	8.6	18	-8.0	14	6	270		28.39			M	AA		29.85
11	2055	0	FEW200	20.00		68	20.0	46	7.9	16	-9.0	13	6	250		28.40			M	AA		29.86
11	2115	0	CLR	10.00		66	19.0	46	7.6	18	-8.0	16	7	250		28.41			M	AA		29.87
11	2135	0	CLR	10.00		64	18.0	45	7.2	19	-7.0	18	6	230		28.42			M	AA		29.88
11	2155	0	CLR	10.00		64	18.0	45	7.2	19	-7.0	18	7	260		28.42			M	AA		29.88
11	2215	0	CLR	10.00		70	21.0	48	9.0	21	-6.0	16	10	300		28.42			M	AA		29.88
11	2235	0	CLR	10.00		70	21.0	49	9.3	23	-5.0	17	13	330		28.43			M	AA		29.89
11	2255	0	CLR	10.00		68	20.0	47	8.5	21	-6.0	17	13	330		28.43			M	AA		29.89
11	2315	0	CLR	10.00		66	19.0	47	8.3	23	-5.0	19	8	340		28.44			M	AA		29.90
11	2335	0	CLR	10.00		66	19.0	47	8.3	23	-5.0	19	9	340		28.44			M	AA		29.90
11	2355	0	CLR	10.00		68	20.0	48	8.8	23	-5.0	18	13	340		28.44			M	AA		29.90

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

QUALITY CONTROLLED LOCAL CLIMATOLOGICAL DATA
(may be updated)
HOURLY OBSERVATIONS TABLE
PHOENIX SKY HARBOR INTL AIRPORT
(23183)
PHOENIX, AZ
(05/2014)

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: 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
11	0051	11	CLR	10.00		80	26.7	56	13.0	32	0.0	17	20	260	26	28.45			29.56	AA		29.62
11	0151	11	CLR	10.00		76	24.4	55	12.9	36	2.2	23	15	250	29	28.45			29.56	AA		29.62
11	0251	11	FEW250	10.00		74	23.3	56	13.0	39	3.9	28	16	230		28.45			29.57	AA		29.62
11	0351	11	FEW250	10.00		73	22.8	54	12.0	35	1.7	25	16	240		28.46			29.58	AA		29.63
11	0451	11	FEW250	5.00	HZ	71	21.7	50	10.1	27	-2.8	19	15	250	24	28.47			29.59	AA		29.64
11	0551	11	OVC028	4.00	HZ	70	21.1	51	10.4	30	-1.1	23	13	240		28.50			29.62	AA		29.67
11	0601	11	OVC028	4.00	HZ	70	21.1	51	10.4	30	-1.1	23	13	240		28.50			M	SP		29.67
11	0649	11	BKN030	3.00	HZ	70	21.0	51	10.4	30	-1.0	23	9	240		28.52			M	SP		29.69
11	0651	11	BKN030	3.00	HZ	70	21.1	51	10.4	30	-1.1	23	9	240		28.52			29.64	AA		29.69
11	0751	11	SCT030	3.00	HZ	73	22.8	51	10.6	27	-2.8	18	14	260		28.54			29.66	AA		29.71
11	0851	11	FEW030	9.00		75	23.9	52	11.2	28	-2.2	18	16	280		28.55			29.67	AA		29.72
11	0949	11	CLR	10.00		75	24.0	50	10.0	19	-7.0	12	22	280	28	28.56			M	SP		29.73
11	0951	11	CLR	10.00		76	24.4	51	10.5	21	-6.1	13	22	290	29	28.57			29.69	AA		29.74
11	1051	11	CLR	10.00		77	25.0	51	10.6	20	-6.7	12	17	300	30	28.58			29.70	AA		29.75
11	1151	11	CLR	10.00		77	25.0	51	10.5	19	-7.2	11	15	310		28.60			29.72	AA		29.77
11	1251	11	FEW080	10.00		77	25.0	51	10.6	20	-6.7	12	14	270	28	28.59			29.71	AA		29.76
11	1347	11	FEW080	10.00		79	26.0	51	10.7	16	-9.0	9	17	280	25	28.59			M	SP		29.76
11	1351	11	FEW080	10.00		79	26.1	51	10.5	14	-10.0	8	21	270	26	28.59			29.71	AA		29.76
11	1451	11	FEW080	10.00		80	26.7	51	10.3	9	-12.8	6	23	300	29	28.58			29.70	AA		29.75
11	1549	11	FEW080	10.00		81	27.0	51	10.8	12	-11.0	7	18	260	31	28.58			M	SP		29.75
11	1551	11	FEW080	10.00		81	27.2	51	10.8	12	-11.1	7	18	250	29	28.57			29.70	AA		29.74
11	1651	11	FEW080	10.00		80	26.7	51	10.4	10	-12.2	7	23	290	30	28.59			29.71	AA		29.76
11	1751	11	FEW080	10.00		79	26.1	50	10.1	10	-12.2	7	17	260	23	28.59			29.71	AA		29.76
11	1851	11	FEW080	10.00		79	26.1	51	10.7	16	-8.9	9	16	280		28.60			29.72	AA		29.77
11	1951	11	FEW080	10.00		78	25.6	52	10.9	20	-6.7	11	15	280		28.62			29.75	AA		29.79
11	2051	11	CLR	10.00		77	25.0	51	10.5	19	-7.2	11	16	290		28.65			29.78	AA		29.82
11	2151	11	CLR	10.00		76	24.4	51	10.5	21	-6.1	13	16	310		28.68			29.80	AA		29.85
11	2251	11	CLR	10.00		76	24.4	51	10.8	23	-5.0	14	14	350		28.69			29.82	AA		29.87
11	2351	11	CLR	10.00		73	22.8	50	10.2	24	-4.4	16	20	350		28.70			29.83	AA		29.88

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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
(05/2014)

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
11	0053	12	CLR	10.00		76	24.4	55	12.6	35	1.7	23	13	250		28.07			29.58	AA		29.66
11	0153	12	CLR	10.00		74	23.3	55	12.6	37	2.8	26	10	220	24	28.07			29.58	AA		29.65
11	0253	12	FEW049	10.00		73	22.8	54	12.1	36	2.2	26	14	230	21	28.07			29.57	AA		29.65
11	0353	12	OVC049	10.00		71	21.7	53	11.5	35	1.7	27	13	220	26	28.07			29.58	AA		29.66
11	0451	12	OVC029	4.00	HZ	70	21.0	49	9.5	25	-4.0	18	9	250		28.08			M	SP		29.67
11	0453	12	OVC029	4.00	HZ	69	20.6	49	9.4	26	-3.3	20	8	240		28.08			29.59	AA		29.67
11	0537	12	OVC025	2.00	HZ	68	20.0	48	9.0	25	-4.0	20	9	240		28.09			M	SP		29.68
11	0553	12	OVC025	2.00	HZ	68	20.0	48	9.0	25	-3.9	20	9	240		28.10			29.62	AA		29.69
11	0653	12	OVC023	2.00	HZ	67	19.4	48	9.1	27	-2.8	22	11	240	16	28.12			29.65	AA		29.71
11	0751	12	OVC021	3.00	HZ	70	21.0	50	10.0	28	-2.0	21	8	250		28.14			M	SP		29.73
11	0753	12	OVC021	3.00	HZ	70	21.1	50	10.0	28	-2.2	21	9	240		28.14			29.66	AA		29.73
11	0853	12	BKN029	8.00		73	22.8	52	11.2	31	-0.6	21	13	270	21	28.16			29.68	AA		29.75
11	0909	12	SCT031	10.00		72	22.0	52	11.2	32	0.0	23	16	250	22	28.15			M	SP		29.74
11	0953	12	CLR	10.00		73	22.8	52	10.9	29	-1.7	20	14	260	21	28.17			29.69	AA		29.76
11	1053	12	CLR	10.00		73	22.8	49	9.2	17	-8.3	12	18	260	29	28.19			29.72	AA		29.78
11	1153	12	CLR	10.00		74	23.3	50	9.9	21	-6.1	14	21	250	31	28.20			29.72	AA		29.79
11	1253	12	CLR	10.00		75	23.9	50	10.1	20	-6.7	13	10	280	28	28.19			29.72	AA		29.78
11	1353	12	CLR	10.00		77	25.0	51	10.4	19	-7.2	11	15	260	32	28.19			29.72	AA		29.78
11	1453	12	CLR	10.00		77	25.0	50	10.2	17	-8.3	10	13	270	21	28.18			29.71	AA		29.77
11	1553	12	CLR	10.00		77	25.0	50	9.9	14	-10.0	9	13	280	28	28.18			29.71	AA		29.77
11	1653	12	CLR	10.00		77	25.0	49	9.4	9	-12.8	7	15	260	24	28.18			29.71	AA		29.77
11	1753	12	CLR	10.00		77	25.0	50	10.1	16	-8.9	10	15	270	18	28.19			29.72	AA		29.78
11	1853	12	CLR	10.00		76	24.4	51	10.3	20	-6.7	12	10	260	18	28.20			29.73	AA		29.79
11	1953	12	CLR	10.00		74	23.3	50	10.1	22	-5.6	14	9	270		28.23			29.76	AA		29.82
11	2053	12	CLR	10.00		73	22.8	50	9.7	21	-6.1	14	7	290	17	28.26			29.79	AA		29.85
11	2153	12	CLR	10.00		72	22.2	50	9.7	23	-5.0	16	7	340		28.29			29.83	AA		29.89
11	2253	12	CLR	10.00		70	21.1	49	9.5	25	-3.9	18	6	340		28.31			29.85	AA		29.91
11	2353	12	CLR	10.00		68	20.0	49	9.2	26	-3.3	21	6	340		28.32			29.86	AA		29.92

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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
(05/2014)

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
11	0547	0	CLRs	2.00	HZ	68	20.0	50	9.9	30	-1.0	24	14	230		28.66			M	AA		29.69
11	0647	0	CLRs	2.00	HZ	66	19.0	50	9.8	32	0.0	28	9	230		28.68			M	AA		29.71
11	0747	0	CLRs	5.00	HZ	72	22.0	53	11.6	34	1.0	25	14	260		28.70			M	AA		29.73
11	0847	0	CLRs	10.00		75	24.0	52	11.3	28	-2.0	18	14	280	23	28.72			M	AA		29.75
11	0947	0	CLRs	10.00		75	24.0	52	11.1	27	-3.0	17	11	290	21	28.74			M	AA		29.77
11	1047	0	FEW120	10.00		77	25.0	51	10.8	21	-6.0	12	11	290	23	28.76			M	AA		29.79
11	1147	0	FEW150	10.00		77	25.0	52	11.3	25	-4.0	14	13	260	21	28.77			M	AA		29.80
11	1252	0	FEW150	10.00		79	26.0	52	10.9	18	-8.0	10	16	280	25	28.75			M	AA		29.78
11	1347	0	FEW150	M		81	27.0	53	11.4	18	-8.0	9	M	M		28.76			M	AA		29.79
11	1447	0	FEW150	10.00		79	26.0	52	10.9	18	-8.0	10	14	250	23	28.75			M	AA		29.78
11	1547	0	FEW150	10.00		82	28.0	54	11.9	21	-6.0	10	17	290	25	28.74			M	AA		29.77
11	1647	0	FEW150	10.00		81	27.0	53	11.4	18	-8.0	9	11	290	21	28.75			M	AA		29.78
11	1747	0	FEW150	10.00		79	26.0	52	10.9	18	-8.0	10	11	270	23	28.76			M	AA		29.79
11	1847	0	FEW250	10.00		79	26.0	52	10.9	18	-8.0	10	11	280	21	28.76			M	AA		29.79
11	1947	0	FEW150	10.00		77	25.0	51	10.5	19	-7.0	11	14	280		28.79			M	AA		29.82
11	2047	0	FEW150	10.00		72	22.0	51	10.4	27	-3.0	19	8	240		28.82			M	AA		29.85

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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
(05/2014)

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
11	0647	0	CLRs	2.00	HZ	68	20.0	50	9.9	30	-1.0	24	11	190		28.58			M	AA		29.71
11	0747	0	CLRs	3.00	HZ	72	22.0	52	11.2	32	0.0	23	10	240		28.60			M	AA		29.73
11	0847	0	CLRs	15.00		73	23.0	52	11.1	30	-1.0	20	18	260	24	28.63			M	AA		29.76
11	0948	0	CLRs	20.00		73	23.0	51	10.6	27	-3.0	18	20	240	29	28.64			M	AA		29.77
11	1047	0	CLRs	20.00		75	24.0	51	10.3	21	-6.0	13	14	260	24	28.67			M	AA		29.80
11	1147	0	CLRs	20.00		77	25.0	51	10.8	21	-6.0	12	18	270	28	28.67			M	AA		29.80
11	1247	0	FEW120	M		81	27.0	53	11.5	19	-7.0	10	M	M		28.66			M	AA		29.79
11	1347	0	CLRs	20.00		79	26.0	50	10.1	10	-12.0	7	20	220	28	28.65			M	AA		29.78
11	1447	0	CLRs	20.00		79	26.0	51	10.5	14	-10.0	8	20	240	25	28.64			M	AA		29.77
11	1547	0	FEW120	20.00		81	27.0	52	11.0	14	-10.0	8	21	270	28	28.64			M	AA		29.77
11	1647	0	CLRs	20.00		81	27.0	51	10.5	9	-13.0	6	17	250	25	28.65			M	AA		29.78
11	1747	0	CLRs	20.00		81	27.0	53	11.4	18	-8.0	9	11	250	22	28.65			M	AA		29.78
11	1847	0	CLRs	20.00		79	26.0	52	11.2	21	-6.0	11	15	270		28.66			M	AA		29.79

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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
(05/2014)

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
11	0647	0	CLRs	3.00	BLDUs	66	19.0	50	9.7	32	0.0	28	9s	220		28.23			M	AA		29.70
11	0750	0	CLRs	3.00	BLDUs	68	20.0	49	9.3	27	-3.0	21	10s	220	17	28.25			M	AA		29.72
11	0847	0	CLR	3.00	BLDU	70	21.0	M	M	28	-2.0	M	11	220	17	M			M	AA		M
11	0947	0	CLRs	6.00		72	22.0	51	10.5	28	-2.0	19	11	230	23	28.28			M	AA		29.75
11	1047	0	CLRs	15.00		73	23.0	50	9.7	21	-6.0	14	17	240	23	28.29			M	AA		29.76
11	1147	0	FEW200	20.00		75	24.0	50	10.0	19	-7.0	12	17	260	25	28.31			M	AA		29.78
11	1247	0	FEW200	30.00		77	25.0	51	10.4	19	-7.0	11	11	260	21	28.31			M	AA		29.78
11	1354	0	FEW200	30.00		79	26.0	52	10.8	18	-8.0	10	16	280		28.30			M	AA		29.77
11	1447	0	FEW200	30.00		81	27.0	52	10.9	14	-10.0	8	14	270	21	28.30			M	AA		29.77
11	1647	0	FEW200	30.00		79	26.0	50	10.0	9	-13.0	7	14	260	21	28.31			M	AA		29.78
11	1747	0	FEW200	40.00		77	25.0	49	9.5	9	-13.0	7	11	250	17	28.30			M	AA		29.77
11	1847	0	FEW015	35.00		75	24.0	48	9.0	10	-12.0	8	11	250		28.31			M	AA		29.78
11	1947	0	FEW150	40.00		73	23.0	49	9.4	18	-8.0	12	14	260		28.34			M	AA		29.81

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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
(05/2014)

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
11	0053	12	CLR	10.00		74	23.3	54	12.4	36	2.2	25	15	240		28.09			29.57	AA		29.64
11	0153	12	CLR	10.00		72	22.2	54	12.1	37	2.8	28	14	220	22	28.08			29.56	AA		29.63
11	0253	12	BKN055	10.00		70	21.1	53	11.6	37	2.8	30	15	220	23	28.08			29.56	AA		29.63
11	0353	12	OVC046	8.00		69	20.6	51	10.6	33	0.6	26	16	230		28.08			29.56	AA		29.63
11	0453	12	OVC030	3.00	HZ	67	19.4	47	8.3	22	-5.6	18	9	230		28.09			29.57	AA		29.64
11	0540	12	OVC034	2.00	HZ	66	19.0	46	7.9	21	-6.0	18	9	220		28.11			M	SP		29.66
11	0553	12	OVC034	2.00	HZ	66	18.9	47	8.1	22	-5.6	19	7	230		28.12			29.60	AA		29.67
11	0623	12	OVC030	1.75	HZ	66	19.0	47	8.5	25	-4.0	21	9	210		28.13			M	SP		29.68
11	0633	12	OVC028	1.75	HZ	66	19.0	47	8.5	25	-4.0	21	8	210		28.14			M	SP		29.69
11	0653	12	OVC024	1.75	HZ	66	18.9	48	8.7	26	-3.3	22	5	220		28.15			29.63	AA		29.70
11	0715	12	OVC022	2.50	HZ	68	20.0	48	9.0	25	-4.0	20	9	250		28.15			M	SP		29.70
11	0725	12	OVC024	4.00	HZ	70	21.0	49	9.5	25	-4.0	18	14	270		28.15			M	SP		29.70
11	0753	12	OVC024	5.00	HZ	70	21.1	49	9.5	25	-3.9	18	14	270		28.16			29.65	AA		29.71
11	0822	12	BKN030	7.00		72	22.0	51	10.5	28	-2.0	19	14	260		28.16			M	SP		29.71
11	0853	12	CLR	10.00		72	22.2	52	10.8	30	-1.1	21	17	280		28.17			29.65	AA		29.72
11	0953	12	CLR	10.00		73	22.8	51	10.6	27	-2.8	18	22	260	28	28.18			29.67	AA		29.74
11	1053	12	CLR	10.00		73	22.8	49	9.3	18	-7.8	12	28	250	33	28.20			29.69	AA		29.75
11	1153	12	CLR	6.00	HZ	75	23.9	50	9.7	17	-8.3	11	28	260	39	28.20			29.69	AA		29.76
11	1253	12	CLR	10.00		76	24.4	50	9.7	15	-9.4	10	21	250	33	28.20			29.70	AA		29.76
11	1353	12	CLR	10.00		77	25.0	50	9.9	14	-10.0	9	16	290	31	28.20			29.69	AA		29.75
11	1453	12	CLR	10.00		77	25.0	49	9.5	10	-12.2	8	21	270	30	28.20			29.69	AA		29.75
11	1553	12	CLR	10.00		78	25.6	49	9.2	1	-17.2	5	22	280	33	28.18			29.68	AA		29.74
11	1653	12	CLR	10.00		78	25.6	50	9.8	10	-12.2	7	14	250	30	28.20			29.69	AA		29.75
11	1753	12	CLR	10.00		78	25.6	51	10.2	15	-9.4	9	17	270	29	28.20			29.70	AA		29.75
11	1853	12	CLR	10.00		75	23.9	50	9.9	19	-7.2	12	18	280		28.21			29.72	AA		29.77
11	1953	12	CLR	10.00		73	22.8	49	9.3	18	-7.8	12	16	270		28.24			29.75	AA		29.80
11	2053	12	CLR	10.00		72	22.2	49	9.3	20	-6.7	14	9	340		28.29			29.79	AA		29.85
11	2153	12	CLR	10.00		71	21.7	49	9.2	21	-6.1	15	15	350		28.31			29.81	AA		29.87
11	2253	12	CLR	10.00		69	20.6	48	9.0	23	-5.0	18	16	350		28.34			29.84	AA		29.90
11	2353	12	CLR	10.00		67	19.4	47	8.5	23	-5.0	19	17	340		28.35			29.85	AA		29.91

