IMPERIAL COUNTY
AIR POLLUTION CONTROL DISTRICT

https://www.hikespeak.com/trails/wind-caves-trail-anza-borrego-desert/

April 11, 2018 and April 12, 2018
Exceptional Event Documentation
For the Imperial County PM_{10} Nonattainment Area

An exceedance of the National Ambient Air Quality Standard (NAAQS) for PM_{10} at the Brawley, Calexico, El Centro and Niland monitors in Imperial County, California on April 11, 2018 and April 12, 2018

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ACRONYM	DESCRIPTIONS
AOD	Aerosol Optical Depth
AQI	Air Quality Index
AQS	Air Quality System
BACM	Best Available Control Measures
BAM 1020	Beta Attenuation Monitor Model 1020
BLM	United States Bureau of Land Management
BP	United States Border Patrol
CAA	Clean Air Act
CARB	California Air Resources Board
CMP	Conservation Management Practice
DCP	Dust Control Plan
DPR	California Department of Parks and Recreation
EER	Exceptional Events Rule
EPA	Environmental Protection Agency
FEM	Federal Equivalent Method
FRM	Federal Reference Method
GOES-W/E	Geostationary Operational Environmental Satellite (West/East)
HC	Historical Concentrations
HYSPLIT	Hybrid Single Particle Lagrangian Integrated Trajectory Model
ICAPCD	Imperial County Air Pollution Control District
INPEE	Initial Notification of a Potential Exceptional Event
ITCZ	Inter Tropical Convergence Zone
KBLH	Blythe Airport
KCZZ	Campo Airport
KIPL	Imperial County Airport
KNJK	El Centro Naval Air Station
KNYL/MCAS	Yuma Marine Corps Air Station
KPSP	Palm Springs International Airport
KTRM	Jacqueline Cochran Regional Airport (aka Desert Resorts Rgnl Airport)
PST	Local Standard Time
MMML/MXL	Mexicali, Mexico Airport
MODIS	Moderate Resolution Imaging Spectroradiometer
MPH	Miles Per Hour
MST	Mountain Standard Time
NAAQS	National Ambient Air Quality Standard
NCAR	National Center for Atmospheric Research
NCEI	National Centers for Environmental Information
NEAP	Natural Events Action Plan
NEXRAD	Next-Generation Radar

NOAA	National Oceanic and Atmospheric Administration
nRCP	Not Reasonably Controllable or Preventable
NWS	National Weather Service
PDT	Pacific Daylight Time
PM_{10}	Particulate Matter less than 10 microns
$PM_{2.5}$	Particulate Matter less than 2.5 microns
PST	Pacific Standard Time
QA/QC	Quality Assured and Quality Controlled
QCLCD	Quality Controlled Local Climatology Data
RACM	Reasonable Available Control Measure
RAWS	Remote Automated Weather Station
SIP	State Implementation Plan
SLAMS	State Local Ambient Air Monitoring Station
SMP	Smoke Management Plan
SSI	Size-Selective Inlet
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UTC	Coordinated Universal Time
WRCC	Western Regional Climate Center

I Introduction

In 2007, the United States Environmental Protection Agency (US EPA) adopted the "Treatment of Data Influenced by Exceptional Events Rule" (EER)[1] to govern the review and handling of certain air quality monitoring data for which the normal planning and regulatory processes are not appropriate. Under the terms of the EER, the US EPA may exclude monitored exceedances of the National Ambient Air Quality Standard (NAAQS) if a State adequately demonstrates that an exceptional event caused the exceedance.

The 2016 revision to the EER added sections 40 CFR §50.1(j)-(r) [Definitions], 50.14(a)-(c) and 51.930(a)-(b) to 40 Code of Federal Regulations (CFR). These sections contain definitions, criteria for US EPA concurrence, procedural requirements and requirements for State demonstrations. The demonstration must satisfy all of the rule criteria for US EPA to concur with the requested exclusion of air quality data from regulatory decisions.

Title 40 CFR §50.14(c)(3)(iv) outlines the elements that a demonstration must include for air quality data to be excluded:

TABLE 1-1 TITLE 40 CFR §50.14(c)(3)(iv) CHECKLIST EXCEPTIONAL EVENT DEMONSTRATION FOR HIGH WIND DUST EVENT (PM_{10})		DOCUMENT SECTION
1	A narrative conceptual model that describes the event(s) causing the exceedance or violation and a discussion of how emissions from the event(s) led to the exceedance or violation at the affected monitor(s)	Pg. 9
2	A demonstration that the event affected air quality in such a way that there exists a clear causal relationship between the specific event and the monitored exceedance or violation	Pg. 22
3	Analyses comparing the claimed event-influenced concentration(s) to concentrations at the same monitoring site at other times to support the requirement at paragraph (c)(3)(iv)(B) of this section	Pg. 33
4	A demonstration that the event was both not reasonably controllable and not reasonably preventable	Pg. 42
5	A demonstration that the event was a human activity that is unlikely to recur at a particular location or was a natural event	Pg. 49

[1] "Treatment of Data Influenced by Exceptional Events; Final Guidance", 81 FR 68216, October 2, 2016

Aside from the above, a State must demonstrate that it has met several procedural requirements during the demonstration process, including:

	TABLE 1-2 PROCEDURAL CHECKLIST EXCEPTIONAL EVENT DEMONSTRATION FOR HIGH WIND DUST EVENT (PM_{10})	DOCUMENT SECTION
1	**Public Notification [40 CFR §50.14(c)(1)]** – In accordance with mitigation requirement at 40 CFR 51.930(a)(1), notification to the public promptly whenever an event occurs or is reasonably anticipated to occur which may result in the exceedance of an applicable air quality standard	Pg. 3 and Appendix C
2	**Initial Notification of Potential Exceptional Event [40 CFR §50.14(c)(2)]** - Submission to the Administrator of an Initial Notification of Potential Exceptional Event and flagging of the affected data in US EPA's Air Quality System (AQS) as described in 40 CFR §50.14(c)(2)(i),	Pg. 3
3	**Public Comment Process [40 CFR §50.14(c)(3)(v)]** - Documentation of fulfillment of the public comment process described in 40 CFR §50.14(c)(3)(v), and	Pg. 4 and Appendix C
4	**Mitigation of Exceptional Events [40 CFR §51.930]** - Implementation of any applicable mitigation requirements (Mitigation Plan) as described in 40 CFR §51.930	Pg. 4

The Imperial County Air Pollution Control District (ICAPCD) has been submitting criteria pollutant data since 1986 into the US EPA's Air Quality System (AQS). In Imperial County, prior to 2017, Particulate Matter Less Than 10 Microns (PM_{10}) was measured by either Federal Reference Method (FRM) Size Selective Instruments (SSI) or Federal Equivalent Method (FEM) Beta Attenuation Monitor's, Model 1020 (BAM 1020). Effective 2017 Imperial County stopped utilizing FRM instruments relying solely on BAM 1020 monitors to measure PM_{10}. It is important to note that the use of non-regulatory data within this document, typically continuous PM_{10} data prior to 2013, measured in local conditions, does not cause or contribute to any significant differences in concentration difference or analysis.

As such, this report demonstrates that a naturally occurring event caused an exceedance observed on Wednesday, April 11, 2018 and Thursday, April 12, 2018, which elevated particulate matter within San Diego, Riverside, Imperial and Yuma Counties and affected air quality. The analyses contained in this report includes regulatory and non-regulatory data that provides support for the elements listed in **Table 1-1** and **Table 1-2**. This

demonstration substantiates that this event meets the definition of the US EPA Regulation for the Treatment of Data Influenced by Exceptional Events (EER)[2].

I.1 Public Notification [40 CFR §50.14(c)(1)]

The ICAPCD utilizes a web-based public notification process to alert the public of forecasted weather conditions and potential changes in ambient air concentrations that may affect the public. The ICAPCD identifies these public notifications as Advisory Events. On April 11, 2018 and April 12, 2018, the ICAPCD published advisories concerning the potential for elevated concentrations of particulate matter caused advisory level gusty westerly winds preceding the passage of a trough of low-pressure. Along with the advisories the ICAPCD published the issued wind advisory for all of Imperial County and an afternoon updated advisory on April 12, 2018 that included a Blowing Dust Advisory. Hazardous impacts were disclosed including lower visibility due to blowing dust. **Appendix C** contains copies of notices pertinent to the April 11, 2018 and April 12, 2018 event.

I.2 Initial Notification of Potential Exceptional Event (INPEE) [40 CFR §50.14(c)(2)]

When States intend to request the exclusion of one or more exceedances of a NAAQS as an exceptional event a notification to the Administrator is required. The notification process identified within the EER as the Initial Notification of Potential Exceptional Event (INPEE) is twofold: to determine whether identified data may affect a regulatory decision and whether a State should develop/submit an EE Demonstration.

On Wednesday, April 11, 2018 and Thursday, April 12, 2018, a naturally occurring event elevated particulate matter within San Diego, Riverside, Imperial and Yuma Counties, causing an exceedance at the Brawley (06-025-0007), Calexico (06-025-0005), El Centro (06-025-1003), and Niland (06-025-4004) air quality monitoring stations. Subsequently, the ICAPCD made a formal written request to the California Air Resources Board (CARB) to place preliminary flags on SLAMS measured PM_{10} hourly concentrations from the Brawley, Calexico, El Centro, and Niland monitors on April 11, 2018 and April 12, 2018. After review, CARB submitted the INPEE, for the April 11, 2018 and April 12, 2018 event in July of 2019. The submitted request included a brief description of the meteorological conditions for April 11, 2018 and April 12, 2018 indicating that a potential natural event occurred. The ICAPCD has engaged in discussions with US EPA Region IX regarding the demonstration prior to formal submittal.

[2] "Treatment of Data Influenced by Exceptional Events; Final Guidance", 81 FR 68216, October 2, 2016

I.3 Public Comment Process [40 CFR §50.14(c)(3)(v)(A-C)]

(A) The CARB and USEPA have reviewed and commented on the draft version of the April 11, 2018 and April 12, 2018 exceptional event prepared by the ICAPCD. After addressing all substantive and non-substantive comments by both CARB and USEPA the ICAPCD has published a notice of availability in the Imperial Valley Press announcing a 30-day public review process. The published notice invites comments by the public regarding the request, by the ICAPCD, to exclude the measured concentrations of 183 µg/m^3 measured by the Brawley monitor; 182 µg/m^3 measured by the Calexico monitor; 159 µg/m^3 measured by the El Centro monitor; and 191 µg/m^3 measured by the Niland monitor on April 11, 2018 and April 12, 2018.

(B) Concurrently with the Public Review period for the April 11, 2018 and April 12, 2018 exceptional event, the ICAPCD is formally submitting to CARB for remittance to USEPA the Final April 11, 2018 and April 12, 2018 exceptional event.

(C) Upon the ending of the review period the ICAPCD will remit to CARB and USEPA all comments received during the Public Review period along with a formal letter addressing any comments that dispute or contradict factual evidence in the demonstration.

The ICAPCD acknowledges that with the submittal to US EPA of the 2018 exceptional events, there is supporting evidence of documented recurring seasonal events that affect air quality in Imperial County.

I.4 Mitigation of Exceptional Events [40 CFR §51.930]

According to 40 CFR §51.930(b) all States having areas with historically documented or known seasonal events, three events or event seasons of the same type and pollutant that recur in a 3-year period, are required to develop and submit a mitigation plan to the US EPA.

The ICAPCD received notice from US EPA September 15, 2016 identifying Imperial County as an area required to develop and submit a mitigation plan within two years of the effective date, September 30, 2016, of the final published notification to states with areas subject to mitigation requirements. On September 21, 2018, after notice and opportunity for public comment the ICAPCD submitted the High Wind Exceptional Event Fugitive Dust Mitigation Plan (Mitigation Plan) for review and verification. Subsequently, on November 28, 2018 CARB received verification from US EPA of its review and approval of the

Mitigation Plan. For a copy of the Mitigation Plan visit the Imperial County Air Pollution Control District website at
https://www.co.imperial.ca.us/AirPollution/otherpdfs/MitigationPlan.pdf

The Imperial County Mitigation Plan contains important geographical and meteorological descriptions, pages 3 through 6, of the areas within Imperial County and the surrounding areas that are sources of transported fugitive dust. **Figure 1-1** helps depict the geological aspects that are within Imperial County and outside of Imperial County that affect air quality.

Essentially, the Anza-Borrego Desert State Park, which lies in a unique geologic setting along the western margin of the Salton Trough, extends north from the Gulf of California (Baja California) to the San Gorgonio Pass and from the eastern rim of the Peninsular Ranges eastward to the San Andreas Fault zone along the far side of the Coachella Valley. These areas are sources of transported fugitive dust emissions into Imperial County when westerly winds funnel through the unique landforms causing in some cases wind tunnels that cause increase in wind speeds.

During the monsoonal season, natural open desert areas to the east, southeast, and south of Imperial County are sources of transported fugitive dust emissions when thunderstorms cause outflows to blow winds across natural opens desert areas within Arizona and Mexico.

FIGURE 1-1
IMPERIAL COUNTY

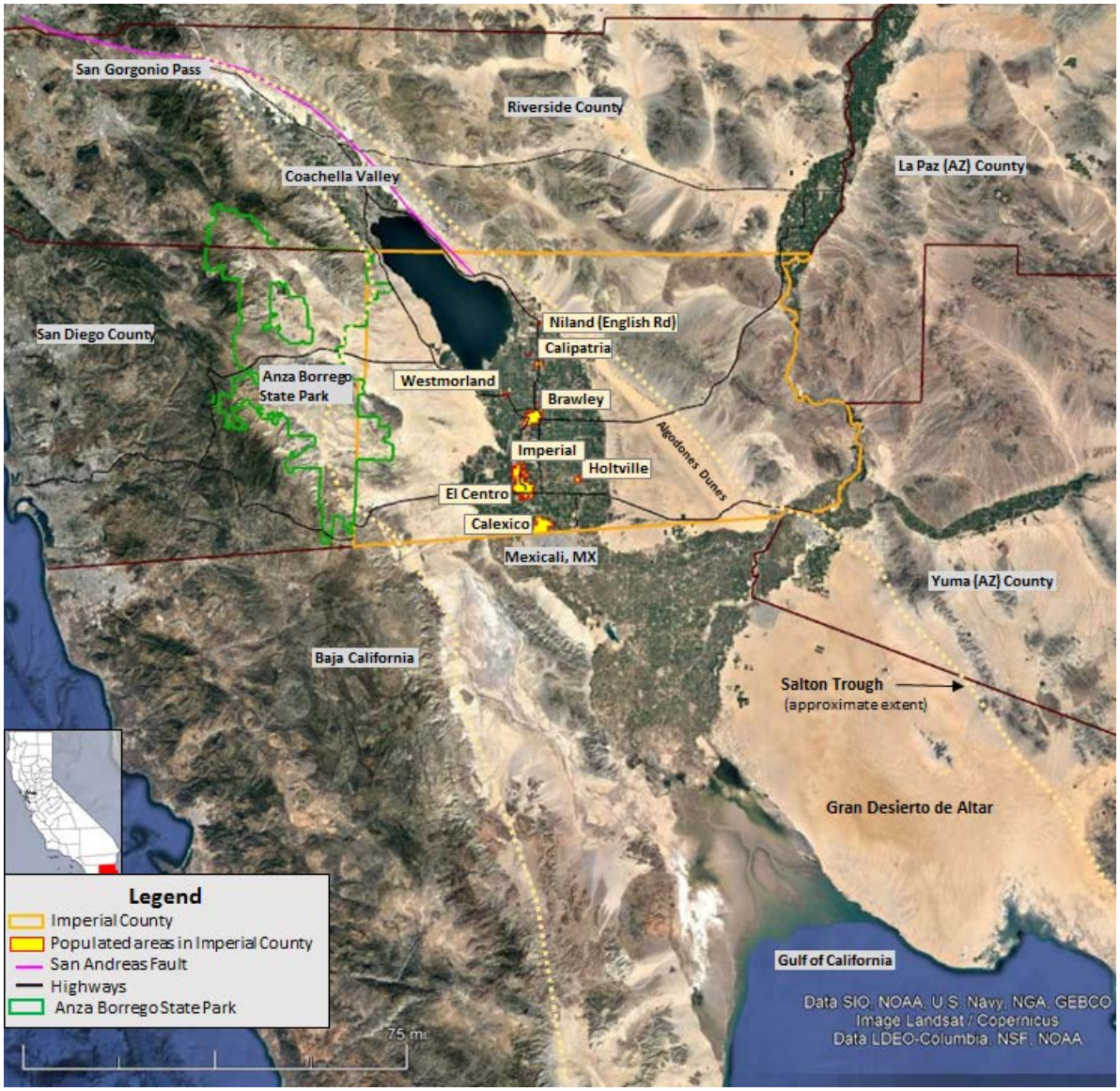


Fig 1-1: Imperial County a Southern California border region, within far southeast California bordering Arizona and Mexico has a small economically diverse region with a population of 174,528

Likewise, the Mitigation Plan contains a high wind event meteorological analysis broken down into four types of seasonal natural occurrences that cause elevated particulate matter that affects Imperial, San Diego, Riverside and Yuma Counties. The historical analysis has defined the meteorological events that lead to high winds and elevated PM_{10} events in Imperial County, page 7, as follows:

- **Type 1:** Pacific storms and frontal passages;
- **Type 2:** Strong pressure and surface pressure gradients;
- **Type 3:** Monsoonal Gulf Surges from Mexico; thunderstorm downburst, outflow winds and gust fronts from thunderstorms
- **Type 4:** Santa Ana wind events

A complete description of these events begins on page 8 of the Mitigation Plan. While there is some overlap in discussed components between the Mitigation Plan and this demonstration such as the public notification process and the warning process, the Mitigation Plan does elaborate a little further. The Mitigation Plan discusses in detail the educational component, the notification component, the warning component and the implementation of existing mitigation measures, such as Regulation VIII.