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

QUALITY CONTROLLED LOCAL CLIMATOLOGICAL DATA (final)

HOURLY OBSERVATIONS TABLE
CHANDLER MUNICIPAL AIRPORT (53128)
CHANDLER, AZ
(05/2014)

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
11	0547	0	FEW250	3.00	HZ	68	20.0	53	11.6	39	4.0	35	11	210		28.38			M	AA		29.69
11	0650	0	CLRs	3.00	HZ	68	20.0	53	11.6	39	4.0	35	15	220		28.40			M	AA		29.71
11	0747	0	CLRs	3.00	HZ	72	22.0	53	11.6	34	1.0	25	17	230		28.42			M	AA		29.73
11	0847	0	CLRs	4.00	HZ	M	M	M	M	30	-1.0	M	18	270		28.43			M	AA		29.75
11	0947	0	CLRs	9.00		75	24.0	51	10.5	23	-5.0	14	21	280	28	28.43			M	AA		29.75
11	1047	0	CLRs	15.00		77	25.0	53	11.5	27	-3.0	16	15	270	26	28.44			M	AA		29.76
11	1147	0	CLRs	30.00		77	25.0	51	10.4	18	-8.0	11	17	280	29	28.46			M	AA		29.78
11	1250	0	CLRs	35.00		77	25.0	51	10.5	19	-7.0	11	23	280	29	28.46			M	AA		29.78
11	1347	0	CLRs	30.00		77	25.0	51	10.5	19	-7.0	11	17	240	29	28.46			M	AA		29.78
11	1447	0	CLRs	30.00		79	26.0	51	10.6	16	-9.0	9	11	240	23	28.46			M	AA		29.77
11	1547	0	CLRs	30.00		79	26.0	51	10.4	14	-10.0	8	17	210	29	28.46			M	AA		29.77
11	1647	0	CLRs	30.00		77	25.0	50	9.8	12	-11.0	8	14	250		28.46			M	AA		29.78
11	1747	0	CLRs	30.00		77	25.0	49	9.6	10	-12.0	8	16	270	24	28.47			M	AA		29.79
11	1847	0	CLRs	40.00		77	25.0	50	9.8	12	-11.0	8	14	240		28.47			M	AA		29.79
11	1947	0	CLRs	15.00		72	22.0	49	9.3	19	-7.0	13	9	240		28.50			M	AA		29.82
11	2047	0	CLRs	15.00		72	22.0	50	9.8	23	-5.0	16	9	250		28.52			M	AA		29.84

Dynamically generated Wed May 14 18:37:29 EDT 2014 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

CASA GRANDE MUNICIPAL ARPT (03914)

CASA GRANDE, AZ

(05/2014)

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

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
11	0015	0	CLR	10.00		75	24.0	54	12.2	34	1.0	22	10	180		28.12			M	AA		29.66
11	0035	0	CLR	10.00		73	23.0	53	11.8	34	1.0	24	11	190		28.13			M	AA		29.67
11	0055	0	CLR	10.00		73	23.0	53	11.8	34	1.0	24	13	190	16	28.13			M	AA		29.67
11	0115	0	CLR	10.00		73	23.0	54	12.1	36	2.0	26	11	200		28.13			M	AA		29.67
11	0135	0	CLR	10.00		72	22.0	54	11.9	36	2.0	27	5	200		28.13			M	AA		29.67
11	0155	0	CLR	10.00		72	22.0	54	11.9	36	2.0	27	7	180		28.13			M	AA		29.67
11	0215	0	CLR	10.00		70	21.0	53	11.4	36	2.0	29	8	170		28.13			M	AA		29.67
11	0235	0	CLR	10.00		70	21.0	53	11.4	36	2.0	29	7	160		28.13			M	AA		29.67
11	0255	0	CLR	10.00		70	21.0	53	11.4	36	2.0	29	6	160		28.13			M	AA		29.67
11	0315	0	CLR	10.00		70	21.0	53	11.4	36	2.0	29	0	000		28.13			M	AA		29.67
11	0335	0	CLR	10.00		68	20.0	52	11.0	36	2.0	31	0	000		28.14			M	AA		29.68
11	0355	0	CLR	10.00		66	19.0	51	10.5	36	2.0	33	0	000		28.14			M	AA		29.68
11	0415	0	CLR	10.00		66	19.0	51	10.7	37	3.0	34	0	000		28.15			M	AA		29.69
11	0435	0	CLR	10.00		66	19.0	52	11.1	39	4.0	37	0	000		28.15			M	AA		29.69
11	0455	0	CLR	10.00		64	18.0	51	10.7	39	4.0	40	0	000		28.16			M	AA		29.70
11	0515	0	CLR	10.00		64	18.0	51	10.7	39	4.0	40	5	270		28.17			M	AA		29.71
11	0535	0	CLR	10.00		64	18.0	51	10.7	39	4.0	40	5	250		28.17			M	AA		29.71
11	0555	0	CLR	10.00		66	19.0	52	11.1	39	4.0	37	8	250		28.18			M	AA		29.72
11	0615	0	CLR	8.00		66	19.0	52	11.1	39	4.0	37	10	240	17	28.18			M	AA		29.72
11	0635	0	CLR	5.00		66	19.0	52	11.1	39	4.0	37	11	240		28.19			M	AA		29.73
11	0655	0	CLR	4.00		66	19.0	52	11.1	39	4.0	37	10	240		28.20			M	AA		29.74
11	0715	0	CLR	3.00		68	20.0	53	11.6	39	4.0	35	7	220		28.21			M	AA		29.75
11	0735	0	CLR	3.00		70	21.0	53	11.7	37	3.0	30	10	240		28.22			M	AA		29.76
11	0755	0	CLR	3.00		70	21.0	53	11.5	36	2.0	29	10	260		28.22			M	AA		29.76
11	0815	0	CLR	3.00		72	22.0	53	11.5	34	1.0	25	15	250		28.22			M	AA		29.76
11	0835	0	CLR	4.00		72	22.0	52	10.8	30	-1.0	21	14	280		28.23			M	AA		29.77
11	0855	0	CLR	6.00		72	22.0	52	10.8	30	-1.0	21	17	250	21	28.23			M	AA		29.77
11	0915	0	CLR	8.00		73	23.0	52	11.1	30	-1.0	20	15	250	20	28.24			M	AA		29.78
11	0935	0	CLR	10.00		75	24.0	52	11.2	28	-2.0	18	15	270	24	28.24			M	AA		29.78
11	0955	0	CLR	10.00		75	24.0	52	11.2	28	-2.0	18	14	270	22	28.24			M	AA		29.78
11	1015	0	CLR	9.00		75	24.0	52	11.0	27	-3.0	17	18	260		28.24			M	AA		29.78
11	1035	0	CLR	10.00		75	24.0	51	10.7	25	-4.0	15	21	260	29	28.24			M	AA		29.78
11	1055	0	CLR	10.00		77	25.0	52	10.9	23	-5.0	13	16	250	26	28.25			M	AA		29.79
11	1115	0	CLR	10.00		75	24.0	50	10.2	21	-6.0	13	20	260	25	28.25			M	AA		29.80
11	1135	0	CLR	10.00		75	24.0	50	9.9	19	-7.0	12	24	280	29	28.25			M	AA		29.80
11	1155	0	CLR	9.00		77	25.0	51	10.4	19	-7.0	11	23	270	32	28.25			M	AA		29.80
11	1215	0	CLR	10.00		77	25.0	51	10.4	19	-7.0	11	20	250	29	28.25			M	AA		29.80
11	1235	0	CLR	10.00		77	25.0	51	10.4	19	-7.0	11	17	240	29	28.25			M	AA		29.80
11	1255	0	CLR	10.00		77	25.0	51	10.7	21	-6.0	12	17	300	28	28.25			M	AA		29.80
11	1315	0	CLR	10.00		77	25.0	51	10.7	21	-6.0	12	14	260	24	28.25			M	AA		29.80
11	1335	0	CLR	10.00		77	25.0	51	10.7	21	-6.0	12	14	250	28	28.25			M	AA		29.80
11	1355	0	CLR	10.00		79	26.0	52	11.2	21	-6.0	11	20	270	30	28.25			M	AA		29.80
11	1415	0	CLR	10.00		79	26.0	52	11.2	21	-6.0	11	18	250	28	28.25			M	AA		29.80
11	1435	0	CLR	10.00		79	26.0	52	11.2	21	-6.0	11	21	270	25	28.25			M	AA		29.80
11	1455	0	CLR	10.00		77	25.0	51	10.4	19	-7.0	11	20	260	30	28.25			M	AA		29.80
11	1515	0	CLR	10.00		77	25.0	51	10.4	19	-7.0	11	20	260	26	28.25			M	AA		29.80
11	1535	0	CLR	10.00		79	26.0	52	10.9	19	-7.0	10	20	270	26	28.25			M	AA		29.80
11	1555	0	CLR	10.00		77	25.0	51	10.4	19	-7.0	11	15	290	30	28.27			M	AA		29.81
11	1615	0	CLR	10.00		77	25.0	51	10.4	19	-7.0	11	17	290	25	28.27			M	AA		29.81
11	1635	0	CLR	10.00		75	24.0	50	9.8	18	-8.0	11	10	270	24	28.27			M	AA		29.81
11	1655	0	CLR	10.00		77	25.0	51	10.3	18	-8.0	11	15	270	25	28.27			M	AA		29.81
11	1715	0	CLR	10.00		77	25.0	51	10.3	18	-8.0	11	15	260	23	28.27			M	AA		29.81
11	1735	0	CLR	10.00		75	24.0	50	9.8	18	-8.0	11	16	270	24	28.27			M	AA		29.82
11	1755	0	CLR	10.00		75	24.0	50	9.8	18	-8.0	11	14	270	24	28.27			M	AA		29.82
11	1815	0	CLR	10.00		75	24.0	50	9.8	18	-8.0	11	17	270		28.27			M	AA		29.82
11	1835	0	CLR	10.00		73	23.0	48	9.1	16	-9.0	11	13	250		28.27			M	AA		29.82
11	1855	0	CLR	10.00		73	23.0	48	9.1	16	-9.0	11	8	250		28.27			M	AA		29.82

11	1915	0	CLR	10.00		72	22.0	48	8.9	16	-9.0	12	10	260		28.27			M	AA		29.82
11	1935	0	CLR	9.00		72	22.0	48	8.9	16	-9.0	12	6	250		28.29			M	AA		29.84
11	1955	0	CLR	10.00		70	21.0	47	8.4	16	-9.0	13	7	260		28.29			M	AA		29.84
11	2015	0	CLR	10.00		68	20.0	47	8.1	18	-8.0	15	6	280		28.30			M	AA		29.85
11	2035	0	CLR	10.00		66	19.0	46	7.6	18	-8.0	16	6	280		28.31			M	AA		29.86
11	2055	0	CLR	10.00		66	19.0	46	7.7	19	-7.0	16	7	280		28.32			M	AA		29.87
11	2115	0	CLR	10.00		64	18.0	45	7.0	18	-8.0	17	7	280		28.33			M	AA		29.88
11	2135	0	CLR	10.00		64	18.0	45	7.2	19	-7.0	18	5	270		28.34			M	AA		29.89
11	2155	0	CLR	10.00		63	17.0	44	6.9	19	-7.0	18	6	260		28.34			M	AA		29.89
11	2215	0	CLR	10.00		63	17.0	44	6.9	19	-7.0	18	0	000		28.35			M	AA		29.90
11	2235	0	CLR	10.00		61	16.0	44	6.4	19	-7.0	20	0	000		28.35			M	AA		29.90
11	2255	0	CLR	10.00		59	15.0	42	5.7	18	-8.0	20	0	000		28.35			M	AA		29.90
11	2315	0	CLR	10.00		61	16.0	44	6.4	19	-7.0	20	0	000		28.35			M	AA		29.90
11	2335	0	CLR	10.00		61	16.0	44	6.4	19	-7.0	20	0	000		28.35			M	AA		29.90
11	2355	0	CLR	10.00		59	15.0	43	5.8	19	-7.0	21	0	000		28.36			M	AA		29.91

Dynamically generated Wed May 14 18:35:42 EDT 2014 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	PCP06	PCP24	PCPXX	SD
		GMT		MPH	MPH						Miles										F	F	Mb	inches	Mb	F	F	inches	inches	inches	inches	inches
720644	99999	201405110715	230	15	21	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	*	75	39	******	29.64	******	***	***	*****	*****	*****	*****	**
720644	99999	201405110735	220	14	23	***	***	*	*	*	10.0	**	**	**	**	**	**	**	**	*	73	39	******	29.65	******	***	***	*****	*****	*****	*****	**
720644	99999	201405110755	220	14	22	31	***	*	*	*	10.0	**	**	**	**	**	**	**	**	*	73	39	******	29.64	******	***	***	*****	*****	*****	*****	**
720644	99999	201405110815	220	14	21	29	***	*	*	*	10.0	**	**	**	**	**	**	**	**	*	72	37	******	29.64	******	***	***	*****	*****	*****	*****	**
720644	99999	201405110835	230	13	20	41	***	*	*	*	10.0	**	**	**	**	**	**	**	**	*	72	36	******	29.64	******	***	***	*****	*****	*****	*****	**
720644	99999	201405110855	240	11	***	41	***	*	*	*	10.0	**	**	**	**	**	**	**	**	*	72	32	******	29.64	******	***	***	*****	*****	*****	*****	**
720644	99999	201405110915	250	13	***	33	***	*	*	*	10.0	**	**	**	**	**	**	**	**	*	68	32	******	29.64	******	***	***	*****	*****	*****	*****	**
720644	99999	201405110935	250	13	18	33	***	*	*	*	7.0	**	**	**	**	**	**	**	**	*	70	34	******	29.64	******	***	***	*****	*****	*****	*****	**
720644	99999	201405110955	270	11	23	24	***	*	*	*	4.0	**	**	**	**	**	**	**	**	*	70	23	******	29.65	******	***	***	*****	*****	*****	*****	**
720644	99999	201405111015	270	17	23	26	***	*	*	*	3.0	**	**	**	**	**	**	**	**	*	70	21	******	29.65	******	***	***	*****	*****	*****	*****	**
720644	99999	201405111035	270	17	24	27	***	*	*	*	2.5	**	**	**	**	**	**	**	**	*	70	23	******	29.65	******	***	***	*****	*****	*****	*****	**
720644	99999	201405111055	270	17	23	45	***	*	*	*	2.5	**	**	**	**	**	**	**	**	*	70	23	******	29.66	******	***	***	*****	*****	*****	*****	**
720644	99999	201405111115	280	13	22	***	***	*	*	*	2.0	**	**	**	**	**	**	**	**	*	68	25	******	29.67	******	***	***	*****	*****	*****	*****	**
720644	99999	201405111135	270	14	***	3	***	*	*	*	2.0	**	**	**	**	**	**	**	**	*	68	25	******	29.67	******	***	***	*****	*****	*****	*****	**
720644	99999	201405111155	260	9	***	3	***	*	*	*	2.0	**	**	**	**	**	**	**	**	*	66	25	******	29.67	******	***	***	*****	*****	*****	*****	**
720644	99999	201405111215	270	11	***	3	***	*	*	*	2.5	**	**	**	**	**	**	**	**	*	66	25	******	29.67	******	***	***	*****	*****	*****	*****	**
720644	99999	201405111235	270	13	20	3	***	*	*	*	2.0	**	**	**	**	**	**	**	**	*	66	27	******	29.68	******	***	***	*****	*****	*****	*****	**
720644	99999	201405111255	270	14	***	722	CLR	*	*	*	2.0	**	**	**	**	**	**	**	**	*	66	27	******	29.69	******	***	***	*****	*****	*****	*****	**
720644	99999	201405111315	280	10	***	722	CLR	*	*	*	3.0	**	**	**	**	**	**	**	**	*	66	28	******	29.70	******	***	***	*****	*****	*****	*****	**
720644	99999	201405111335	290	9	***	722	CLR	*	*	*	5.0	**	**	**	**	**	**	**	**	*	66	28	******	29.71	******	***	***	*****	*****	*****	*****	**
720644	99999	201405111355	280	13	17	722	CLR	*	*	*	9.1	**	**	**	**	**	**	**	**	*	68	28	******	29.72	******	***	***	*****	*****	*****	*****	**
720644	99999	201405111415	290	15	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	*	68	28	******	29.73	******	***	***	*****	*****	*****	*****	**
720644	99999	201405111435	290	17	23	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	*	70	28	******	29.73	******	***	***	*****	*****	*****	*****	**
720644	99999	201405111455	280	16	23	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	*	72	28	******	29.74	******	***	***	*****	*****	*****	*****	**
720644	99999	201405111515	280	18	24	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	*	72	25	******	29.75	******	***	***	*****	*****	*****	*****	**
720644	99999	201405111535	290	15	23	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	*	72	23	******	29.76	******	***	***	*****	*****	*****	*****	**
720644	99999	201405111555	270	17	23	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	*	73	23	******	29.76	******	***	***	*****	*****	*****	*****	**
720644	99999	201405111615	320	17	22	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	*	73	27	******	29.77	******	***	***	*****	*****	*****	*****	**
720644	99999	201405111635	330	14	23	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	*	73	23	******	29.78	******	***	***	*****	*****	*****	*****	**
720644	99999	201405111655	320	20	30	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	*	73	21	******	29.79	******	***	***	*****	*****	*****	*****	**
720644	99999	201405111715	320	16	23	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	*	73	21	******	29.80	******	***	***	*****	*****	*****	*****	**
720644	99999	201405111735	340	10	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	*	72	21	******	29.80	******	***	***	*****	*****	*****	*****	**
720644	99999	201405111755	990	11	21	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	*	73	21	******	29.80	******	***	***	*****	*****	*****	*****	**
720644	99999	201405111815	330	15	24	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	*	75	18	******	29.80	******	***	***	*****	*****	*****	*****	**
720644	99999	201405111835	290	18	24	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	*	75	18	******	29.80	******	***	***	*****	*****	*****	*****	**
720644	99999	201405111855	990	21	28	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	*	75	16	******	29.80	******	***	***	*****	*****	*****	*****	**

720644	99999	201405112155	270	14	31	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	*	77	10	******	29.79	******	***	***	*****	*****	*****	*****	**
720644	99999	201405112215	300	24	29	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	*	77	9	******	29.78	******	***	***	*****	*****	*****	*****	**
720644	99999	201405112235	280	13	24	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	*	79	10	******	29.78	******	***	***	*****	*****	*****	*****	**
720644	99999	201405112255	320	17	21	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	*	79	12	******	29.78	******	***	***	*****	*****	*****	*****	**
720644	99999	201405112315	300	15	25	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	*	79	10	******	29.79	******	***	***	*****	*****	*****	*****	**
720644	99999	201405112335	300	10	22	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	*	77	10	******	29.79	******	***	***	*****	*****	*****	*****	**
720644	99999	201405112355	300	16	23	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	*	79	14	******	29.79	******	***	***	*****	*****	*****	*****	**
720644	99999	201405120015	330	15	26	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	*	77	14	******	29.79	******	***	***	*****	*****	*****	*****	**
720644	99999	201405120035	320	21	25	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	*	77	14	******	29.79	******	***	***	*****	*****	*****	*****	**