Finally, the Mitigation Plan contains a complete description of the methods, processes and mechanisms used to minimize the public exposure, page 14, retain historical and real-time data, page 15, and the consultation process with other air quality managers to abate and minimize air impacts within Imperial County, page 16.

In all, the Mitigation Plan helps explain the recurring events, by type and influence upon Imperial County and provides supporting justification of a natural event.[3]

[3] Title 40 Code of Federal Regulations §50.1 (k) defines a Natural Event as meaning an event and its resulting emissions, which may recur at the same location, in which human activity plays little or no direct causal role. For purposes of the definition of a natural event, anthropogenic sources that are reasonably controlled shall be considered to not play a direct role in causing emissions.

FIGURE 1-2
MONITORING SITES IN AND AROUND IMPERIAL COUNTY

Fig 1-2: Depicts a select group of PM_{10} monitoring sites in Imperial County, eastern Riverside County, and southwestern Arizona (Yuma County). Generated through Google Earth

II Conceptual Model – A narrative that describes the event causing the exceedance and a discussion of how emissions from the event led to the exceedance at the affected monitors

II.1 Description of the event causing the exceedance

Days before and during Wednesday and Thursday, April 11, 2018 and April 12, 2018 the National Weather Service (NWS) offices in Phoenix and San Diego issued Area Forecast Discussions describing a low-pressure trough approaching the coast on Wednesday, April 11, 2018 and moving inland Thursday, April 12, 2018, causing surface pressure to drop over the Great Basin, strengthening onshore winds, resulting in strong gusty westerly winds over the mountains and deserts.[4] The anticipated severity of the winds caused the San Diego NWS office to issue the first Urgent Weather Message for several areas within the San Diego service area, including the San Diego Mountains and San Diego Deserts as early as April 9, 2018.[5] In all a total the NWS issued twenty (20) Urgent Weather Messages advising of advisory level winds within Riverside, San Diego, Imperial and Yuma counties (**Appendix A**). All of the Urgent Weather Messages issued by the San Diego NWS office advised of the potential for blowing dust and blowing sand. The Phoenix NWS office issued a blowing dust advisory by Thursday, April 12, 2018 for Imperial County.[6]

It is of some worth to mention, that the San Diego NWS office described the path of the strong winds as starting "…to pick up Wednesday afternoon in the mountains and deserts ahead of the main upper trough that will sweep across SoCal Thursday."[7] In addition, the San Diego NWS office described a "…moderately strong mountain wave down the eastern slopes in the deserts Wednesday afternoon and evening."[8] This however was underscored by the statement that the stronger wave would make its way down the slopes and into parts of the desert floor of the Coachella Valley on Thursday, April 12, 2018.[9] As a result the San Diego office called this "…a wind event more than a rain event with only slight chances for light showers along and west of the mountains Thursday."[10] On a similar note, the Phoenix office identified this system as a "…dry Pacific trough…"[11] Although light rain and scatter showers were primarily forecasted west of the mountains, there was enough moisture that made it across the mountains so that the El Centro NAF (KNJK) measured trace precipitation on April 12, 2018.[12] **Appendix A** contains all pertinent NWS

[4] National Weather Service, Area Forecast Discussion, Apr. 11, 2018, San Diego office, 250 am PDT; 918 am PDT; & 142pm PDT
[5] National Weather Service, Urgent Weather Message, Apr. 9, 2018, San Diego office, 1256pm PDT
[6] National Weather Service, Urgent Weather Message, Apr. 12, 2018, Phoenix office, 941am MST
[7] National Weather Service, Area Forecast Discussion, Apr. 10, 2018, 150pm PDT
[8] *Id.*
[9] *Id.*
[10] *Id.*
[11] National Weather Service, Area Forecast Discussion, Apr. 10, 2018, 255am MST
[12] National Weather Service, Area Forecast Discussion, Apr. 12, 2018, San Diego office, 930 am PDT

notices.

II.2 How emissions from the event led to an exceedance

On April 11, 2018 and April 12, 2018, the air monitors in Imperial, Riverside and Yuma counties measured elevated concentrations of particulate matter when a low-pressure system moved inland from the Pacific coast over California and increased the surface pressure gradients which generated strong gusty westerly winds across the Desert Southwest. The strong gusty westerly winds associated with the system generated emissions from within the open mountain ranges and surrounding open natural deserts within San Diego and Imperial Counties. These windblown dust emissions were transported to all the Imperial County regional air quality monitors causing an exceedance of the PM_{10} NAAQS (**Table 2-1**).

FIGURE 2-1
MONITORING AND METEOROLOGICAL SITES

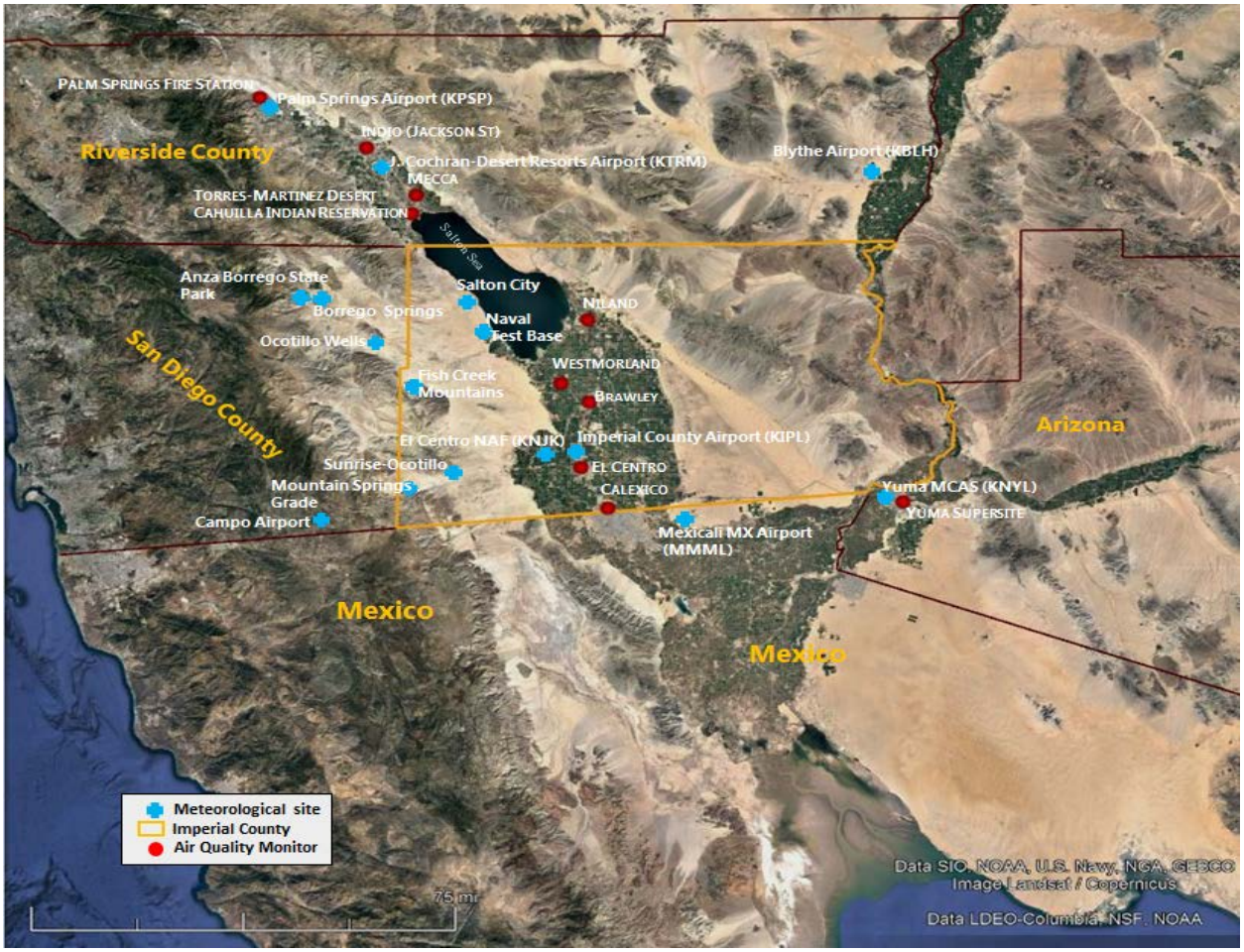


Fig 2-1: Includes a general location of the sites used in this analysis. The site furthest south is in Mexicali, Mexico and the site furthest north is the Palm Springs Fire Station