NWS SRRS PRODUCTS FOR:
2014051107 to 2014051119

FXUS65 KPSR 110902
AFDPSR
AREA FORECAST DISCUSSION
NATIONAL WEATHER SERVICE PHOENIX AZ
200 AM MST SUN MAY 11 2014
.SYNOPSIS...
A DRY COLD FRONT WILL BRING SLIGHTLY COOLER TEMPERATURES TO THE REGION TODAY...ALONG WITH BREEZY TO WINDY CONDITIONS AND THE POSSIBILITY OF BLOWING DUST. UNDER HIGH PRESSURE AND SUNNY SKIES...TEMPERATURES WILL GRADUALLY REBOUND INTO THE UPPER 90S/LOWER 100S BY THE MIDDLE AND END OF THE WEEK.
&&
.DISCUSSION...
THE STRONG SHORTWAVE OF INTEREST MONITORED THE PAST SEVERAL DAYS HAS NOW MOVED INTO THE GREAT BASIN WITH A SEASONABLY DEEP PV ANOMALY ROUNDING THE BASE OF THE TROUGH AXIS THROUGH SRN NEVADA. A NARROW JET CORRIDOR WAS PLUNGING THROUGH THE WRN HALF OF THE TROUGH WITH INTENSE MIDTROPOSPHERIC FRONTOGENESIS AND CLASSIC BAROCLINIC LEAF SATELLITE APPEARANCE ADVANCING AHEAD OF THE VORTICITY CENTER. 00Z SOUNDING DATA SAMPLED 6-8DM HEIGHT FALLS IN ADVANCE OF THIS WAVE...AND THE DEEPENING PHASE OVER NRN ARIZONA/SRN UTAH SHOULD CONTINUE FOR THE NEXT 6-12 HOURS UNTIL THE PV ANOMALY CENTER AND JET ROTATE THROUGH THE EASTERN PORTION OF THE WAVE DEFORMING THE NEGATIVE TILT STRUCTURE INTO A MORE POSITIVE TILT/SHEARED WAVE. OBJECTIVE AND OBSERVATIONAL ANALYSIS PLACE A 994MB SFC LOW ALONG THE UTAH/ARIZONA BORDER WITH A COLD FRONT SNAKING SOUTH THROUGH FAR WRN ARIZONA. POST FRONTAL PRESSURE RISES HAVE BEEN RATHER VIGOROUS OVER SRN NEVADA (GREATER THAN 6MB/3HR) YIELDING A STEEP GRADIENT IN THE VICINITY OF THE NWRN FORECAST AREA (KFLG-KLAS GRADIENT OF 8MB). THE TIGHT THERMAL PACKING OF THIS SYSTEM HAS ALSO ALLOWED FOR THE DEVELOPMENT OF A NLY LLJ AXIS WITHIN THE ZONE OF POST FRONTAL CAA...YIELDING GUSTY WINDS AND PRECLUDING THE DEVELOPMENT OF A DISTINCT NOCTURNAL INVERSION. TERRAIN INFLUENCES HAVE LOCALLY ENHANCED WINDS OVER THE PAST 6-12 HOURS ACROSS SERN CALIFORNIA SUCH THAT A FEW OBSERVATIONS HAVE SHOWN GUSTS OVER 40 MPH WHICH HAS LOFTED SUBSTANTIAL AMOUNTS OF DUST DOWNSTREAM.
THE STEEP POST FRONTAL PRESSURE GRADIENT WILL GRADUALLY TRANSLATE EASTWARD THROUGH CNTRL ARIZONA WITH FROPA FORECAST LATER THIS MORNING. WITH H8 TEMPERATURES FALLING SOME 6C-8C VERSUS SATURDAY...COOLER WEATHER WILL DEFINITELY BE NOTICEABLE BUT NOT OVERLY DRASTIC (AROUND 8F-14F COOLER HIGHS). BY AND LARGE THE GREATEST IMPACTS WILL BE A RESULT OF A PROLONGED PERIOD OF VERY GUSTY WINDS MECHANICALLY MIXED FROM THE H8-H7 LAYER TO THE SFC THROUGHOUT THE DAYLIGHT HOURS...LEADING TO 1) COPIOUS AMOUNTS OF SUSPENDED DUST (AIR QUALITY ISSUES)...2) LOCAL CHANNELS OF MORE DENSE BLOWING DUST (REDUCED VISIBILITIES)...3) STRONG CROSS WINDS ON REGIONAL INTERSTATES (TRAVEL PROBLEMS FOR HIGH PROFILE VEHICLES)...AND 4) FIRE WEATHER CONCERNS (SEVERAL ONGOING SMALL FIRES AND ANY NEW STARTS COULD QUICKLY BECOME UNCONTROLLED). THEREFORE...THE COMPLIMENT OF WIND ADVISORIES AND RED FLAG WARNING REMAIN IN EFFECT THROUGH THIS AFTERNOON. FUTURE SHIFTS MAY NEED TO ADDRESS ANY CONCENTRATED AREAS OF BLOWING DUST WITH LOCAL ADVISORY STATEMENTS...BUT FOR THE MOST PARTS THE MAJORITY OF THE AREA SHOULD MAINTAIN VISIBILITIES ABOVE ONE MILE.
THE AFOREMENTIONED SHORTWAVE WILL LIFT THROUGH THE PLAINS MONDAY AND TUESDAY WITH NWLY FLOW ALOFT AND SLOWLY RISING HEIGHTS PREDOMINATING THE FORECAST AREA. WITH BOUNDARY LAYER NLY/NELY FLOW...WARMING OF THE MIXING LAYER WILL LAG THE MID/UPPER LEVEL SOMEWHAT SUCH THAT TEMPERATURES WILL REMAIN SLIGHTLY BELOW NORMAL. EVENTUALLY BY THE

MIDDLE OF THE WEEK...HIGHER AMPLITUDE RIDGING WILL BUILD SOLIDLY INTO THE REGION WITH H5 HEIGHTS REACHING INTO A 585-588DM RANGE. WITH FAIRLY HIGH CONFIDENCE...HAVE PUSHED THE FORECAST TOWARDS THE WARMEST AVAILABLE GUIDANCE...ECLIPSING THE 100F THRESHOLD FOR MOST LOWER ELEVATION LOCATIONS ON THURSDAY...AND MAINTAINING MUCH WARMER THAN AVERAGE READINGS INTO THE WEEKEND (QUITE POSSIBLY FLIRTING TOWARDS RECORD TERRITORY ON AT LEAST ONE DAY LATER THIS WEEK).
&&

FXUS65 KPSR 111547
AFDPSR
AREA FORECAST DISCUSSION
NATIONAL WEATHER SERVICE PHOENIX AZ
845 AM MST SUN MAY 11 2014
.SYNOPSIS...
A DRY COLD FRONT WILL BRING SLIGHTLY COOLER TEMPERATURES TO THE REGION TODAY...ALONG WITH BREEZY TO WINDY CONDITIONS AND THE POSSIBILITY OF BLOWING DUST. UNDER HIGH PRESSURE AND SUNNY SKIES...TEMPERATURES WILL GRADUALLY REBOUND INTO THE UPPER 90S/LOWER 100S BY THE MIDDLE AND END OF THE WEEK.
&&
.DISCUSSION...
VIGOROUS SPRING PACIFIC UPPER LOW WAS PUSHING EAST ACROSS THE DESERT SOUTHWEST THIS MORNING...BRINGING WIND AND COOLING TO THE SERN CA AND SRN AZ DESERTS. H5 PLOT DATA AS WELL AS VAPOR IMAGERY DEPICTED THE LOW CENTER ACROSS SOUTH CENTRAL UTAH AT 5 AM...AND EARLY THIS MORNING THE SURFACE COLD FRONT WAS PUSHING EAST ACROSS THE GREATER PHOENIX AREA. BREEZY TO WINDY WEATHER IS ON TAP FOR TODAY...UNDER GENLY SUNNY SKIES. STRONGEST WINDS WILL OCCUR OVER THE WESTERN CWA...MAINLY FROM THE LOWER CO RIVER WESTWARD...BUT WE WILL SEE GUSTS IN EXCESS OF 30 MPH ACROSS MUCH OF THE CENTRAL DESERTS THIS AFTERNOON. SIGNIFICANT AMOUNTS OF BLOWING DUST OCCURRED ACROSS THE SERN CA AND SW AZ DESERTS YESTERDAY EVENING...AND THIS DUST WAS LOFTED INTO THE ATMOSPHERE. OVERNIGHT THE DUST SPREAD INTO THE CENTRAL DESERTS AND FORMED A THICK HAZE ACROSS THE GREATER PHOENIX AREA LOWERING VISIBILITIES TO BETWEEN 2 AND 5 MILES. THIS DUST/HAZE LAYER COULD BE CLEARLY SEEN IN THE VISIBLE SAT IMAGERY THIS MORNING AND WAS REFLECTED IN A NUMBER OF SURFACE OBSERVATIONS...SHOWING UP AS LOW CLOUD CEILINGS. EXPECT MOST OF THIS DUST/HAZE TO MOVE OFF TO THE EAST LATER THIS MORNING...AND MUCH OF IT SHOULD ALSO MIX OUT AS THE DAY PROGRESSES. OF COURSE...ADDITIONAL BLOWING DUST IS POSSIBLE THIS AFTERNOON AS THE WINDS PICK UP AGAIN...SO WE MAY SEE A REPEAT PERFORMANCE TONIGHT INTO TOMORROW. COOLER WEATHER IS ALSO EXPECTED TODAY BEHIND THE FRONT...AND HIGHS WILL FALL INTO THE LOW TO MID 80S OVER THE LOWER DESERT WITH 83 FORECAST AT PHOENIX. CURRENT FORECASTS LOOK TO BE IN GOOD SHAPE AND NO SIGNIFICANT UPDATES ARE PLANNED.

NOAA Satellite and Information Services Smoke Text Products For:
201405100130 to 201405130315

Saturday, May 10, 2014

DESCRIPTIVE TEXT NARRATIVE FOR SMOKE/DUST OBSERVED IN SATELLITE IMAGERY
THROUGH 0130Z May 11, 2014

Smoke:
Texas/Louisiana:
A large area of light smoke extends through the Gulf of Mexico and into southeastern Texas and Louisiana. This is likely remnant smoke from numerous agricultural burns in Central America.

Blowing Dust:
California/Nevada:
Numerous areas of blowing dust originate in southern California with the dust moving to the east. The Inyo Mountains Wilderness Resort, the Grass Valley Wilderness Area and the Anza-Borrego Desert State Park are some of the more significant areas of origin for this blowing dust. There was also an area of blowing dust sweeping southward through southern Nevada behind a strong frontal boundary.

New Mexico:
An area of blowing dust originates in Chaves County and is moving to the northeast.

Texas:
Blowing dust appears to originate in the Brownfield/Lubbock area of northwestern Texas. This blowing dust is moving to the northeast.

Aerosols:
A large area of unknown composition is located off the coast of southern California. The area is moving to the south and may contain blowing dust from southern California.

Earlier:
SMOKE
Western Gulf of Mexico:
An area of light smoke from the seasonal agricultural fires in Mexico and Central America was seen extending from Honduras into the Bay of Campeche, reaching as far north as 24N.

BLOWING DUST
Nebraska:
A small past of light dust was seen moving eastward across Nebraska this morning.

Great Lakes Region:
An area of light to moderately thick dust was visible this morning extending from northern Minnesota southeastward through the remainder of the Great Lakes. This dust was wrapping around the low pressure system currently moving through Ontario/Quebec. Aerosol forecast models suggest that this is dust from Asia which has tracked across the Pacific and most of Canada.

Vogt Miller

THIS TEXT PRODUCT IS PRIMARILY INTENDED TO DESCRIBE SIGNIFICANT AREAS
OF SMOKE ASSOCIATED WITH ACTIVE FIRES AND SMOKE WHICH HAS BECOME
DETACHED FROM THE FIRES AND DRIFTED SOME DISTANCE AWAY FROM THE SOURCE
FIRE..TYPICALLY OVER THE COURSE OF ONE OR MORE DAYS. AREAS OF BLOWING DUST
ARE ALSO DESCRIBED. USERS ARE ENCOURAGED TO VIEW A GRAPHIC DEPICTION OF
THESE AND OTHER PLUMES WHICH ARE LESS EXTENSIVE AND STILL ATTACHED TO
THE SOURCE FIRE IN VARIOUS GRAPHIC FORMATS ON OUR WEB SITE:

JPEG: http://www.ospo.noaa.gov/Products/land/hms.html
GIS: http://www.firedetect.noaa.gov/viewer.htm
KML: http://www.ssd.noaa.gov/PS/FIRE/kml.html
ANY QUESTIONS OR COMMENTS REGARDING THIS PRODUCT SHOULD BE SENT TO
SSDFireTeam@noaa.gov

Unless otherwise indicated:

- Areas of smoke are analyzed using GOES-EAST and GOES-WEST Visible satellite imagery.
- Only a general description of areas of smoke or significant smoke plumes will be analyzed.
- A quantitative assessment of the density/amount of particulate or the vertical distribution is not included.
- Widespread cloudiness may prevent the detection of smoke even from significant fires.

Sunday, May 11, 2014

DESCRIPTIVE TEXT NARRATIVE FOR SMOKE/DUST OBSERVED IN SATELLITE IMAGERY
THROUGH 1645Z May 11, 2014

SMOKE
Western Gulf of Mexico:
An area of light smoke from the seasonal agricultural fires in Mexico
and Central America was seen extending from Honduras into the Bay of
Campeche, reaching as far north as 28N. It is possible that trace
amounts of light smoke extend into the Mississippi Valley but the full
extent is unclear due to cloud cover.

Alaska:
Mostly light smoke remains in place over southeast Alaska due to an
active wildfire. This smoke is centered between Denali National Park and
Tanana Valley State Forest and has not moved much due to a surface high
pressure system.

BLOWING DUST
California/Arizona:
An area of moderately dense blowing dust was visible sweeping across
northern Baja California/Arizona into western New Mexico behind a strong
cold frontal boundary. This remnant dust originated from multiple areas
in southern California last evening.

Southern Ontario and Quebec/Upper Great Lakes Region:

An area of light dust, possibly mixed with remnant smoke, was visible this morning extending from Lake Michigan southeastward across southern portions of Ontario, Quebec, northeastern US, into the Atlantic. Aerosol forecast models suggest that this is dust from Asia which has tracked across the Pacific and Canada. However, there have been numerous agricultural burns in southern Saskatchewan the past few days, likely causing remnant smoke to mix in with the Asian dust.

Vogt Miller

THIS TEXT PRODUCT IS PRIMARILY INTENDED TO DESCRIBE SIGNIFICANT AREAS OF SMOKE ASSOCIATED WITH ACTIVE FIRES AND SMOKE WHICH HAS BECOME DETACHED FROM THE FIRES AND DRIFTED SOME DISTANCE AWAY FROM THE SOURCE FIRE..TYPICALLY OVER THE COURSE OF ONE OR MORE DAYS. AREAS OF BLOWING DUST ARE ALSO DESCRIBED. USERS ARE ENCOURAGED TO VIEW A GRAPHIC DEPICTION OF THESE AND OTHER PLUMES WHICH ARE LESS EXTENSIVE AND STILL ATTACHED TO THE SOURCE FIRE IN VARIOUS GRAPHIC FORMATS ON OUR WEB SITE:

JPEG: http://www.ospo.noaa.gov/Products/land/hms.html
GIS: http://www.firedetect.noaa.gov/viewer.htm
KML: http://www.ssd.noaa.gov/PS/FIRE/kml.html
ANY QUESTIONS OR COMMENTS REGARDING THIS PRODUCT SHOULD BE SENT TO SSDFireTeam@noaa.gov

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Unless otherwise indicated:

- Areas of smoke are analyzed using GOES-EAST and GOES-WEST Visible satellite imagery.
- Only a general description of areas of smoke or significant smoke plumes will be analyzed.
- A quantitative assessment of the density/amount of particulate or the vertical distribution is not included.
- Widespread cloudiness may prevent the detection of smoke even from significant fires.

Tuesday, May 13, 2014

DESCRIPTIVE TEXT NARRATIVE FOR SMOKE/DUST OBSERVED IN SATELLITE IMAGERY
THROUGH 0315Z May 13, 2014

West Texas/eastern New Mexico:
Remnant plume of aerosols, believed to be primarily comprised of dust is observed moving slowly south and east across portions of west Texas and the panhandle. There may be some remnant smoke particle entrained along the southwestern extent of this plume from smoke that had been tracking eastward across southern New Mexico from a large wildfire that continues to burn across the southwestern portion of the state.

Baja California/Pacific Ocean:
A rather expansive plume of remnant dust is remains extending off western portions of Baja California and out over the Pacific Ocean. The origin of this dust plume came from multi-source blowing dust event that occurred yesterday across southern California and Arizona.

Southwestern Canada:

Light remnant smoke can be seen across southern Alberta and Saskatchewan towards sunset. The smoke is believed to be remnant from a handful of fires across the central and northern Alberta and the southern half of Saskatchewan today as well as previous days.

Alaska:
A large fire in central Alaska continues to produce a thin smoke plume with smoke from earlier extending toward the northwest and more recent medium smoke has shifted to the west.

Liddick

THIS TEXT PRODUCT IS PRIMARILY INTENDED TO DESCRIBE SIGNIFICANT AREAS OF SMOKE ASSOCIATED WITH ACTIVE FIRES AND SMOKE WHICH HAS BECOME DETACHED FROM THE FIRES AND DRIFTED SOME DISTANCE AWAY FROM THE SOURCE FIRE..TYPICALLY OVER THE COURSE OF ONE OR MORE DAYS. AREAS OF BLOWING DUST ARE ALSO DESCRIBED. USERS ARE ENCOURAGED TO VIEW A GRAPHIC DEPICTION OF THESE AND OTHER PLUMES WHICH ARE LESS EXTENSIVE AND STILL ATTACHED TO THE SOURCE FIRE IN VARIOUS GRAPHIC FORMATS ON OUR WEB SITE:

JPEG: http://www.ospo.noaa.gov/Products/land/hms.html
GIS: http://www.firedetect.noaa.gov/viewer.htm
KML: http://www.ssd.noaa.gov/PS/FIRE/kml.html
ANY QUESTIONS OR COMMENTS REGARDING THIS PRODUCT SHOULD BE SENT TO SSDFireTeam@noaa.gov

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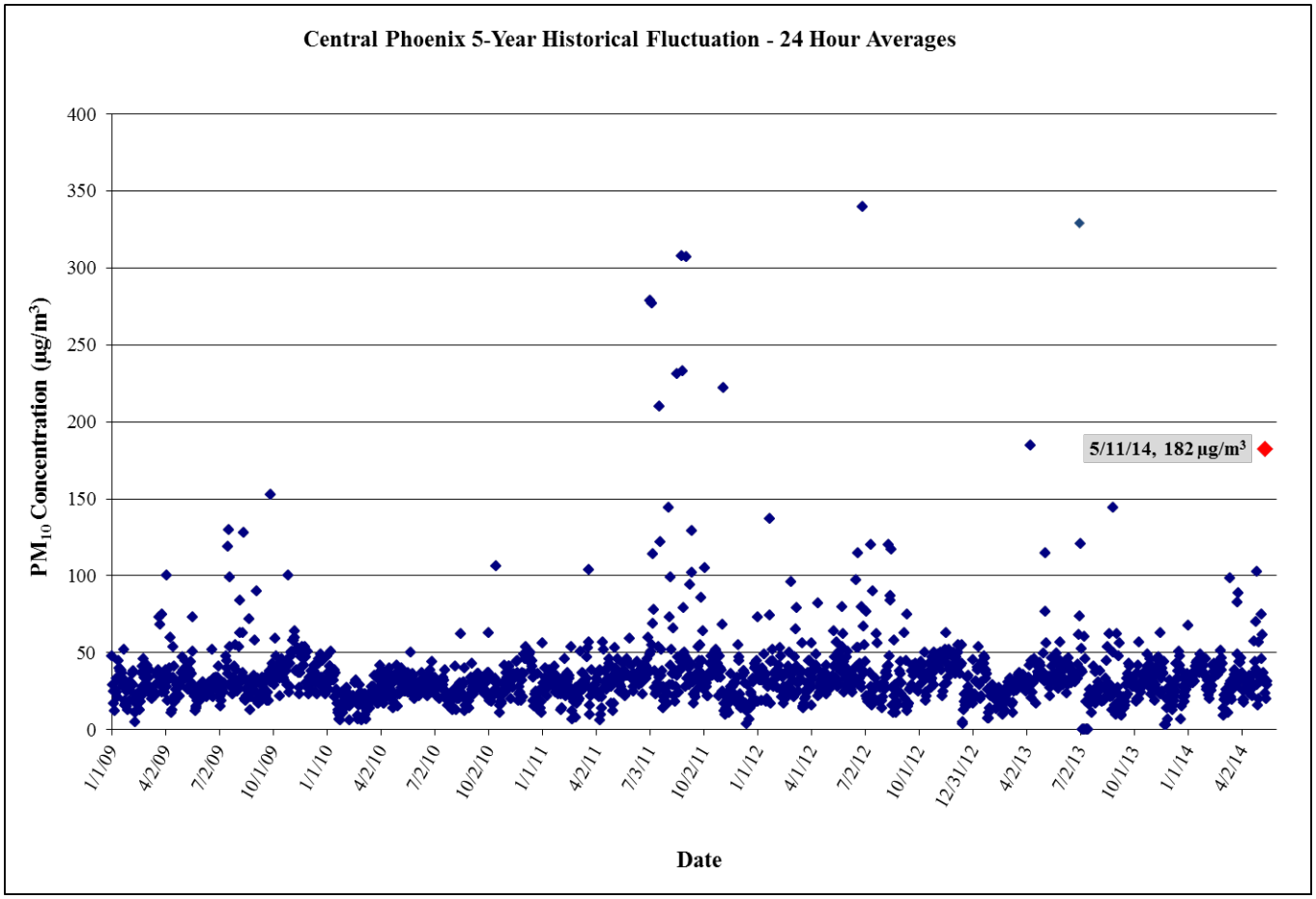
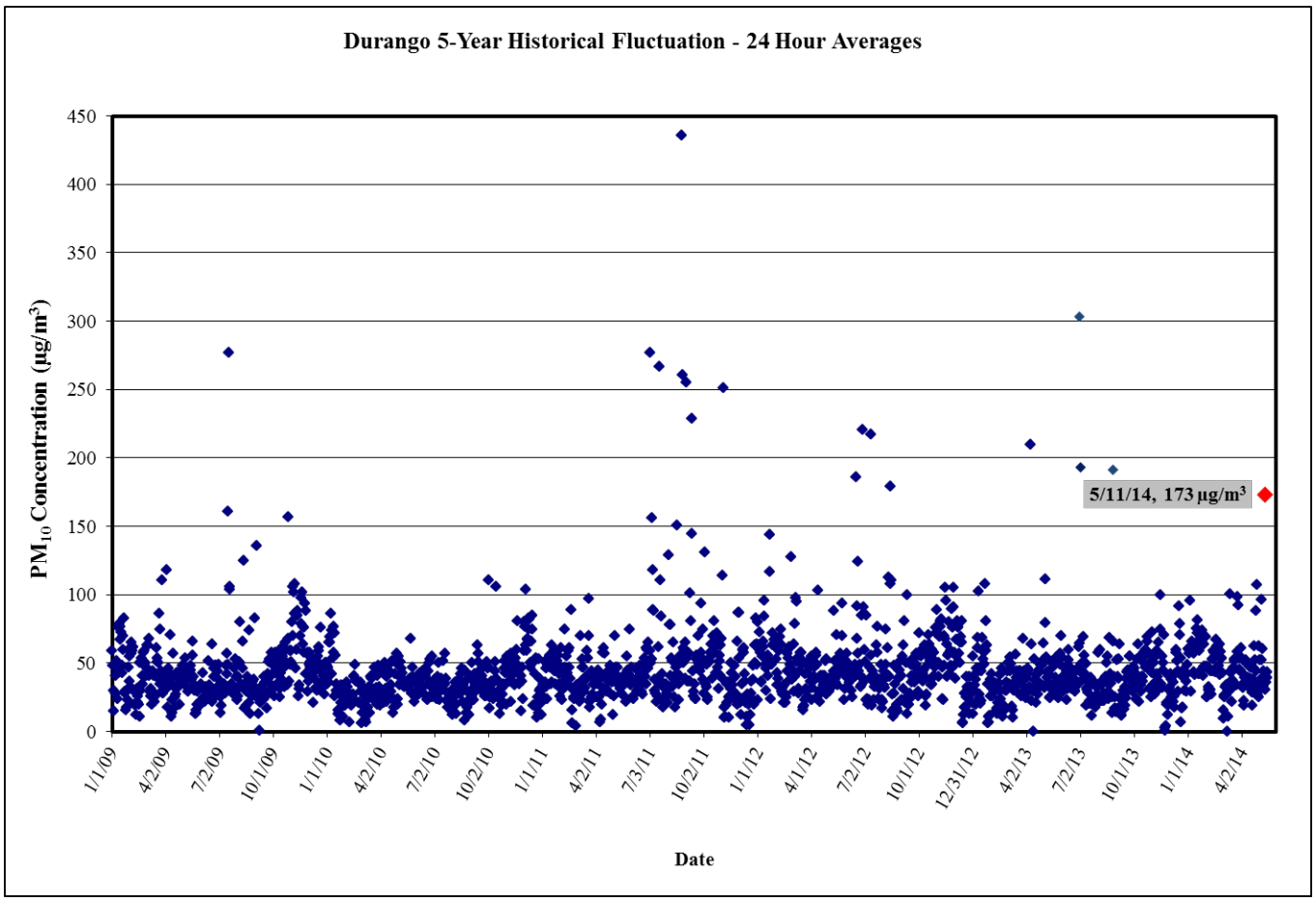
Unless otherwise indicated:

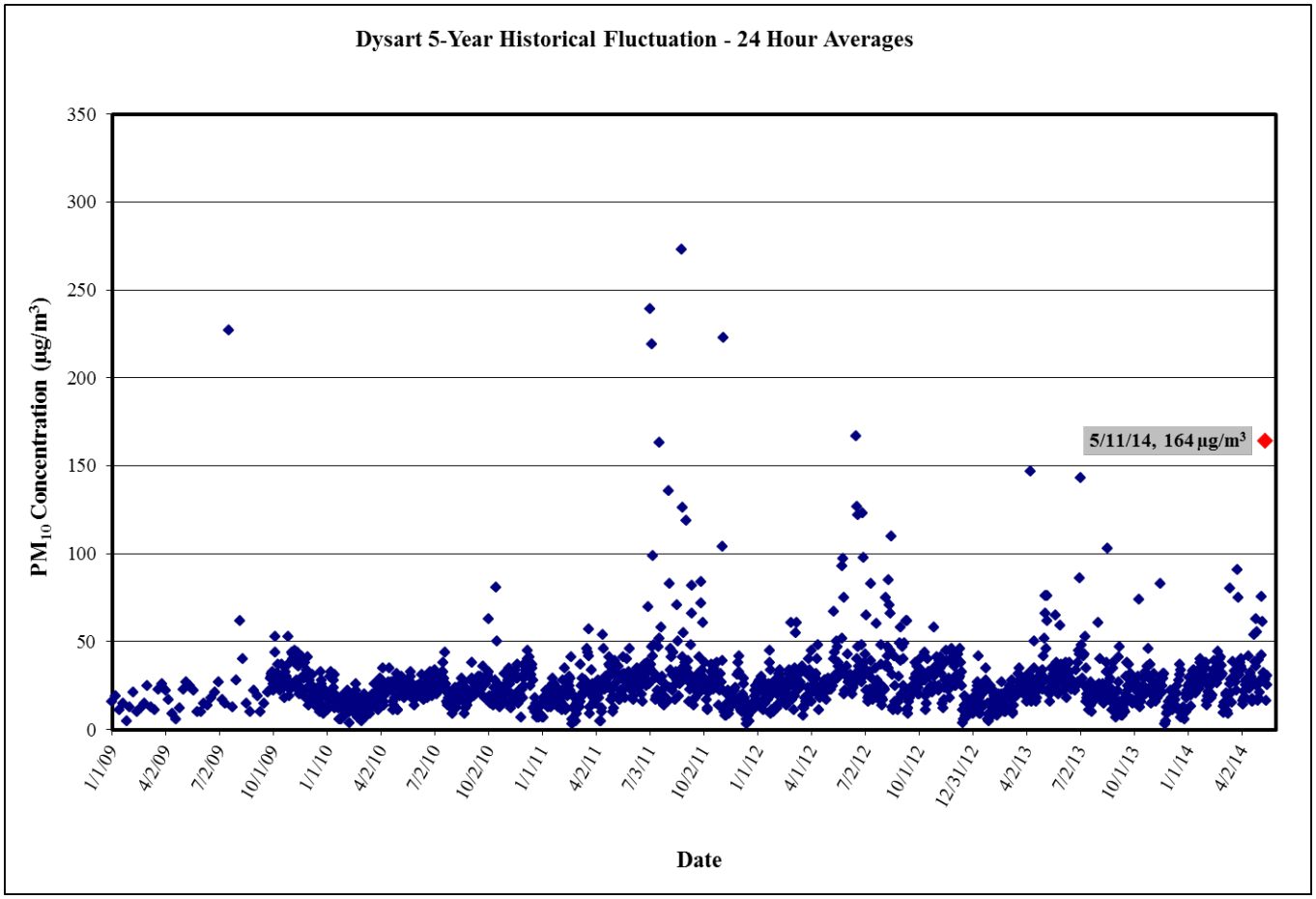
- Areas of smoke are analyzed using GOES-EAST and GOES-WEST Visible satellite imagery.
- Only a general description of areas of smoke or significant smoke plumes will be analyzed.
- A quantitative assessment of the density/amount of particulate or the vertical distribution is not included.
- Widespread cloudiness may prevent the detection of smoke even from significant fires.