TABLE 2-1
HOURLY CONCENTRATIONS OF PARTICULATE MATTER

SITE	DATE	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Hrly MAX	24-Hr AVERAGE
PALM SPRINGS FIRE STATION	20180410	19	19	18	17	18	20	31	39	28	11	15	19	18	18	23	25	23	24	29	24	23	18	15	16	39	21
	20180411	24	17	14	14	15	17	18	25	30	17	9	15	17	17	23	23	46	34	18	29	32	22	27	29	**46**	22
	20180412	13	26	25	25	52	68	50	88	112	64	49	35	36	110	31	33	29	35	62	29	25	29	35	28	**112**	45
	20180413	32	22	23	19	10	12	16	10	10	7	8	8	8	13	17	17	22	19	26	23	22	21	18	21	32	16
INDIO	20180410	20	20	20	22	23	39	55	66	29	19	17	27	28	24	23	76	19	18	42	43	38	30	23	21	76	30
	20180411	18	21	20	19	31	53	64	68	39	27	24	30	53	30	23	79	146	380	233	47	91	43	23	33	**380**	66
	20180412	10	18	37	93	156	139	198	167	129	562	182	58	258	127	148	159	100	99	61	52	33	33	31	39	**562**	120
	20180413	36	27	20	15	15	26	25	12	7	9	11	11	8	11	18	24	25	22	22	20	27	30	43	39	43	20
MECCA	20180410	21	23	11	22	32	134	112	151	91	21	22	24	27	22	7	20	20	51	26	25	45	29	22	26	151	41
	20180411	38	35	34	36	33	90	168	99	23	16	41	51	43	9	34	226	593	402	248	169	247	290	103	37	**593**	127
	20180412	21	2	33	54	139	126	130	209	124	448	240	161	142	602	414	558	528	331	195	50	58	26	32	36	**602**	194
	20180413	38	19	26	16	33	34	42	50	23	29	25	39	28	22	21	25	25	28	15	30	47	30	27	31	50	29
TORRES-MARTINEZ TRIBAL	20180410	32	26	25	23	36	80	96	85	82	55	39	113	93	56	17	22	21	91	65	87	38	39	28	18	113	52
	20180411	29	29	37	20	59	121	155	62		41	84	49	31	26	38	494	3003	1090	73	64	178	191	353	339	**3003**	285
	20180412	836	512	139	456	81	320	218	250	541	135	245	424	365	545	170	190	137	68	51	75	44	34	35	32	**836**	245
	20180413	30	26	24	23	23	27	73	48	21	29	26	19	30	12	23	20	41	33	30	28	25	25	32	31	73	29
WESTMORLAND	20180410	33	29	21	18	21	39	64	46	72	39	36	31	42	30	63	40	29	41	47	51	34	45	39	18	72	38
	20180411	16	13	15	35	24	47	155	77	93	85	67	66	65	47	56	55	306	230	204	529	64	42	147	228	**529**	111
	20180412	174	44	64	192	173	115	101	430	190	255	174	122	91	101	77	113	538	133	57	57	65	33	32	34	**538**	140
	20180413	38	44	30	24	22	26	56	56	21	22	22	38	19	10	16	12	21	31	33	25	25	26	37	18	56	28
NILAND	20180410	39	58	24	35	65	31	37	108	94	39	30	32	26	23	25	19	47	299	50	52	63	33	28	17	299	53
	20180411	20	28	22	46	28	25	69	58	115	50	49	39	42	35	40	67	151	395	995	995	430	189	476	241	**995**	191
	20180412	240	213	94	80	31	54	74	175	253	210	121	95	98	95	95	101	92	95	226	68	32	29	42	57	**253**	111
	20180413	53	42	25	24	13	19	20	13	11	22	16	146	43	22	11	18	17	18	15	16	19	17	18	14	146	26
BRAWLEY	20180410	39	20	15	34	26	43	47	49	36	39	36	28	25	30	31	29	33	47	64	57	109	52	68	31	109	41
	20180411	13	16	16	15	23	39	68	87	81	53	57	42	30	40	55	208	210	206	294	648	196	49	63	306	**648**	117
	20180412	119	164	89	210	133	266	325	664	192	159	181	179	112	121	88	155	582	315	86	104	54	35	29	47	**664**	183
	20180413	41	54	41	40	32	42	46	34	23	23	16	16	29	20	19	20	22	22	34	37	148	95	27	22	148	37
EL CENTRO	20180410	19	14	16	19	23	57	38	46	47	32	31	31	33	32	30	32	27	36	67	76	30	27	21	24	76	33
	20180411	18	7	17	19	16	38	107	168	142	95	85	62	53	41	46	249	205	170	306	317	103	49	29	48	**317**	99
	20180412	212	342	112	150	63	89	498	366	172	252	174	184	139	80	72	53	118	311	54	65	209	46	30	27	**498**	159
	20180413	33	31	26	29	27	37	53	46	30	23	15	25	29	27	24	20	21	25	31	28	29	39	26	27	53	29
CALEXICO	20180410	34	49	35	24	24	38	58	84	35	25	31	30	21	23	31	34	40	57	146	54	35	20	20	23	146	40
	20180411	18	23	24	39	40	79	164	153	136	67	67	56	56	51	76	60	384	71	146	235	317	225	75	59	**384**	109
	20180412	37	279	305	519	265	115	221	503	298	655	137	285	103	70	70	59	128	88	67	58	42	19	22	29	**655**	182
	20180413	29	37	32	29	27	51	64	50	32	22	14	14	21	21	18	28	38	37	69	76	74	42	52	46	76	38
YUMA AZ SUPERSITE (PST)	20180410	11	7	18	14	19	41	69	24	50	28	23	28	42	29		22	28	33	50	61	68	92	61	44	92	37
	20180411	51	86	58	48	56	90	78	47	30	25	22	24	19	17	19	20	25	52	85	70	42	156	153	105	**156**	57
	20180412	103	162	145	119	88	91	144	194	415	459	719	354	367	379	136	89	139	158	453	271	113	121	92	108	**719**	225
	20180413	84	73	50	45	55	36	44	55	144	63	139	72	83	40	45	33	29	22	34	14	30	29	23	16	144	52
YUMA AZ SUPERSITE (MST)	20180410	14	11	7	18	14	19	41	69	24	50	28	23	28	42	29		22	28	33	50	61	68	92	61	92	36
	20180411	44	51	86	58	48	56	90	78	47	30	25	22	24	19	17	19	20	25	52	85	70	42	156	153	**156**	54
	20180412	105	103	162	145	119	88	91	144	194	415	459	719	354	367	379	136	89	139	158	453	271	113	121	92	**719**	225
	20180413	108	84	73	50	45	55	36	44	55	144	63	139	72	83	40	45	33	29	22	34	14	30	29	23	144	56

Color coding information – **Red bold** highlighted sites indicate sites that exceeded the NAAQS. **Bold Blue** dates indicate date of Exceptional Event. **Red fill and Red bold** hourly concentrations represent concentrations above 100 µg/m^3. Pink squares around concentrations identify peak hourly concentrations.

FIGURE 2-2
CONCENTRATIONS FOR ALL SITES LISTED IN TABLE 2-1

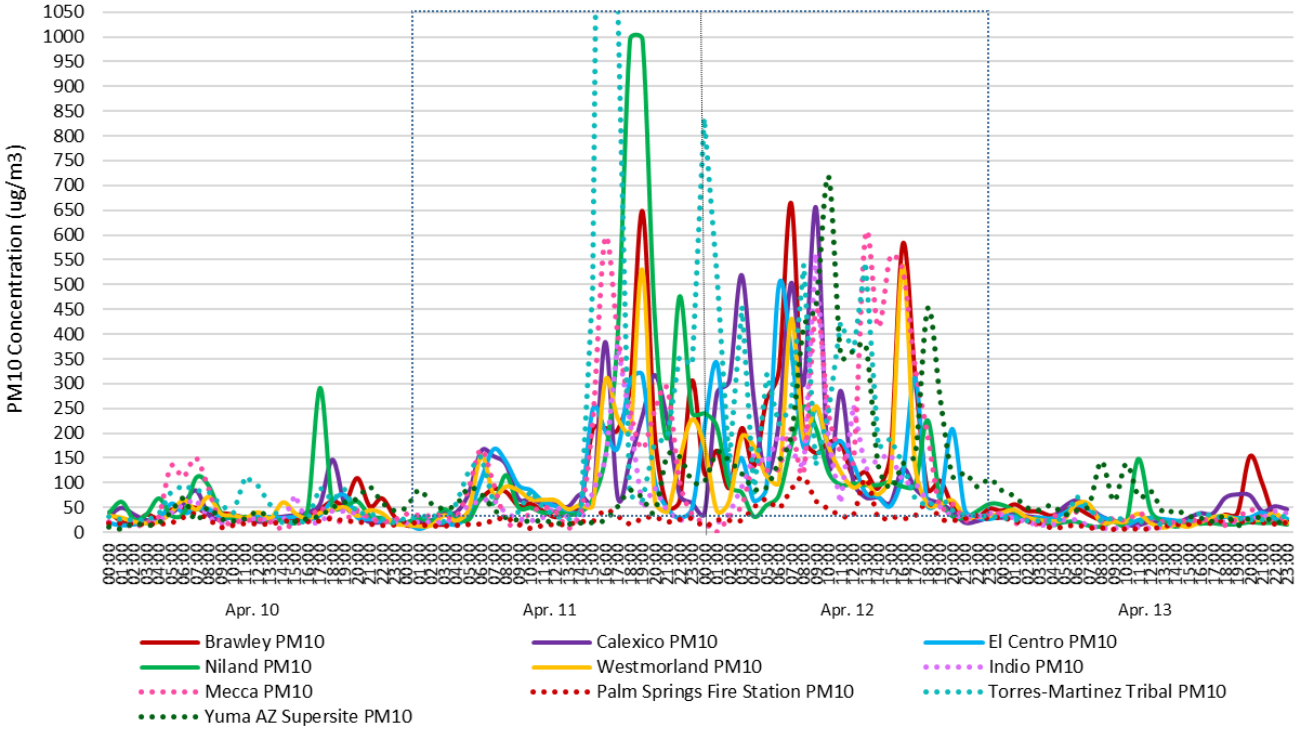


Fig 2-2: is a four-day graphical representation of the PM_{10} concentrations measured at the sites identified in **Table 2-1**. Note that nearly all of the monitors depicted, and in particular those in Imperial County, have high hourly concentrations on April 11, 2018 And April 12, 2018 (boxed area)