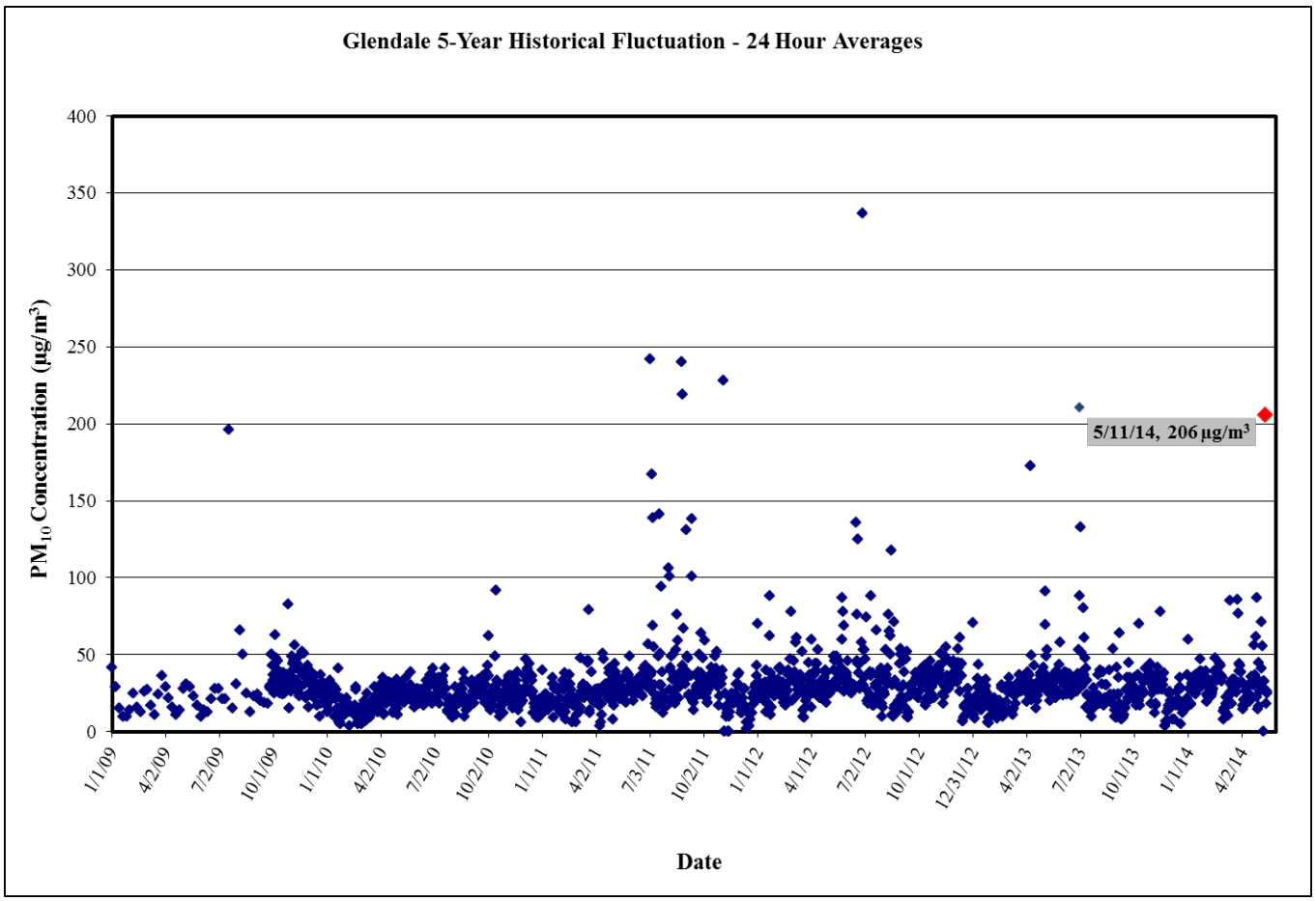
APPENDIX C

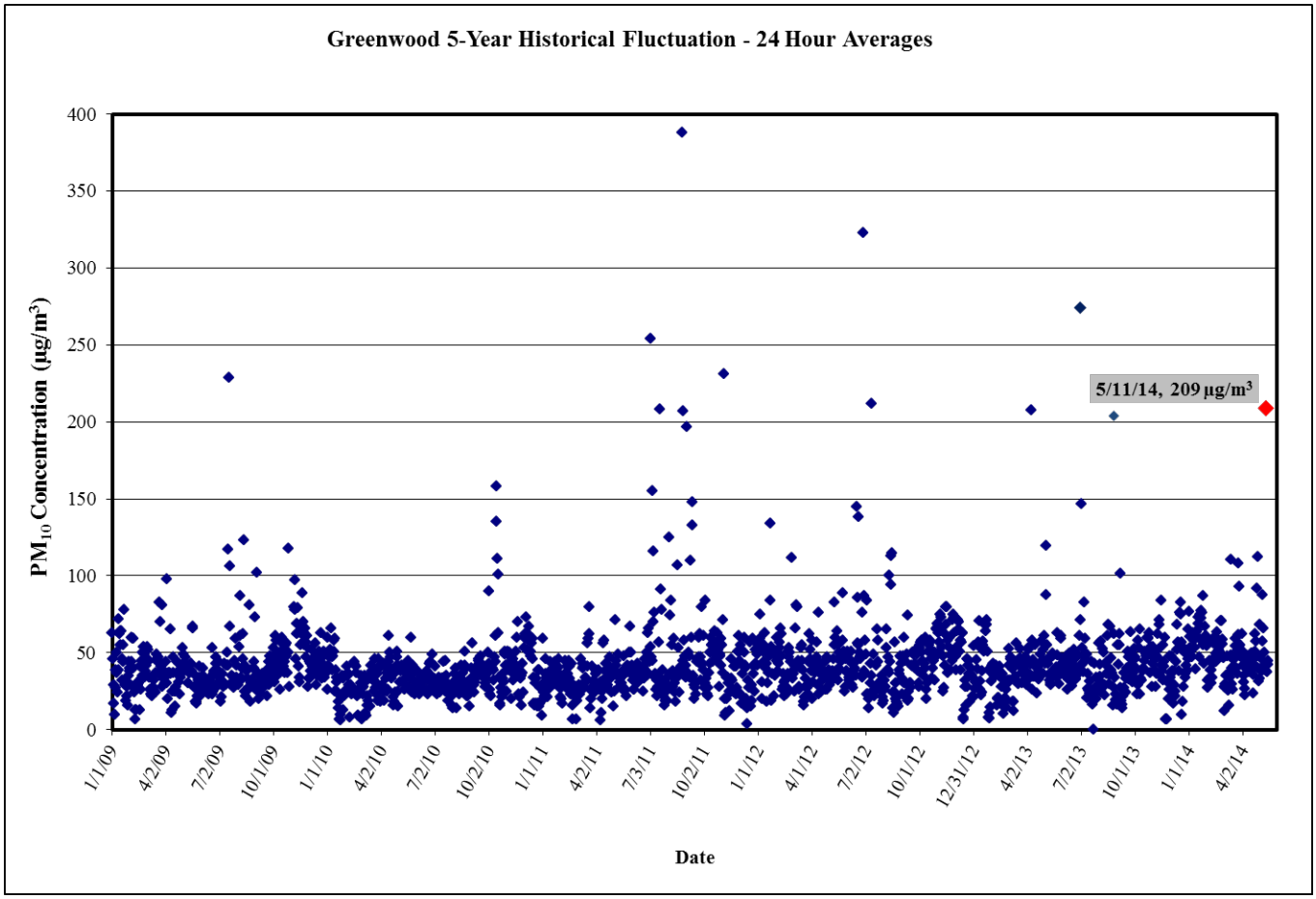
HISTORICAL FLUCTUATION GRAPHS FOR MARICOPA COUNTY PM_{10} MONITORING SITES

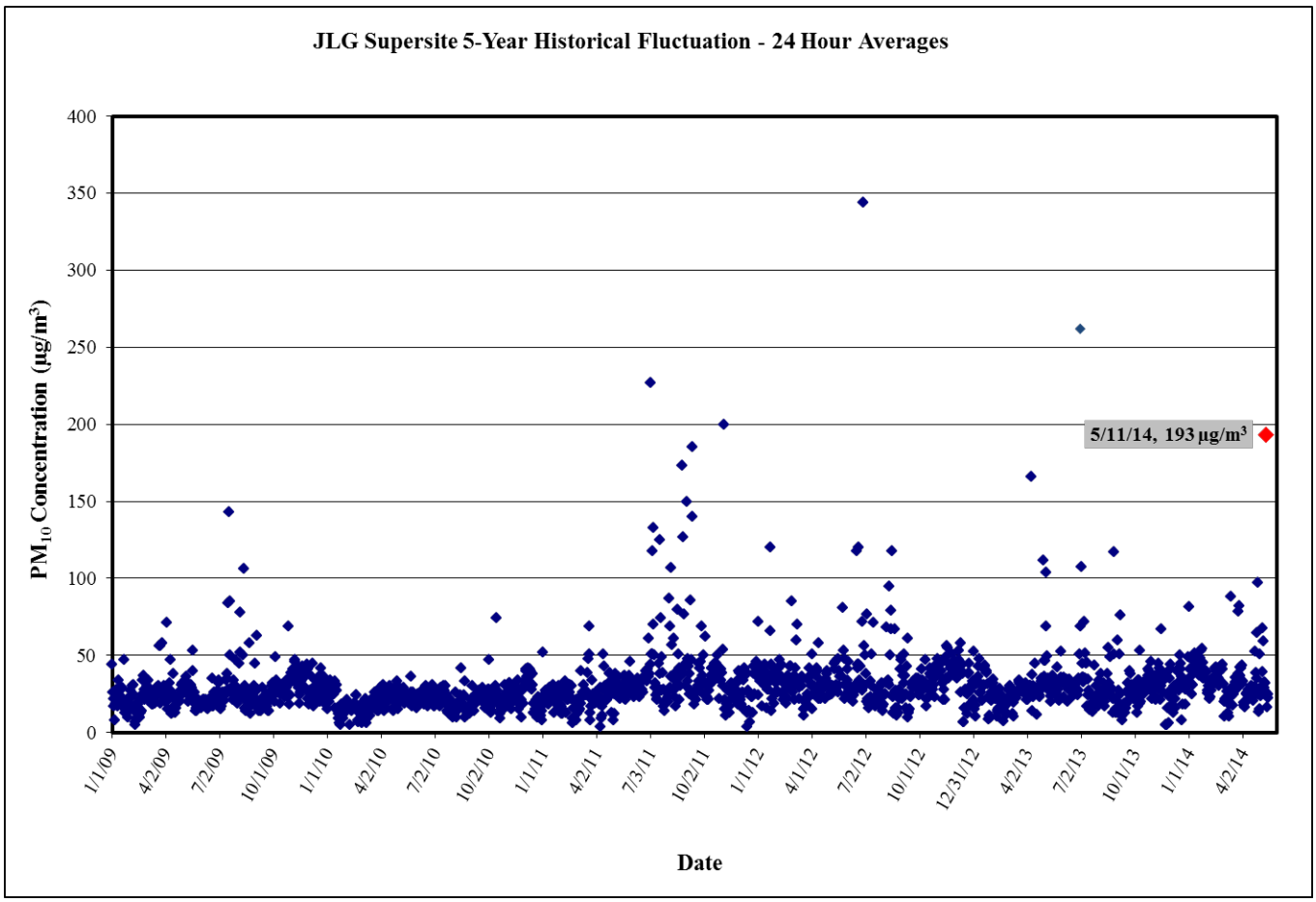

Central Phoenix 5-Year Historical Fluctuation - 24 Hour Averages
PM10 Concentration (µg/m3)
400
350
300
250
200
150
100
50
0
5/11/14, 182 µg/m3
1/1/09
4/2/09
7/2/09
10/1/09
1/1/10
4/2/10
7/2/10
10/2/10
1/1/11
4/2/11
7/3/11
10/2/11
1/1/12
4/1/12
7/2/12
10/1/12
12/31/12
4/2/13
7/2/13
10/1/13
1/1/14
4/2/14
Date


Durango 5-Year Historical Fluctuation - 24 Hour Averages
PM10 Concentration (µg/m3)
450
400
350
300
250
200
150
100
50
0
5/11/14, 173 µg/m3
1/1/09
4/2/09
7/2/09
10/1/09
1/1/10
4/2/10
7/2/10
10/2/10
1/1/11
4/2/11
7/3/11
10/2/11
1/1/12
4/1/12
7/2/12
10/1/12
12/31/12
4/2/13
7/2/13
10/1/13
1/1/14
4/2/14
Date


Dysart 5-Year Historical Fluctuation - 24 Hour Averages
PM10 Concentration (µg/m3)
350
300
250
200
150
100
50
0
5/11/14, 164 µg/m3
1/1/09
4/2/09
7/2/09
10/1/09
1/1/10
4/2/10
7/2/10
10/2/10
1/1/11
4/2/11
7/3/11
10/2/11
1/1/12
4/1/12
7/2/12
10/1/12
12/31/12
4/2/13
7/2/13
10/1/13
1/1/14
4/2/14
Date


Glendale 5-Year Historical Fluctuation - 24 Hour Averages
PM10 Concentration (µg/m3)
400
350
300
250
200
150
100
50
0
5/11/14, 206 µg/m3
1/1/09
4/2/09
7/2/09
10/1/09
1/1/10
4/2/10
7/2/10
10/2/10
1/1/11
4/2/11
7/3/11
10/2/11
1/1/12
4/1/12
7/2/12
10/1/12
12/31/12
4/2/13
7/2/13
10/1/13
1/1/14
4/2/14
Date


Greenwood 5-Year Historical Fluctuation - 24 Hour Averages
PM10 Concentration (µg/m3)
400
350
300
250
200
150
100
50
0
5/11/14, 209 µg/m3
1/1/09
4/2/09
7/2/09
10/1/09
1/1/10
4/2/10
7/2/10
10/2/10
1/1/11
4/2/11
7/3/11
10/2/11
1/1/12
4/1/12
7/2/12
10/1/12
12/31/12
4/2/13
7/2/13
10/1/13
1/1/14
4/2/14
Date


JLG Supersite 5-Year Historical Fluctuation - 24 Hour Averages
PM10 Concentration (µg/m3)
400
350
300
250
200
150
100
50
0
5/11/14, 193 µg/m3
1/1/09
4/2/09
7/2/09
10/1/09
1/1/10
4/2/10
7/2/10
10/2/10
1/1/11
4/2/11
7/3/11
10/2/11
1/1/12
4/1/12
7/2/12
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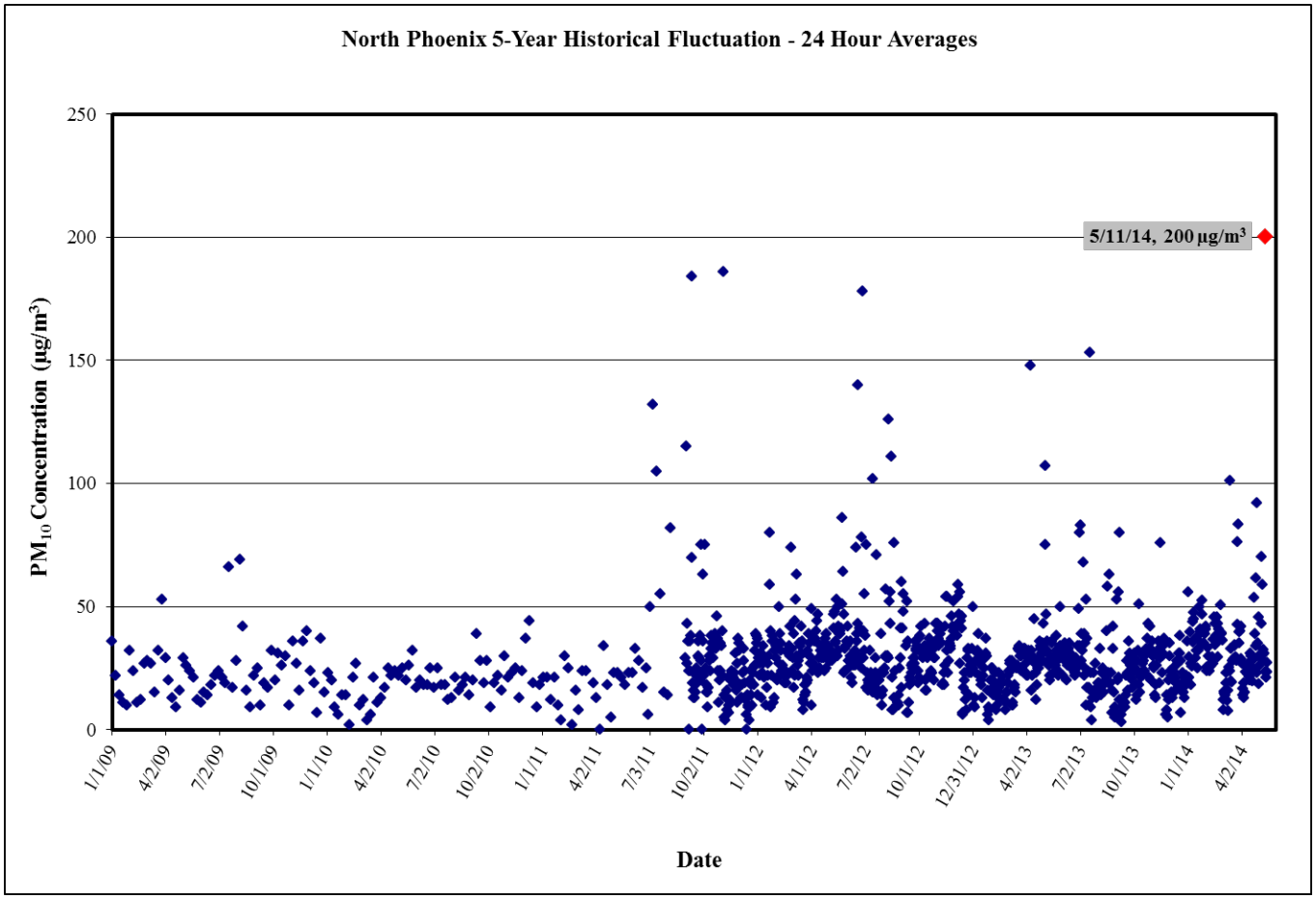
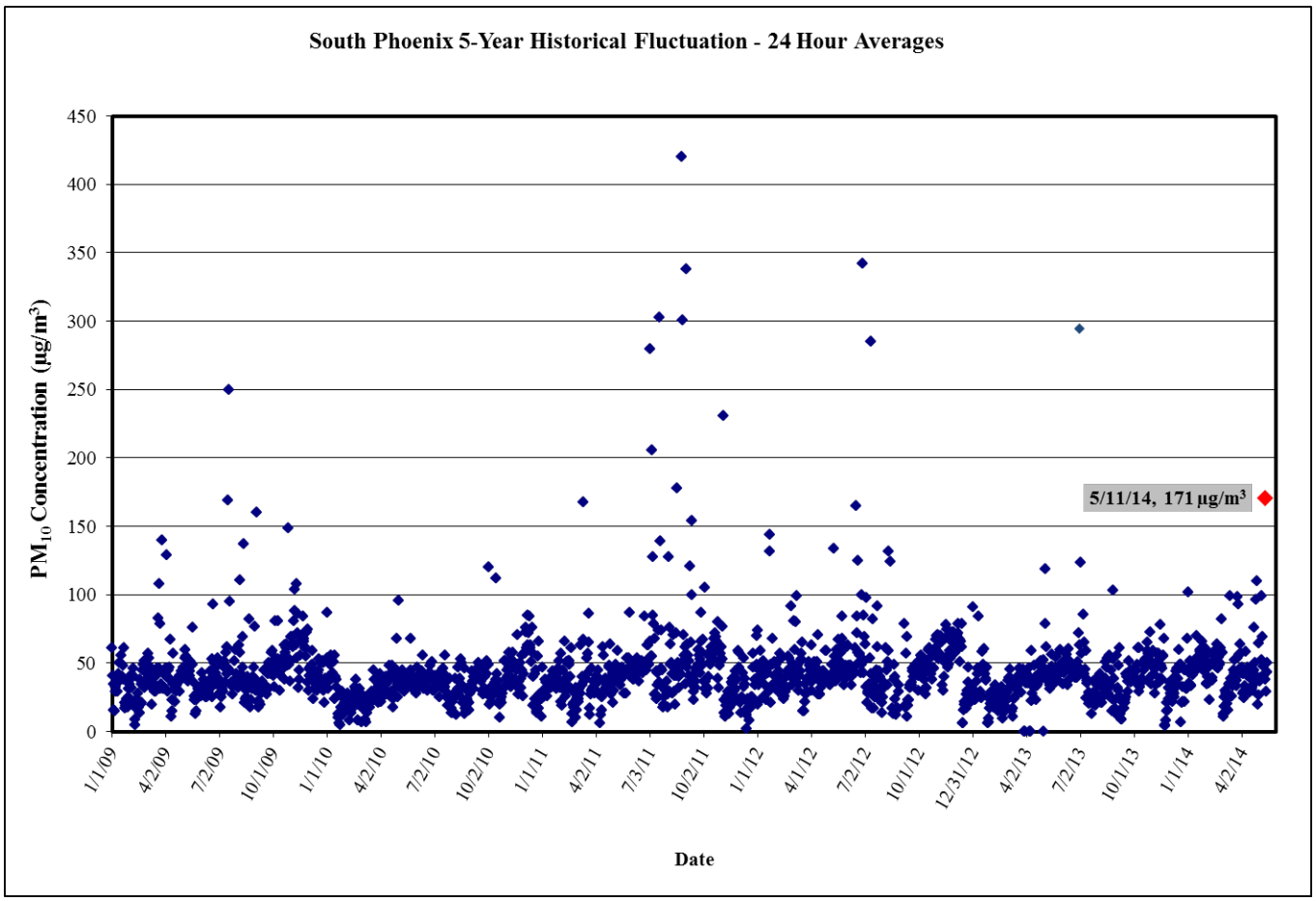
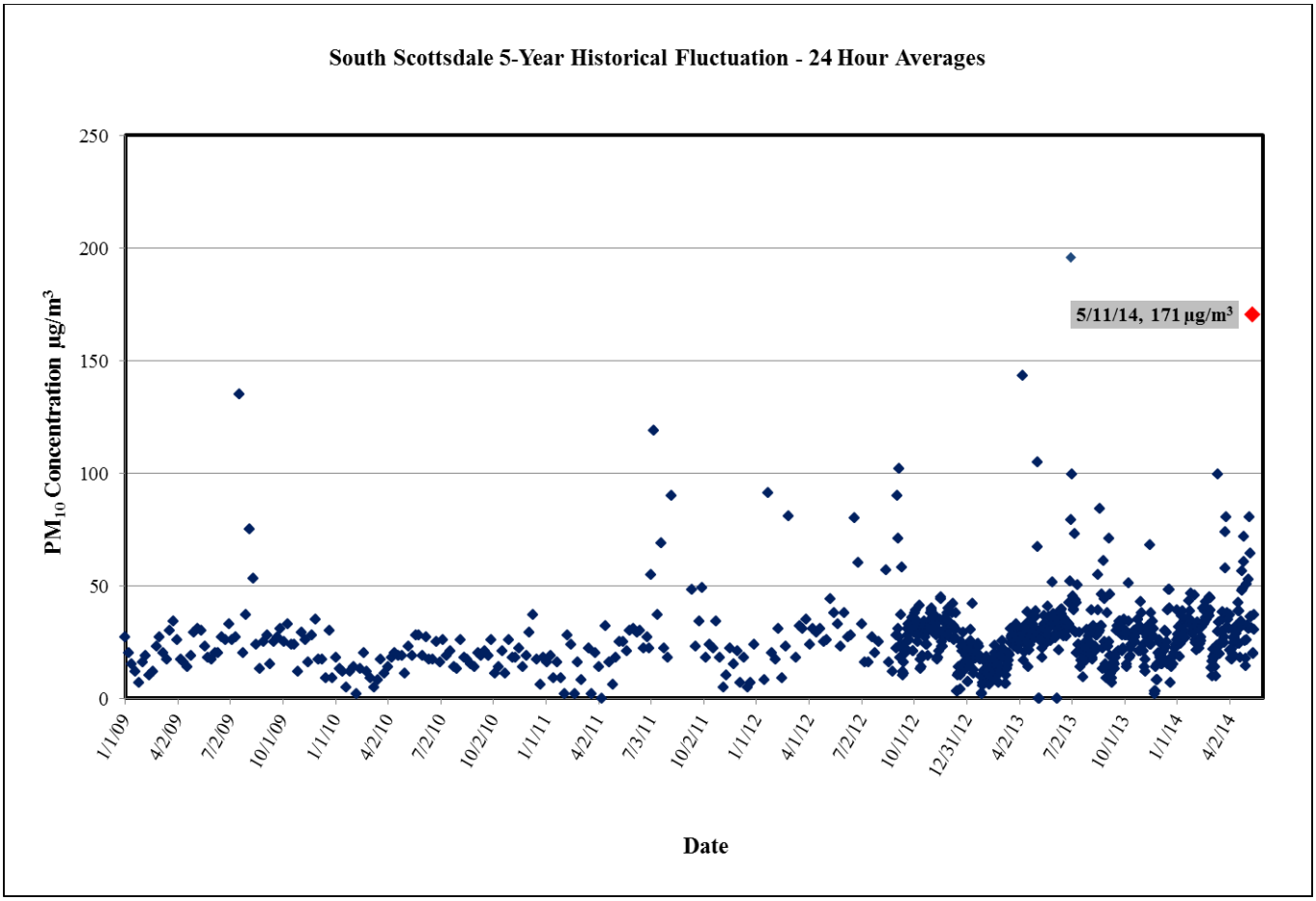
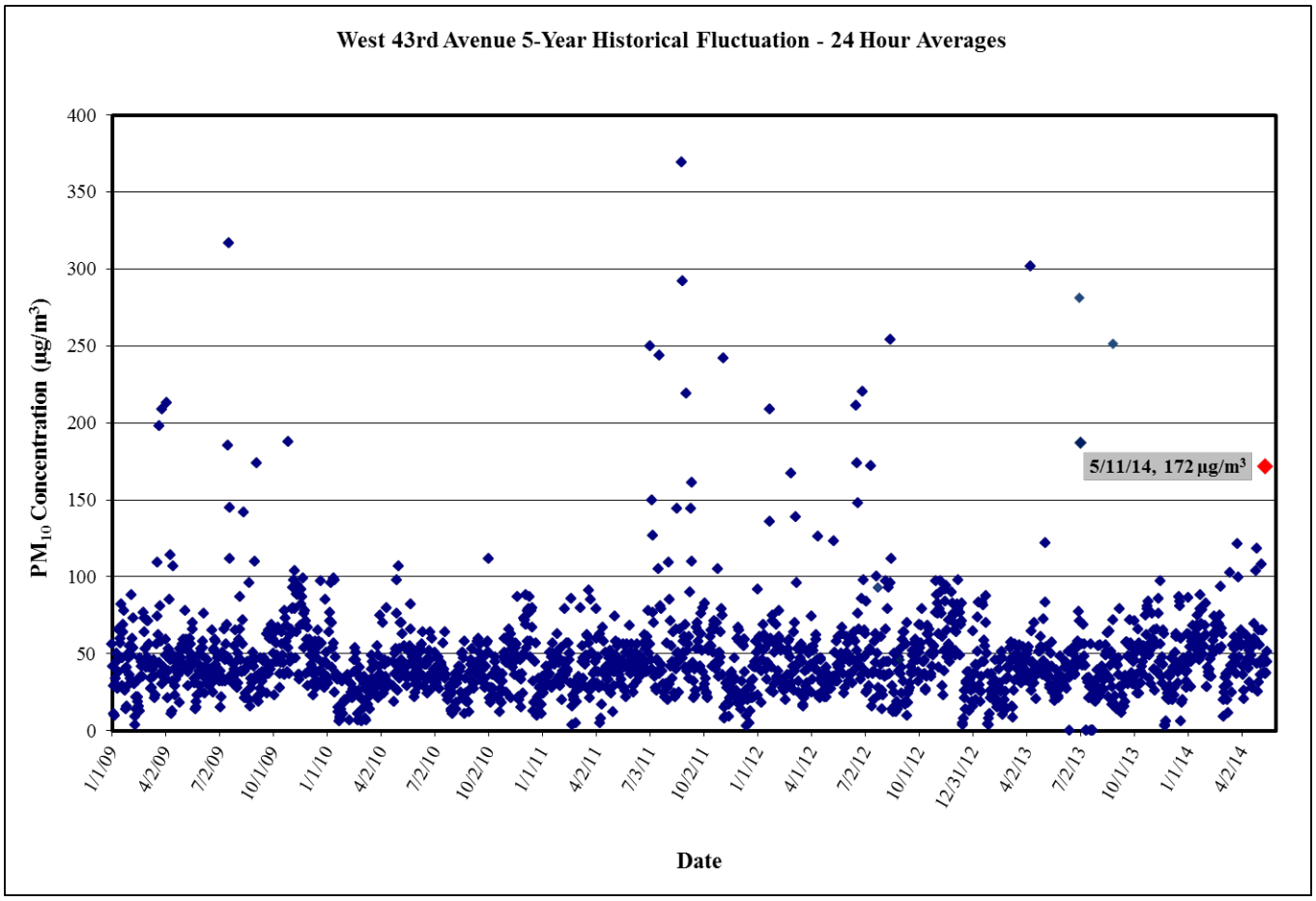
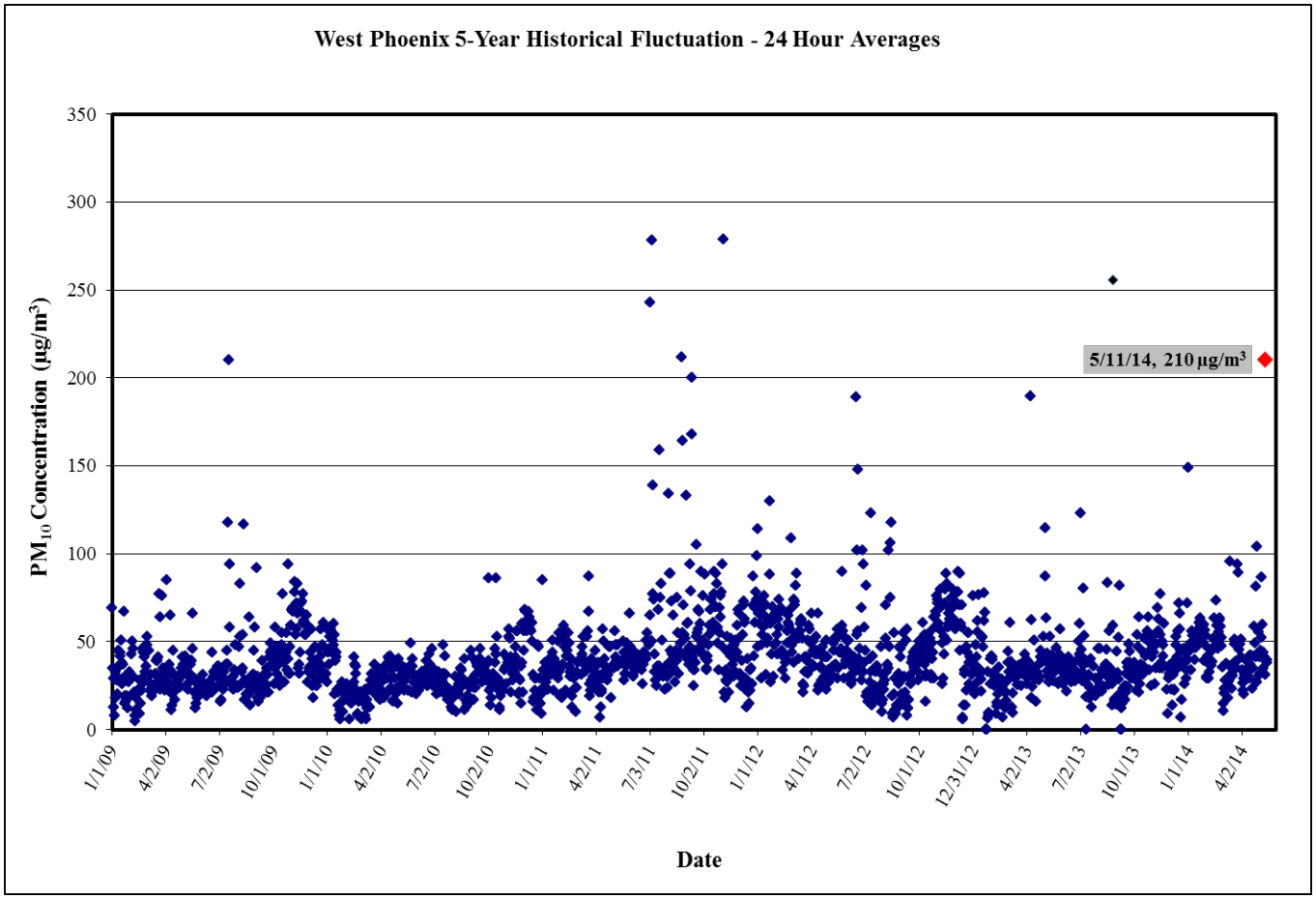
7/2/13
10/1/13
1/1/14
4/2/14
Date

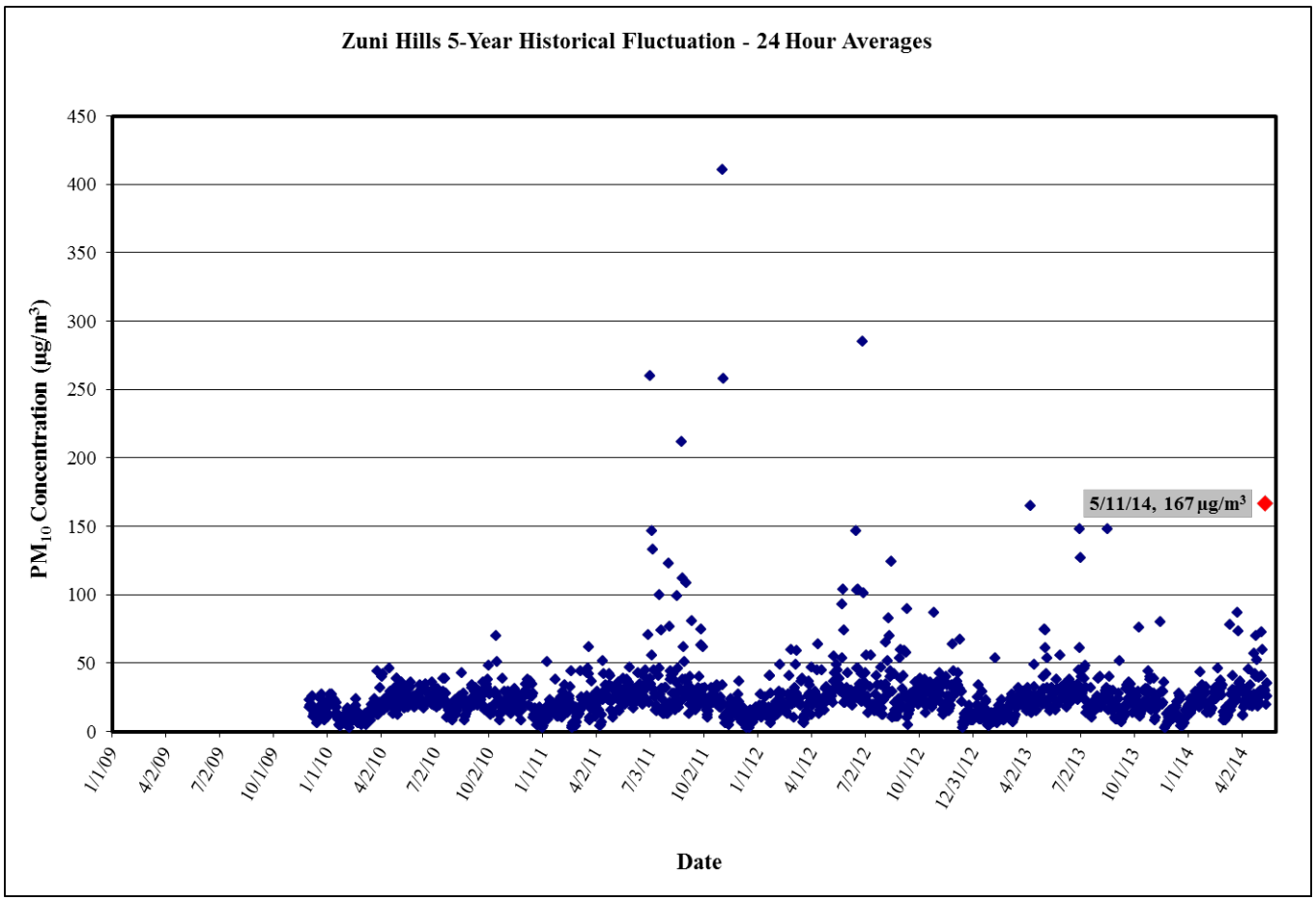

North Phoenix 5-Year Historical Fluctuation - 24 Hour Averages
PM10 Concentration (µg/m3)
250
200
150
100
50
0
5/11/14, 200 µg/m3
1/1/09
4/2/09
7/2/09
10/1/09
1/1/10
4/2/10
7/2/10
10/2/10
1/1/11
4/2/11
7/3/11
10/2/11
1/1/12
4/1/12
7/2/12
10/1/12
12/31/12
4/2/13
7/2/13
10/1/13
1/1/14
4/2/14
Date


South Phoenix 5-Year Historical Fluctuation - 24 Hour Averages
PM10 Concentration (µg/m3)
450
400
350
300
250
200
150
100
50
0
5/11/14, 171 µg/m3
1/1/09
4/2/09
7/2/09
10/1/09
1/1/10
4/2/10
7/2/10
10/2/10
1/1/11
4/2/11
7/3/11
10/2/11
1/1/12
4/1/12
7/2/12
10/1/12
12/31/12
4/2/13
7/2/13
10/1/13
1/1/14
4/2/14
Date


South Scottsdale 5-Year Historical Fluctuation - 24 Hour Averages
PM10 Concentration µg/m3
250
200
150
100
50
0
5/11/14, 171 µg/m3
1/1/09
4/2/09
7/2/09
10/1/09
1/1/10
4/2/10
7/2/10
10/2/10
1/1/11
4/2/11
7/3/11
10/2/11
1/1/12
4/1/12
7/2/12
10/1/12
12/31/12
4/2/13
7/2/13
10/1/13
1/1/14
4/2/14
Date


West 43rd Avenue 5-Year Historical Fluctuation - 24 Hour Averages
PM10 Concentration (µg/m3)
400
350
300
250
200
150
100
50
0
5/11/14, 172 µg/m3
1/1/09
4/2/09
7/2/09
10/1/09
1/1/10
4/2/10
7/2/10
10/2/10
1/1/11
4/2/11
7/3/11
10/2/11
1/1/12
4/1/12
7/2/12
10/1/12
12/31/12
4/2/13
7/2/13
10/1/13
1/1/14
4/2/14
Date


West Phoenix 5-Year Historical Fluctuation - 24 Hour Averages
PM10 Concentration (µg/m3)
350
300
250
200
150
100
50
0
5/11/14, 210 µg/m3
1/1/09
4/2/09
7/2/09
10/1/09
1/1/10
4/2/10
7/2/10
10/2/10
1/1/11
4/2/11
7/3/11
10/2/11
1/1/12
4/1/12
7/2/12
10/1/12
12/31/12
4/2/13
7/2/13
10/1/13
1/1/14
4/2/14
Date


Zuni Hills 5-Year Historical Fluctuation - 24 Hour Averages
PM10 Concentration (µg/m3)
450
400
350
300
250
200
150
100
50
0
5/11/14, 167 µg/m3
1/1/09
4/2/09
7/2/09
10/1/09
1/1/10
4/2/10
7/2/10
10/2/10
1/1/11
4/2/11
7/3/11
10/2/11
1/1/12
4/1/12
7/2/12
10/1/12
12/31/12
4/2/13
7/2/13
10/1/13
1/1/14
4/2/14
Date

APPENDIX D

GRAPHS OF HOURLY PM_{10} CONCENTRATIONS, WIND GUSTS, AND SUSTAINED WIND SPEEDS

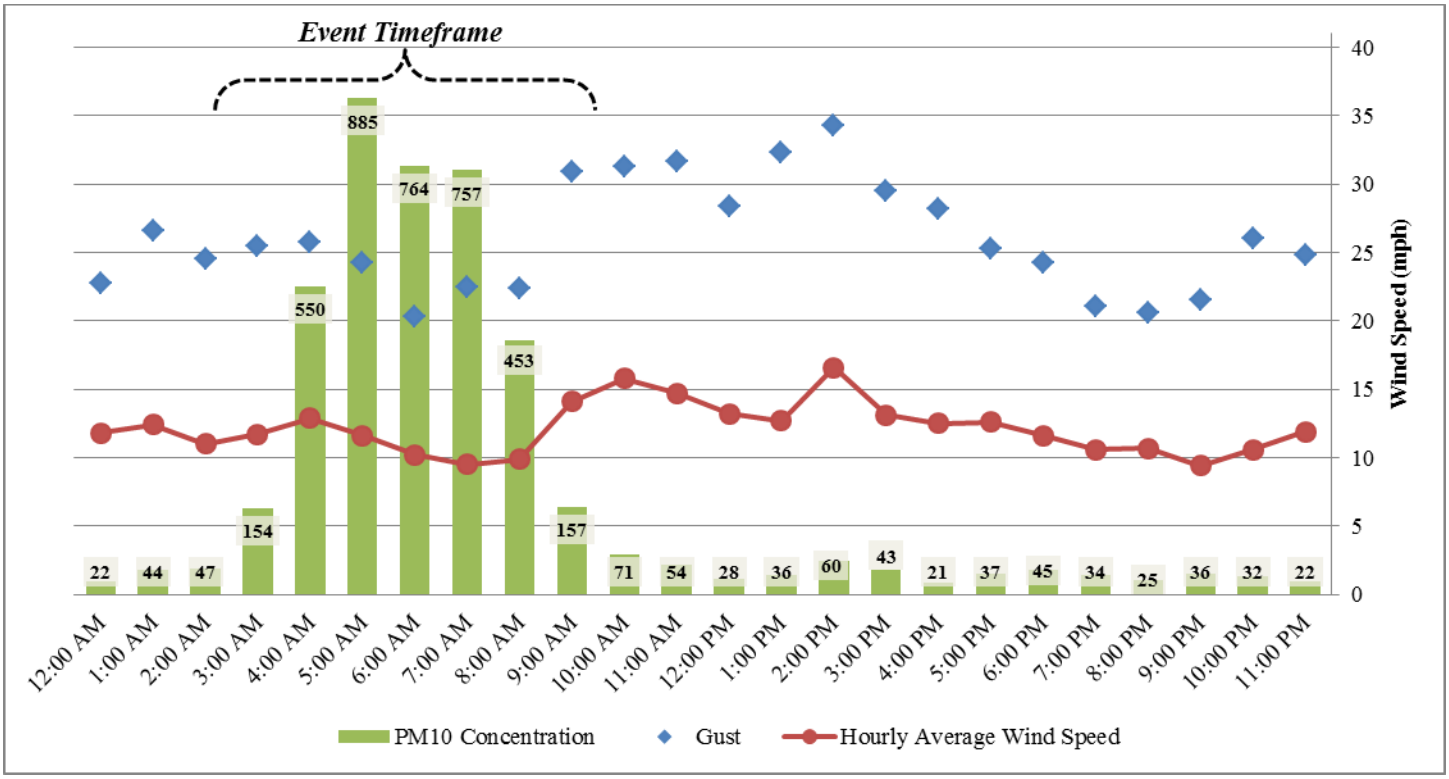


Figure D-1. Central Phoenix monitor PM_{10} concentration, wind gust, and hourly wind speed on May 11, 2014.

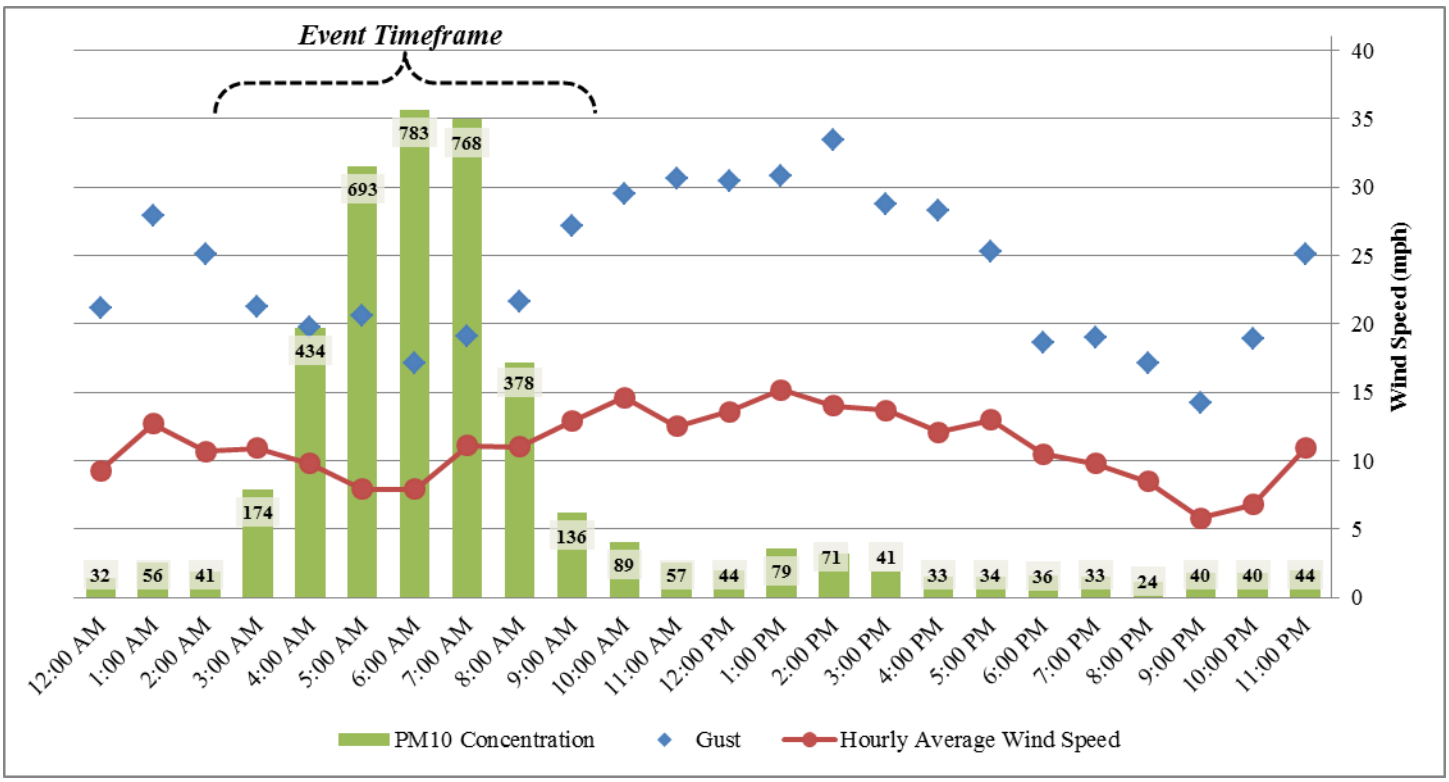


Figure D-2. Durango Complex monitor PM_{10} concentration, wind gust, and hourly wind speed on May 11, 2014.