Wind speed, wind direction and airflow patterns combined all help explain how windblown emissions resulting from the strong gusty westerly winds associated with the passing of the trough affected the all monitors in Imperial County on Wednesday, April 11, 2018 and Thursday, April 12, 2018.

As mentioned above, the early weather forecast notices issued by both the San Diego and Phoenix NWS offices indicated that a Pacific trough moving inland over California would increase the onshore pressure gradient and produce widespread strong gusty westerly winds over the Desert Southwest.[13],[14],[15] As mentioned above, twenty (20) Urgent Weather Messages were issued by the NWS office in San Diego and Phoenix advising of advisory level westerly winds within San Diego mountains and Imperial County (**Appendix A**).

Figures 2-3 and 2-4 depict the compiled wind data for regional and neighboring airports and upstream sites. Airports within Imperial and Riverside counties measured wind speeds at or above 25 mph or measured wind gusts at or above 25 mph, coincident with

[13] National Weather Service, Area Forecast Discussion, Apr. 9, 2018, San Diego office, 336 am PDT
[14] National Weather Service, Area Forecast Discussion, Apr. 10, 2018, San Diego office, 329 am PDT
[15] National Weather Service, Area Forecast Discussion, Apr. 12, 2018, Phoenix office, 150 pm PDT

measured elevated concentrations. Sites farther west of Imperial County, similarly measured wind speeds and gust at or above 25 mph sooner than air quality monitoring stations within Imperial County, consistent with the westerly direction of the winds.

FIGURE 2-3
LOCAL AND VICINITY AIRPORT WIND SPEEDS AND GUST

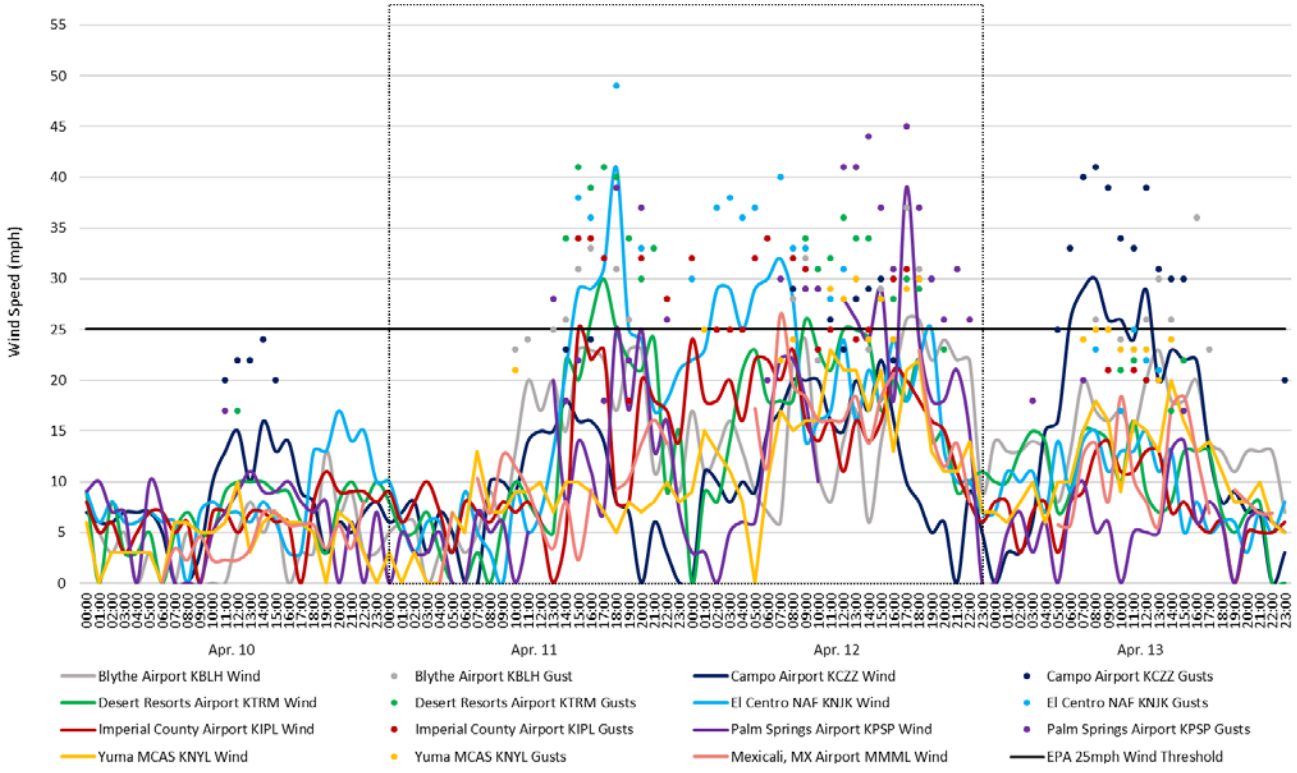


Fig 2-3: is a four-day graphical representation of the measured wind speed and wind gust (if available) from local and neighboring airports. All data derived from the Local Climatological Data Hourly Observations (LCDHO) reports released by the NOAA https://www.ncdc.noaa.gov/. MMML is from the University of Utah's Meso West https://mesowest.utah.edu/index.html

FIGURE 2-4
WIND SPEEDS AND GUST UPSTREAM SITES

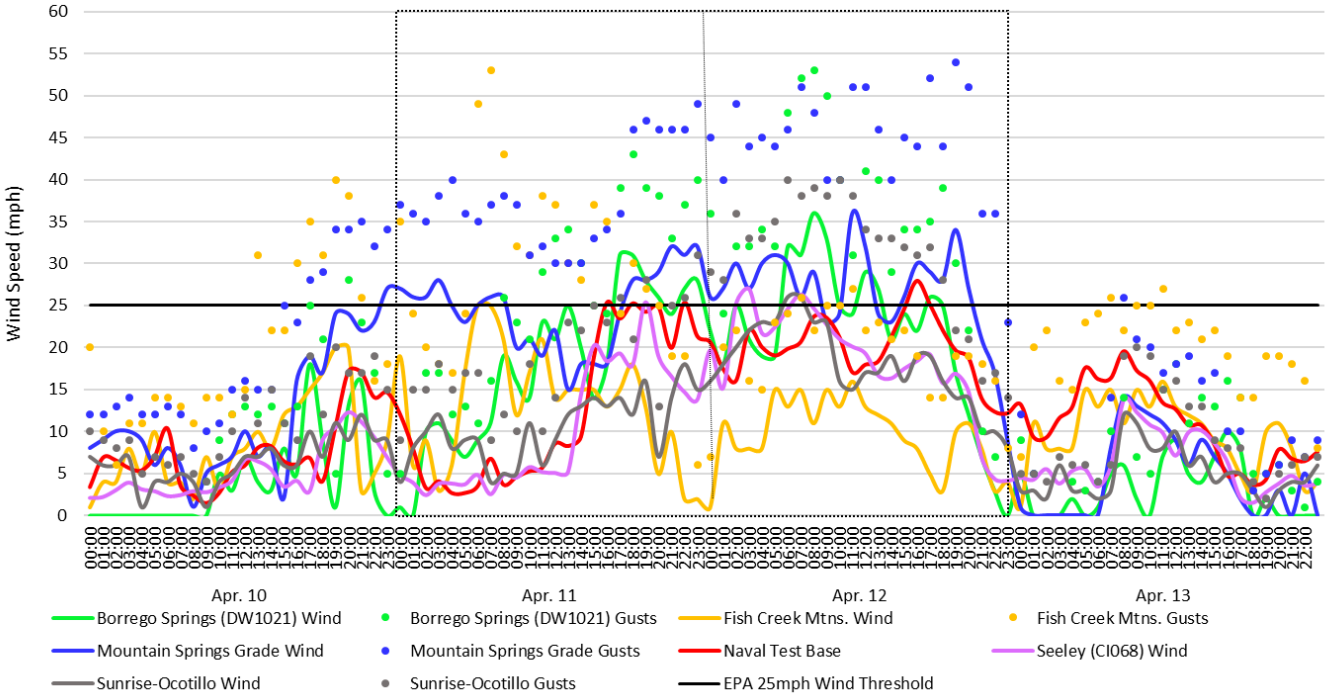


Fig 2-4: is a four-day graphical representation of the measured wind speed and wind gust (if available) from sites located upstream from the Imperial County monitors. All data derived from the University of Utah's Meso West https://mesowest.utah.edu/index.html

The National Oceanic and Atmospheric Administration (NOAA) Laboratory HYSPLIT back-trajectory models[16] provide supporting evidence of the westerly airflow within Imperial County on April 11, 2018 and April 12, 2018. As a two-day event, the HYSPLIT back-trajectory models in **Figures 2-5 through 2-9** depict the airflow during the morning (0700 PST), the afternoon (1500 PST) and evening (1900 PST) hours, on April 11, 2018 and the midnight (0000 PST) and the morning (0700 PST) hours on April 12, 2018 to help illustrate the shift of airflow from a northwesterly direction, to a west direction and as the system passed through on April 12, 2018 due west direction.