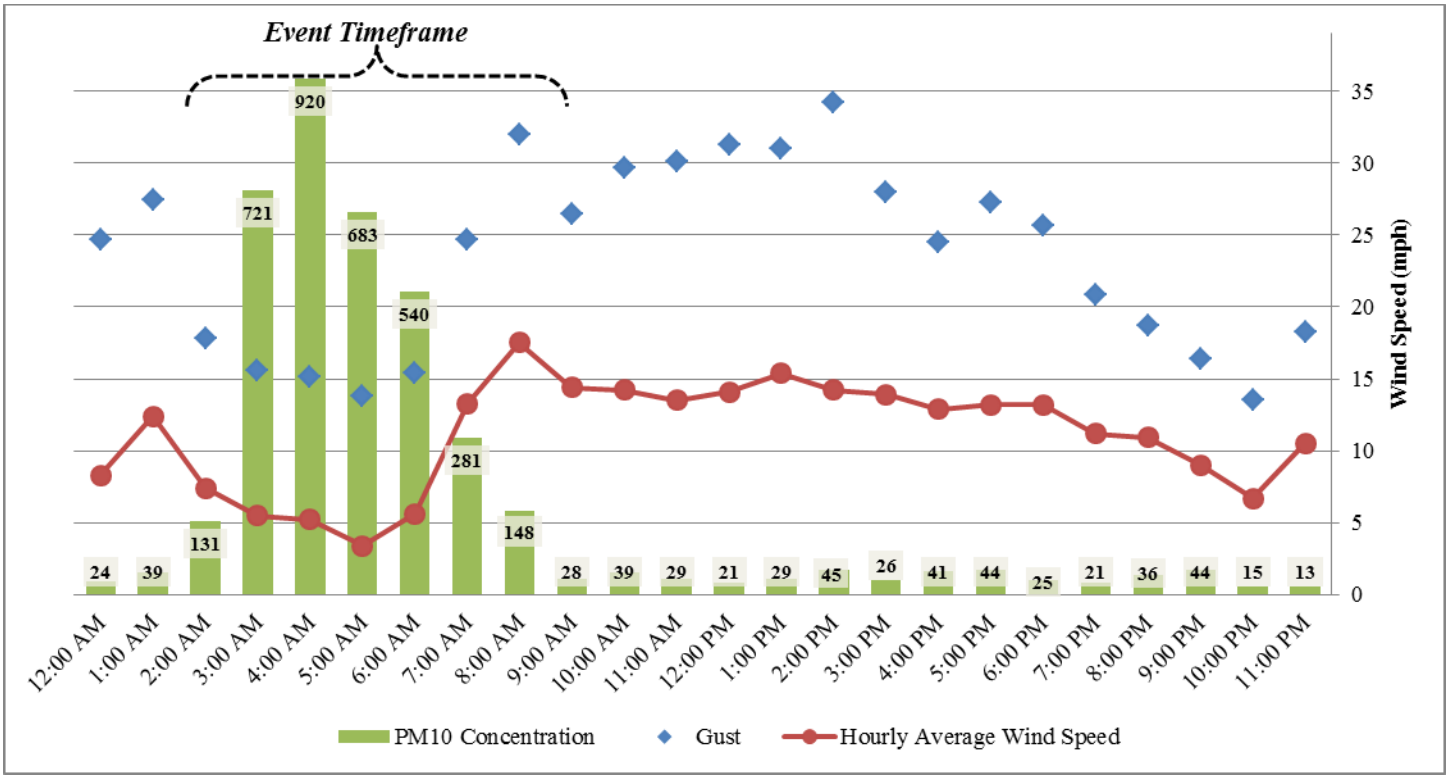


Figure D-3. Dysart monitor PM_{10} concentration, wind gust, and hourly wind speed on May 11, 2014.

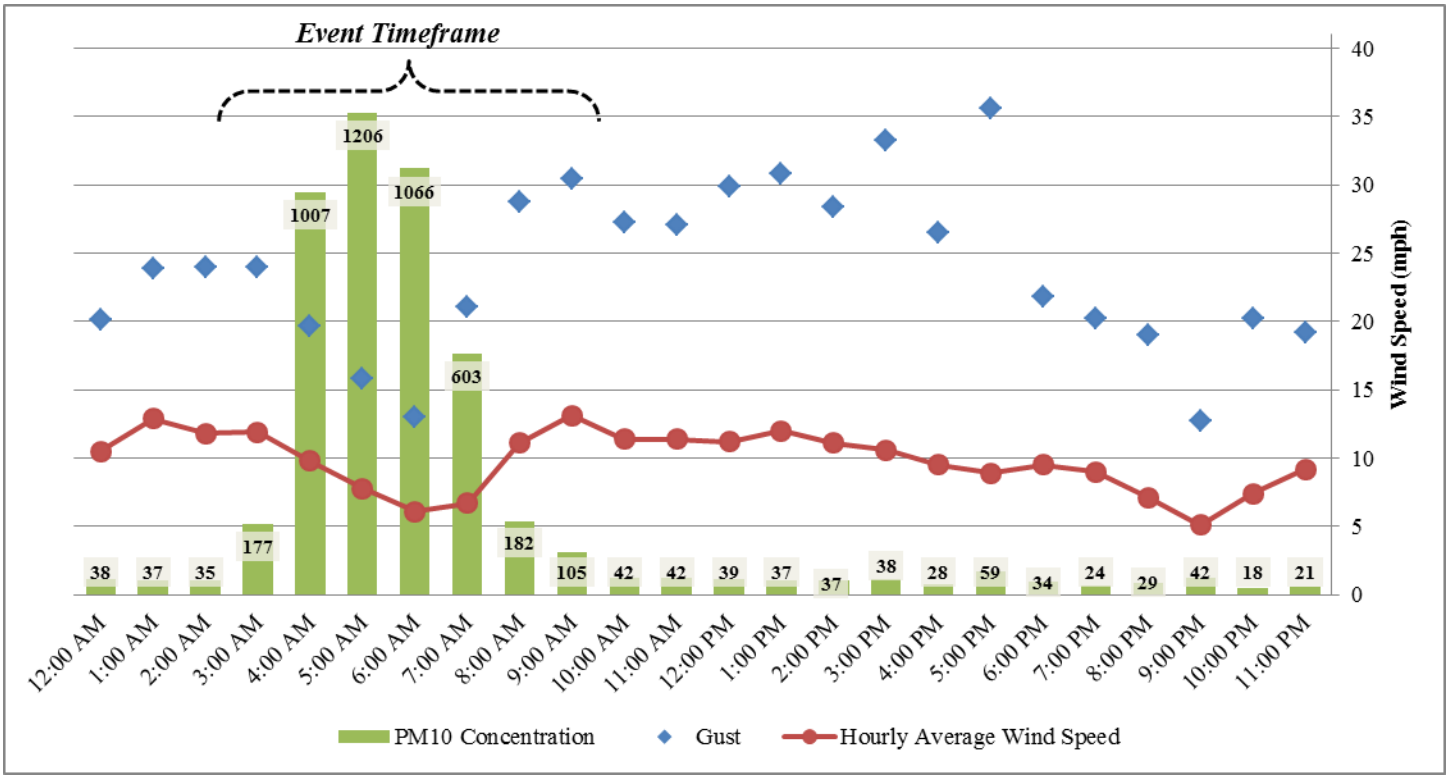


Figure D-4. Glendale monitor PM_{10} concentration, wind gust, and hourly wind speed on May 11, 2014.

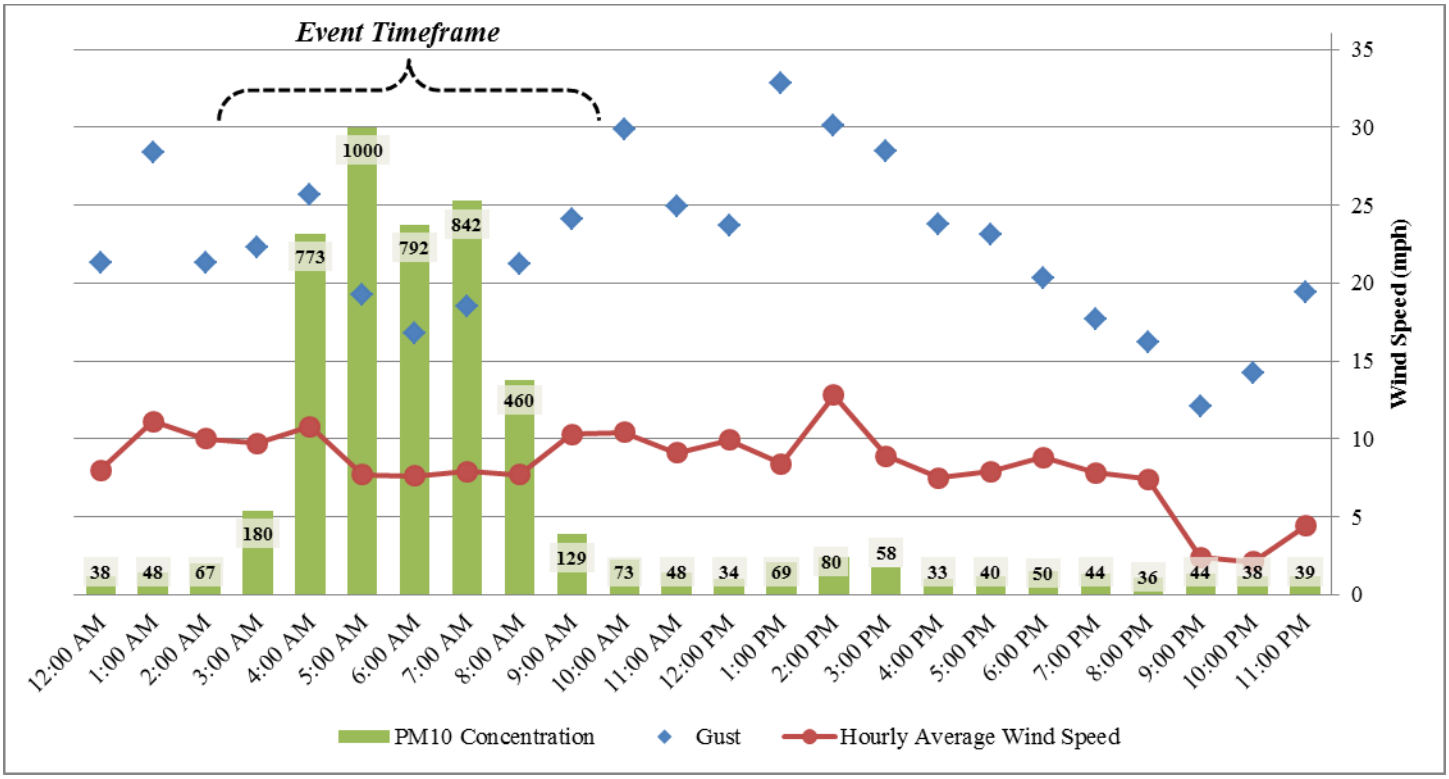


Figure D-5. Greenwood monitor PM_{10} concentration, wind gust, and hourly wind speed on May 11, 2014.

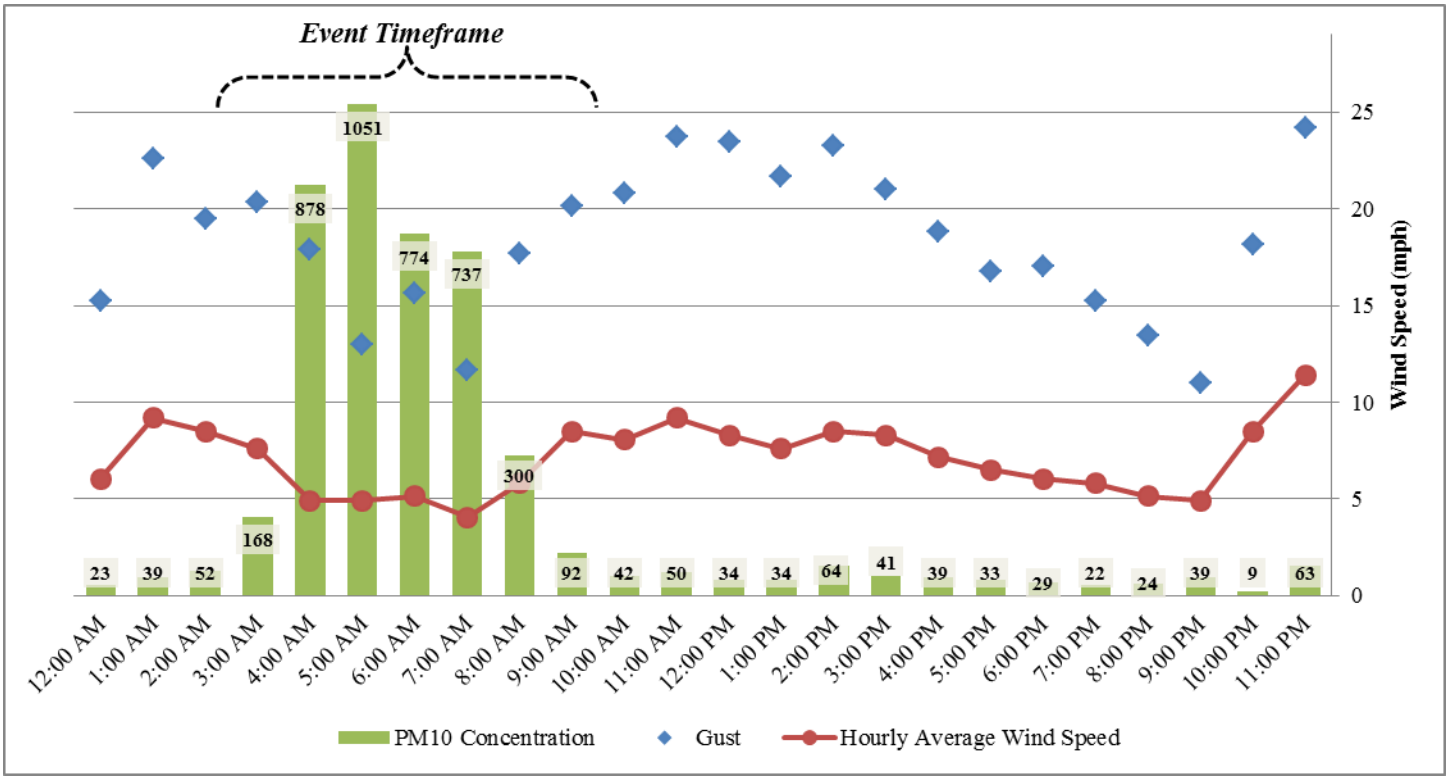


Figure D-6. JLG Supersite monitor PM_{10} concentration, wind gust, and hourly wind speed on May 11, 2014.

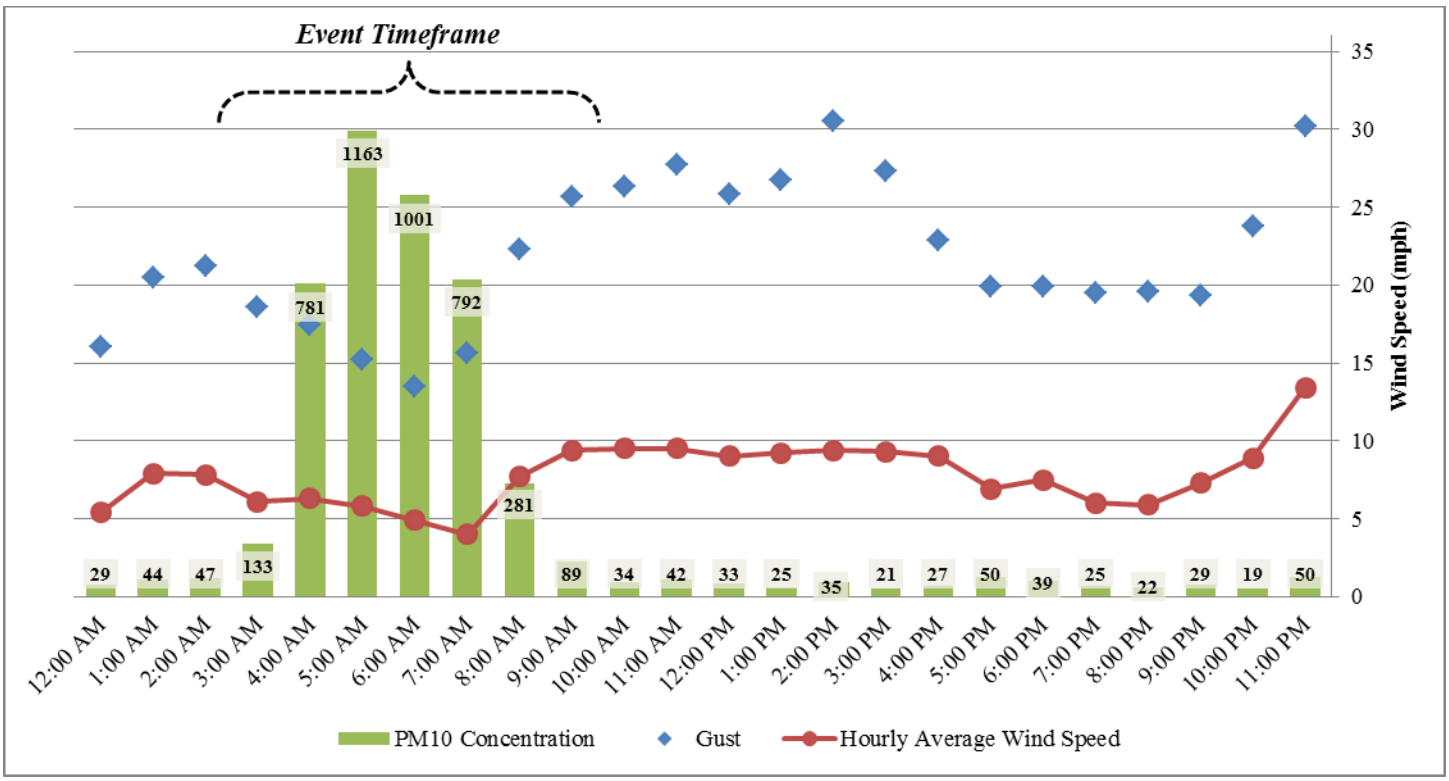


Figure D-7. North Phoenix monitor PM_{10} concentration, wind gust, and hourly wind speed on May 11, 2014.

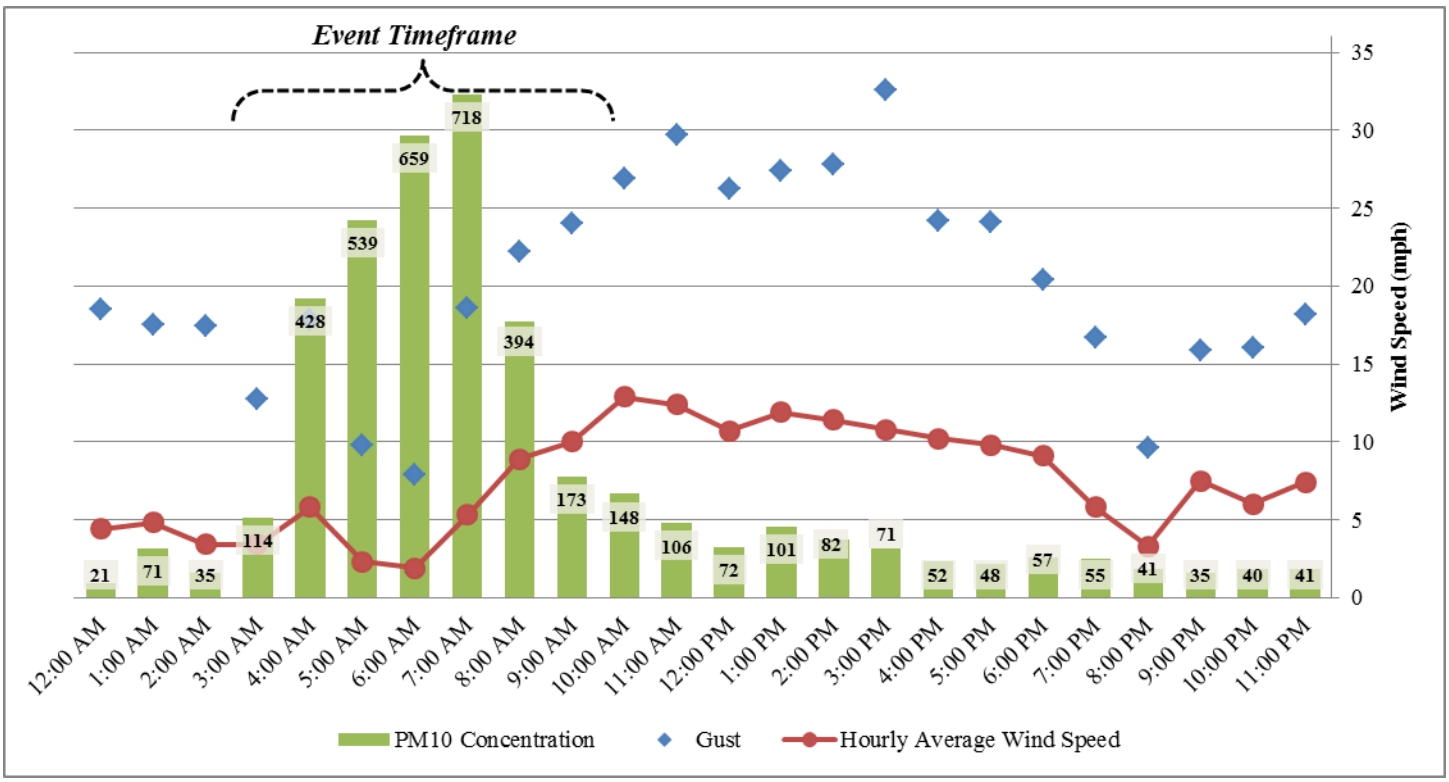


Figure D-8. South Phoenix monitor PM_{10} concentration, wind gust, and hourly wind speed on May 11, 2014.

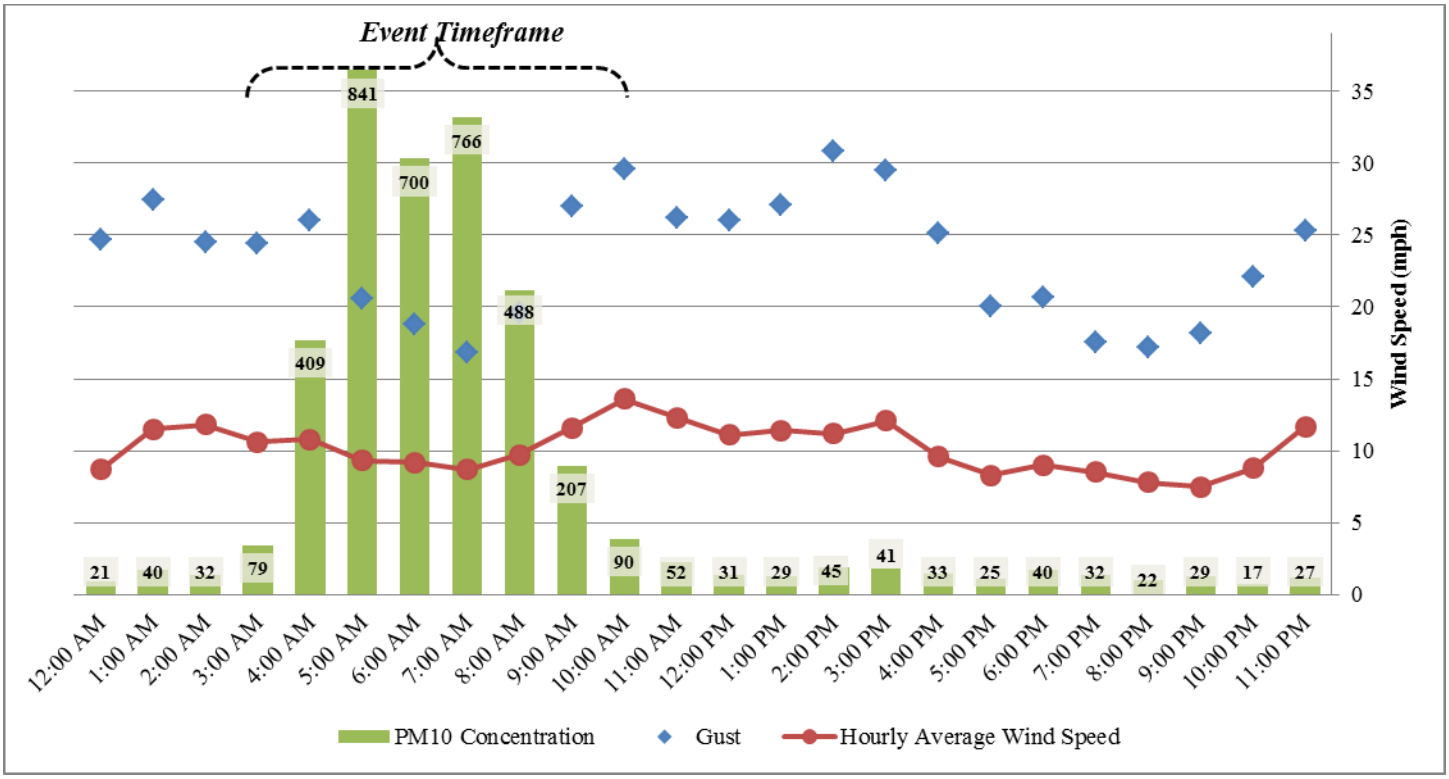


Figure D-9. South Scottsdale monitor PM_{10} concentration, wind gust, and hourly wind speed on May 11, 2014.

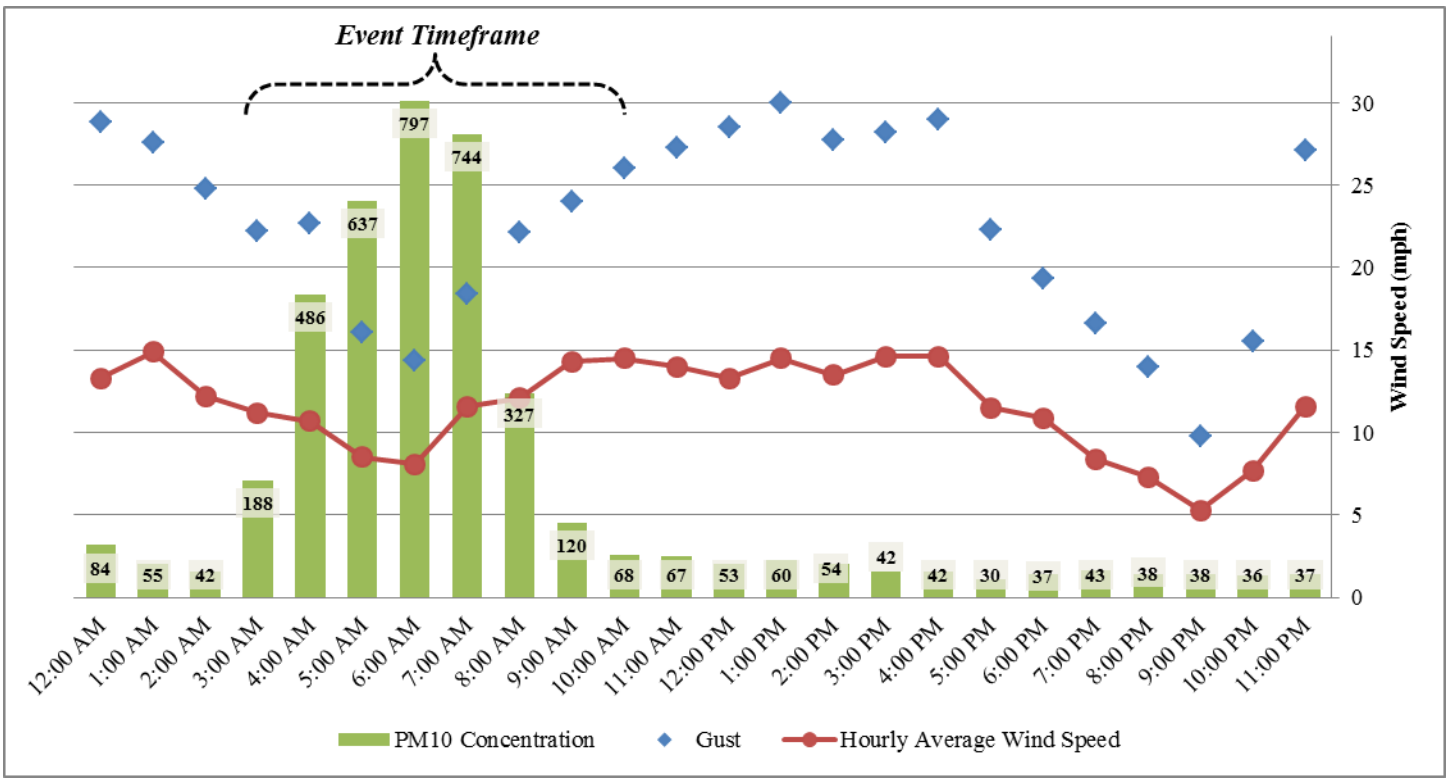


Figure D-10. West 43rd Avenue monitor PM_{10} concentration, wind gust, and hourly wind speed on May 11, 2014.

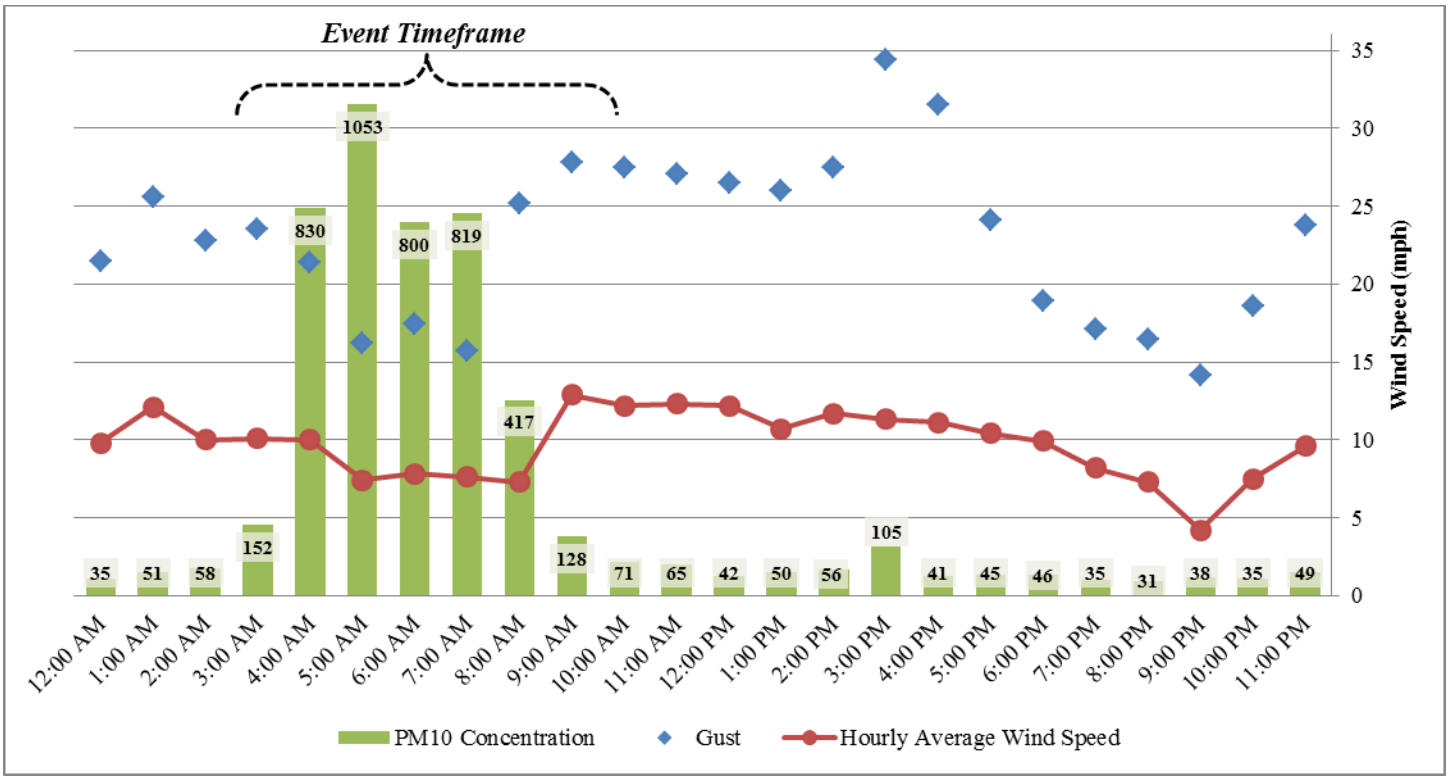


Figure D-11. West Phoenix monitor PM_{10} concentration, wind gust, and hourly wind speed on May 11, 2014.

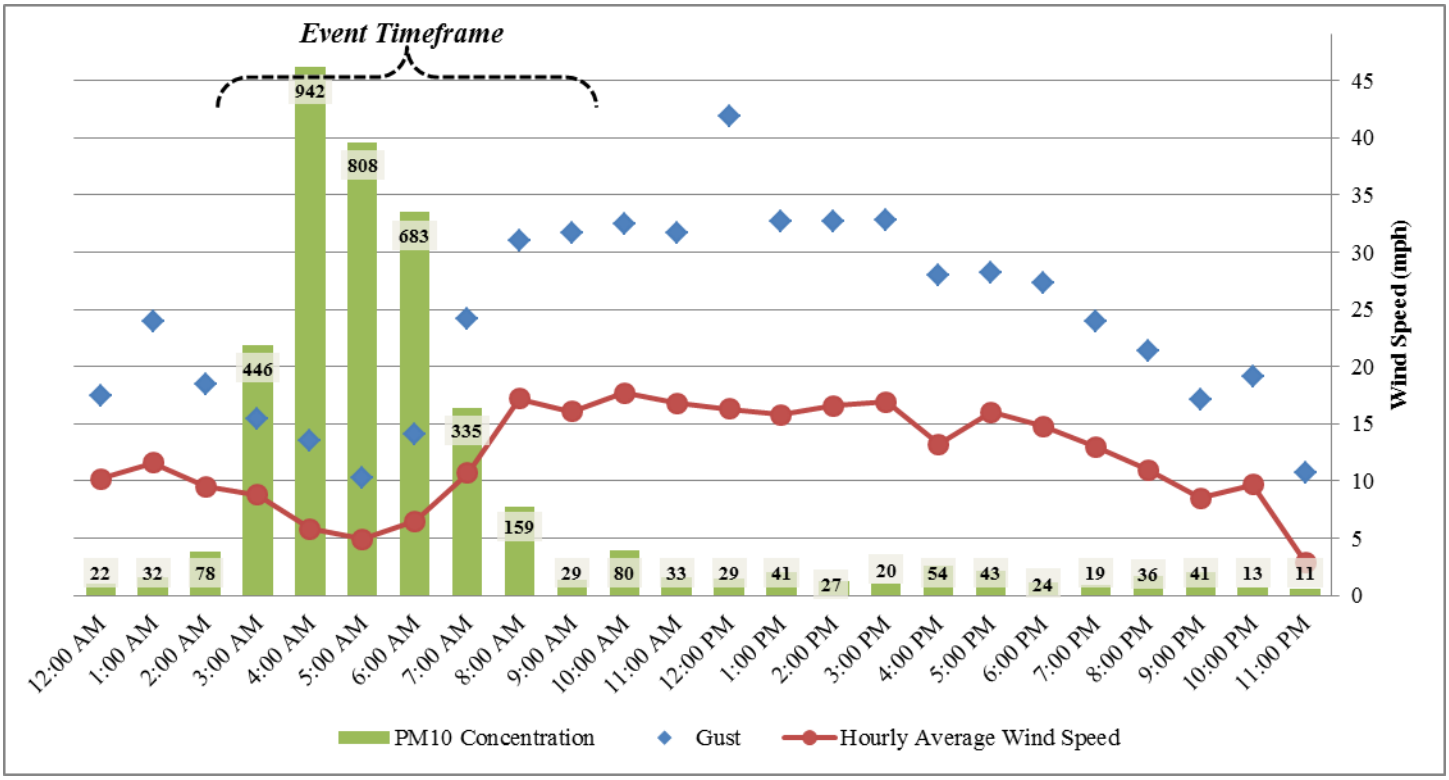


Figure D-12. Zuni Hills monitor PM_{10} concentration, wind gust, and hourly wind speed on May 11, 2014.

APPENDIX E

NOTICE OF PUBLIC COMMENT PERIOD

6840 State Agency Public Notices

Request for Public Comments on Exceptional Events in the Maricopa County (Greater Phoenix) PM10 Nonattainment 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 the final demonstrations of events that caused elevated concentrations of PM10 in the Maricopa County PM10 Nonattainment Area on May 11, July 3, July 8, and July 25, 2014. ADEQ has decided to flag these episodes based on these analyses. A copy of each demonstration is available for review beginning Monday, September 8, 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, October 7, 2014. Any comments received will be responded to and the comments and ADEQ's responses to the comments will be 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, a copy of each analysis is 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, E-mail: recordscenter@azdeq.gov.

Persons with a disability may request reasonable accommodations, 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.

Pub: September 8, 2014

AFFIDAVIT OF PUBLICATION

THE ARIZONA REPUBLIC

STATE OF ARIZONA
COUNTY OF MARICOPA } SS.

Tabitha Weaver, being first duly sworn, upon oath deposes and says: That she is a Sr. legal advertising representative of the Arizona Business Gazette, a newspaper of general circulation in the county of Maricopa, State of Arizona, published at Phoenix, Arizona, by Phoenix Newspapers Inc., which also publishes The Arizona Republic, and that the copy hereto attached is a true copy of the advertisement published in the said paper on the dates as indicated.

The Arizona Republic

September 8, 2014

Sworn to before me this
9th day of
September A.D. 2014

BRIAN BILLINGS
Notary Public - State of Arizona
MARICOPA COUNTY
My Commission Expires
July 25, 2018

Notary Public