Figure 2-5 depicts the morning airflow on April 11, 2018 from a northwest direction, for the monitors located to the northern part of Imperial Count and a southwest airflow for the monitors to the south, this is coincident with elevated concentrations above 100 µg/m^3 at the El Centro and Calexico monitors. **Figure 2-6** depicts the afternoon airflow

[16] The Hybrid Single Particle Lagrangian Integrated Trajectory Model (**HYSPLIT**) is a computer model that is a complete system for computing simple air parcel trajectories to complex dispersion and deposition simulations. Used, currently, to compute air parcel trajectories and dispersion or deposition of atmospheric pollutants. One popular use of HYSPLIT is to establish whether high levels of air pollution at one location are caused by transport of air contaminants from another location. HYSPLIT's back trajectories, combined with satellite images (for example, from NASA's MODIS satellites), can provide insight into whether high air pollution levels are caused by local air pollution sources or whether an air pollution problem was blown in on the wind The initial development was a result of a joint effort between NOAA and Australia's Bureau of Meteorology. Source: NOAA/Air Resources Laboratory, 2011.

shift to the southwest for all air quality monitors which is consistent with the approaching Pacific trough on April 11, 2018. **Figure 2-7** depicts the evening airflow on April 11, 2018, note the airflow is almost due west coincident with hourly peak concentrations at all Imperial County monitors, except the Calexico monitor. As the system moves further inland and to the east on April 12, 2018, **Figures 2-8 and 2-9** depict the westerly airflow at midnight (0000 PST) and during the early morning hour of 0700 PST, coincident with continued elevated concentrations above 100 µg/m^3 at all air quality monitors in Imperial County, except for the Calexico monitor which did not measure an elevated concentration at midnight.

FIGURE 2-5
HYSPLIT MODEL All SITES APRIL 11, 2018 0700 PST

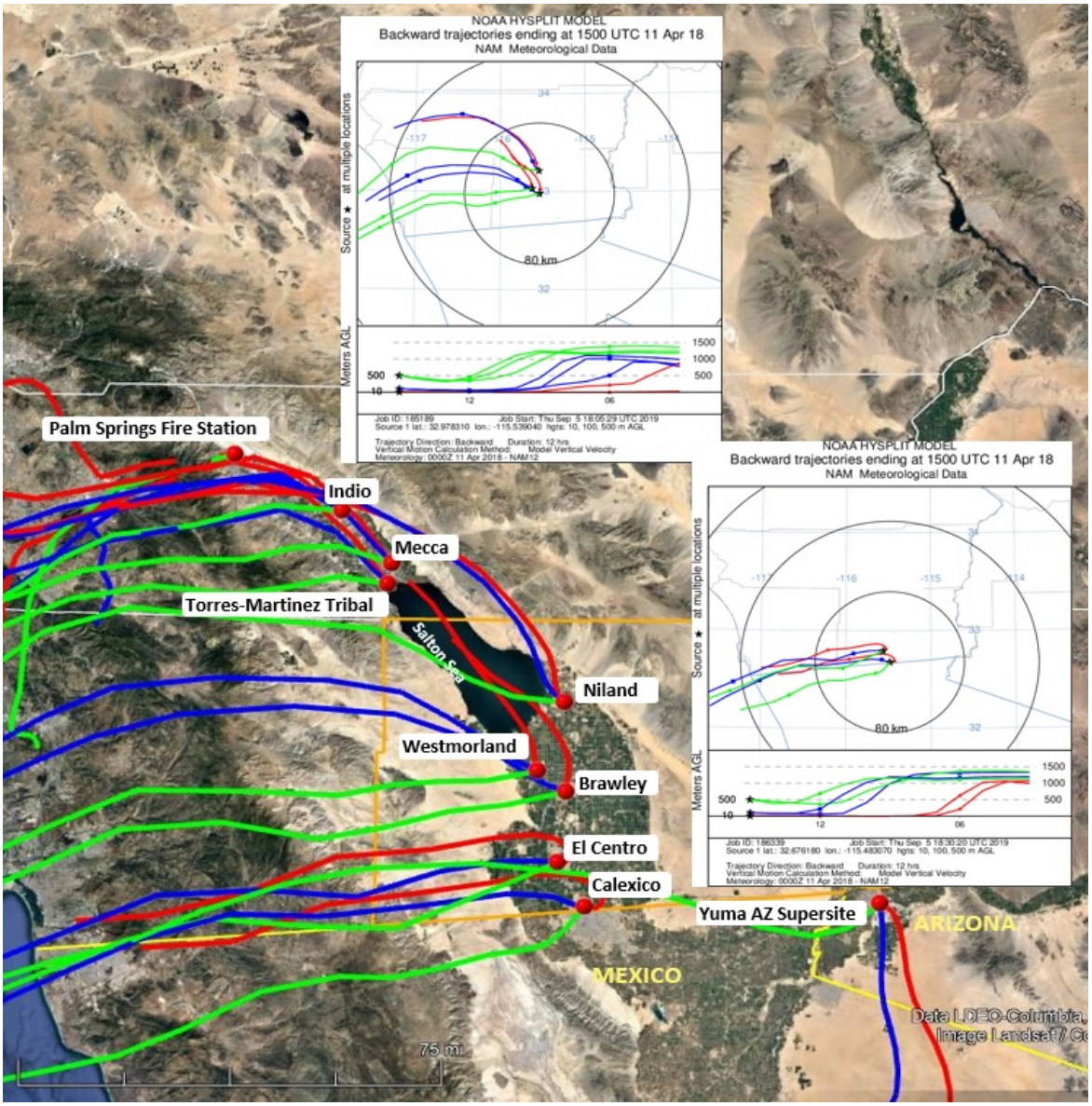


Fig 2-5: A 12-hour HYSPLIT back-trajectory ending at 0700 PST for all sites identified in **Table 2-1**. The inset graphic depicts the airflow to neighboring monitors. Red trajectory indicates airflow at 10 meters AGL (above ground level); blue indicates airflow at 100m; green indicates airflow at 500m. Yellow line indicates the international border. Dynamically generated through NOAA's Air Resources Laboratory HYSPLIT model. Base map from Google Earth

FIGURE 2-6
HYSPLIT MODEL All SITES APRIL 11, 2018 1500 PST

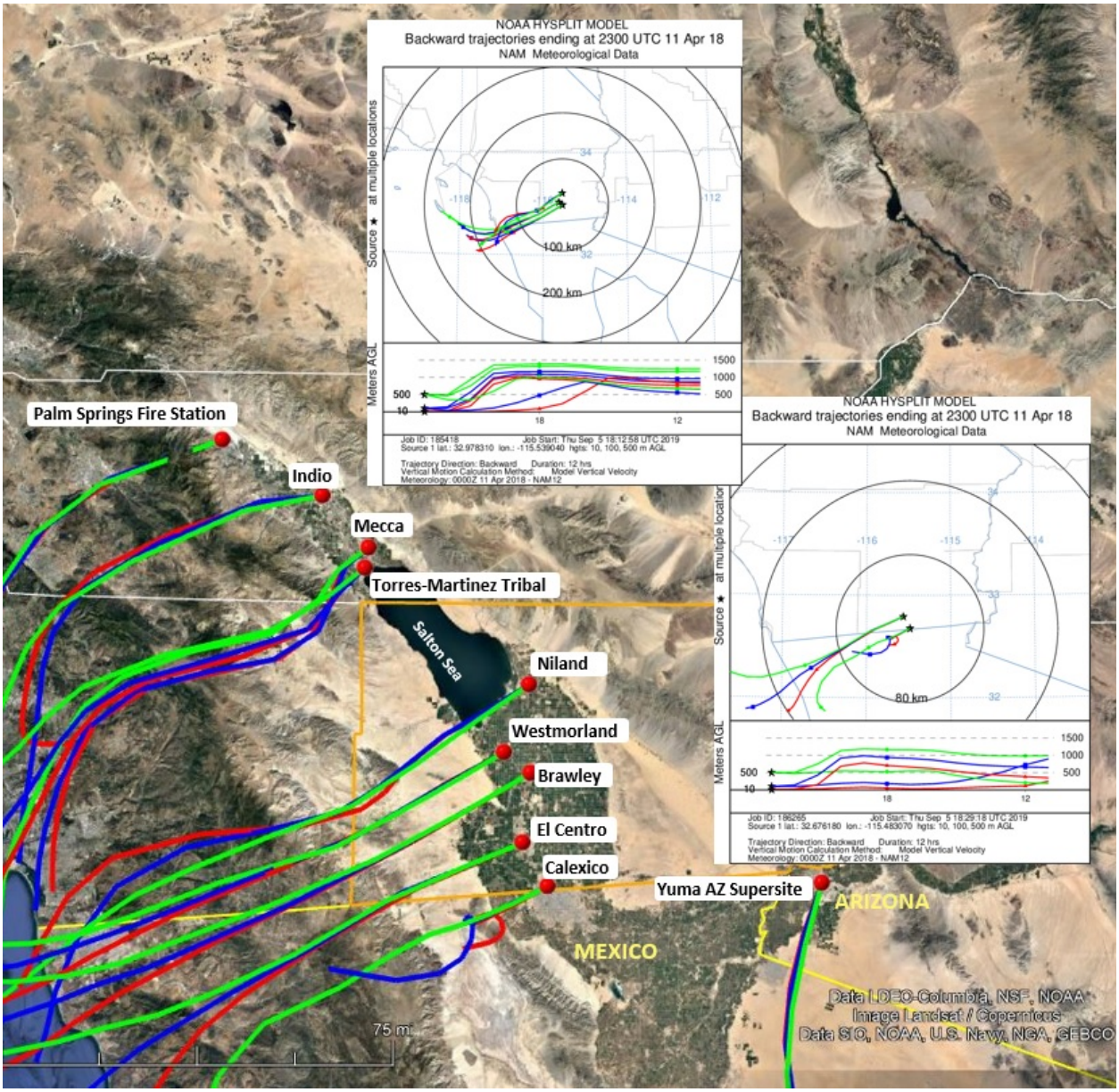


Fig 2-6: A 12-hour HYSPLIT back-trajectory ending at 1500 PST for all sites identified in **Table 2-1**. The inset graphic depicts the airflow to neighboring monitors. Red trajectory indicates airflow at 10 meters AGL (above ground level); blue indicates airflow at 100m; green indicates airflow at 500m. Yellow line indicates the international border. Dynamically generated through NOAA's Air Resources Laboratory HYSPLIT model. Base map from Google Earth

FIGURE 2-7
HYSPLIT MODEL ALL SITES APRIL 11, 2018 1900 PST

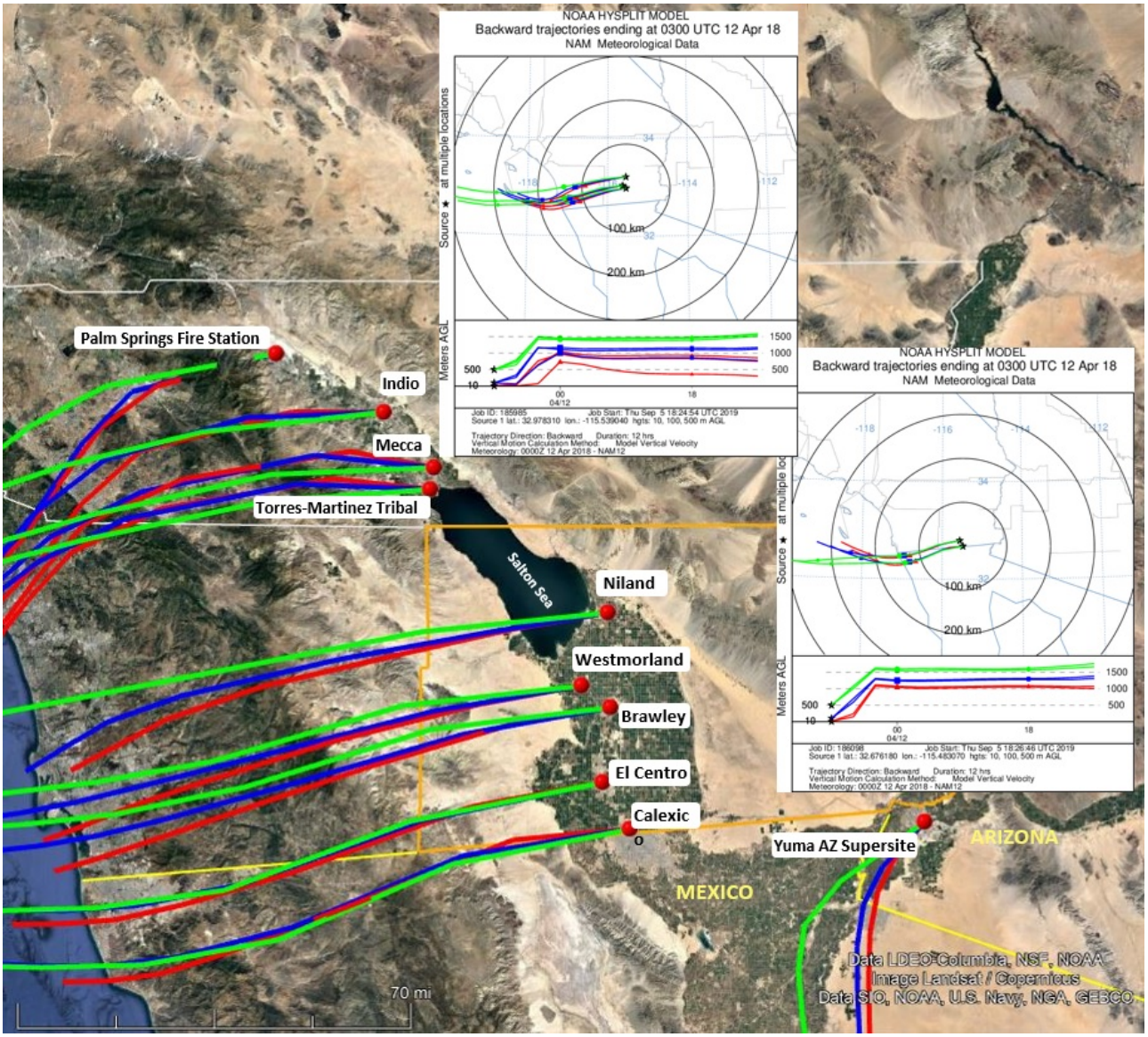


Fig 2-7: A 12-hour back-trajectory HYSPLIT ending at 1900 PST for all sites identified in **Table 2-1**. Note that the airflow is now WNW. The inset graphic depicts airflow to neighboring monitors. Red trajectory indicates airflow at 10 meters AGL (above ground level); blue indicates airflow at 100m; green indicates airflow at 500m. Yellow line indicates the international border. Dynamically generated through NOAA's Air Resources Laboratory HYSPLIT model. Base map from Google Earth

FIGURE 2-8
HYSPLIT MODEL ALL SITES APRIL 12, 2018 0000 PST

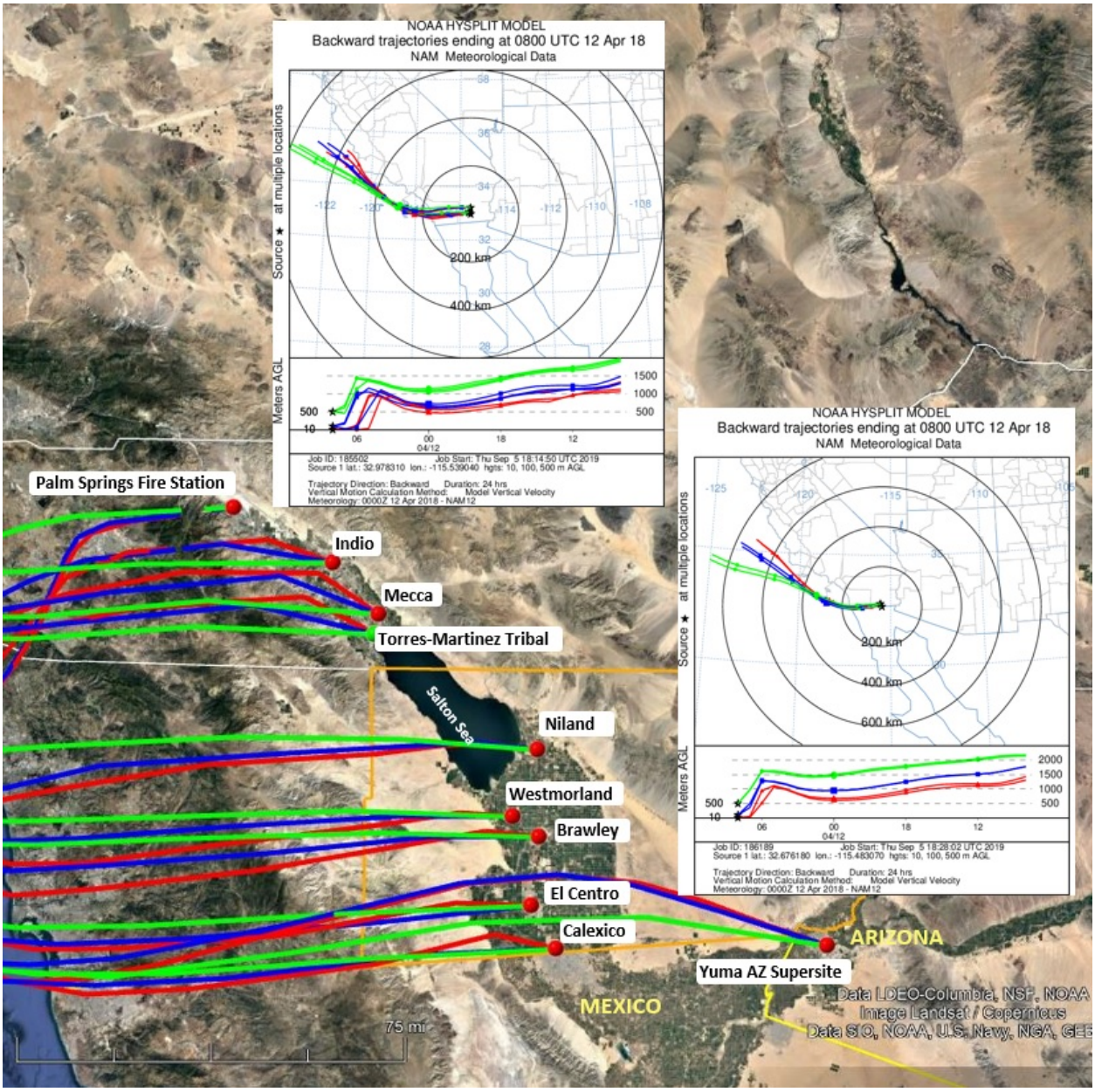


Fig 2-8: A 24-hour back-trajectory HYSPLIT ending at 0000 PST (midnight on April 12, 2018) for all sites identified in **Table 2-1**. Note that the airflow is now WNW. The inset graphic depicts airflow to neighboring monitors. Red trajectory indicates airflow at 10 meters AGL (above ground level); blue indicates airflow at 100m; green indicates airflow at 500m. Yellow line indicates the international border. Dynamically generated through NOAA's Air Resources Laboratory HYSPLIT model. Base map from Google Earth

FIGURE 2-9
HYSPLIT MODEL ALL SITES APRIL 12, 2018 0700 PST

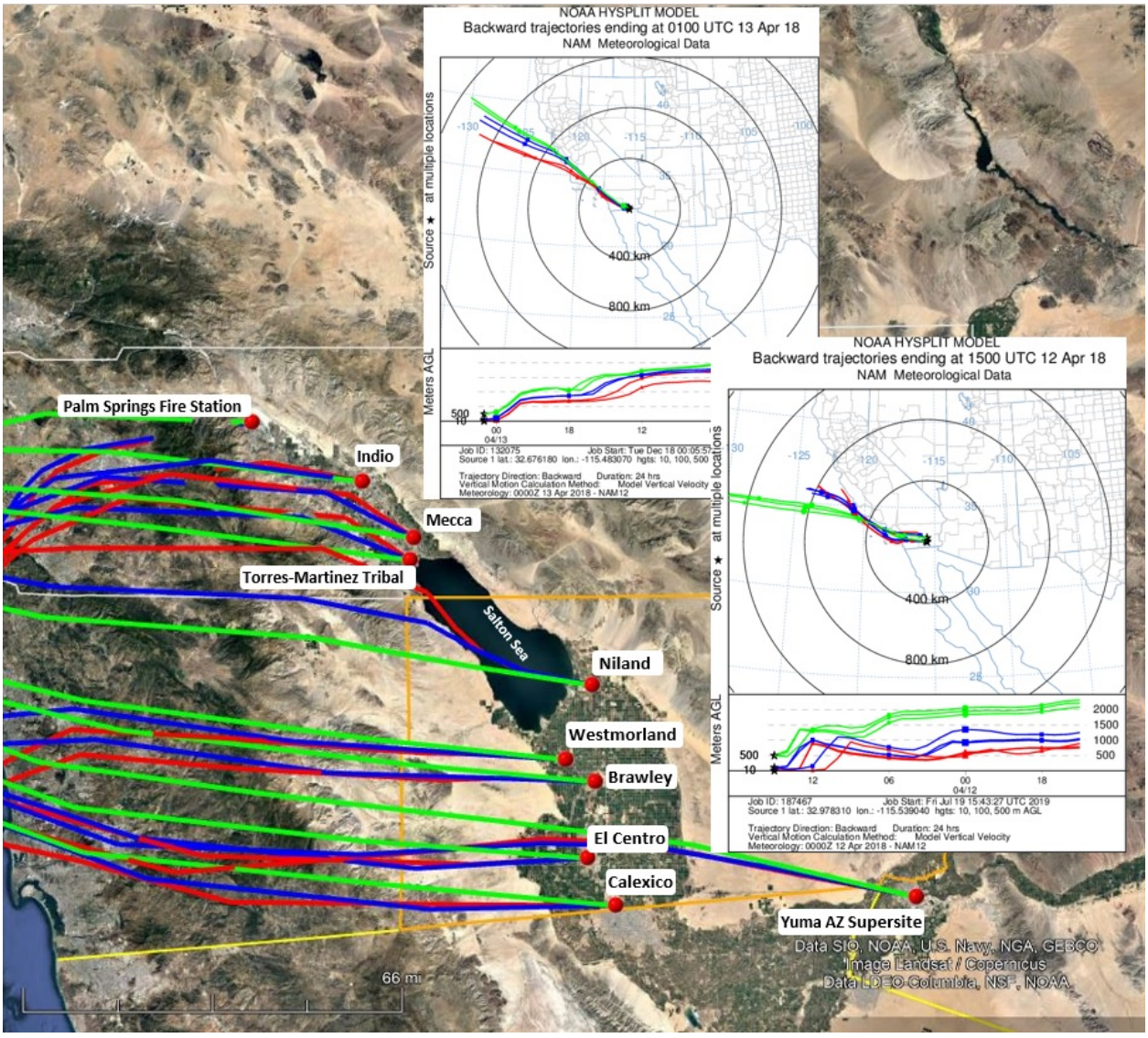


Fig 2-9: A 24-hour back-trajectory HYSPLIT ending at 0700 PST April 12, 2018 for all sites identified in **Table 2-1**. The inset graphic depicts airflow to neighboring monitors. Red trajectory indicates airflow at 10 meters AGL (above ground level); blue indicates airflow at 100m; green indicates airflow at 500m. Yellow line indicates the international border. Dynamically generated through NOAA's Air Resources Laboratory HYSPLIT model. Base map from Google Earth

As strong gusty westerly winds blew over open natural mountains and desert areas west of Imperial County, fugitive windblown dust affected air quality monitors within Imperial County. Twenty (20) Urgent Weather Messages were issued by the NWS in anticipation of the advisory level winds within San Diego, Riverside, Imperial and Yuma counties. Both the El Centro NAF (KNJK) and the Imperial County Airport (KIPL) measured wind speeds or gusts at or above 25 mph on April 11, 2018 and April 12, 2018. While KIPL measured a single hour of wind speed at 25 mph on April 11, 2018 the airport did measure more

than a single hour of gusts above 25 mph on April 11, 2018 and April 12, 2018. By contrast KNJK measured more than a single hour of wind speeds at or above 25 mph on April 11, 2018 and April 12, 2018. Measured peak gust for KNJK was 49 mph and 40 mph on April 11, 2018 and April 12, 2018, respectively.

III Clear Causal Relationship – A demonstration that the event affected air quality illustrating the relationship between the event and the monitored exceedance

As mentioned above, the NWS office described a low-pressure trough approaching the coast on Wednesday, April 11, 2018 and moving inland Thursday, April 12, 2018, causing surface pressure to drop over the Great Basin, strengthening onshore winds, resulting in strong gusty westerly winds over the mountains and deserts.[17] Winds were forecast to develop across southeastern California Wednesday afternoon (April 11, 2018) as the surface gradient tightened[18] before peaking that night and into Thursday.[19] The strongest winds from the weather system were forecast across the San Diego County mountains and deserts with gusts reaching 70 mph in some locations.[20] As a result the NWS issued twenty (20) Urgent Weather Messages advising of advisory level winds and the potential for blowing dust and blowing sand. The magnitude of the strong gusty westerly winds generated and transported dust across portions of the lower deserts in southeastern California, which was caught by satellite imagery.[21] The issued Smoke Text Products by NOAA covered April 11, 2018, identifying dust over the southern half of the Salton Sea and points south from the Colorado Desert through April 12, 2018 where dust plumes from the Mojave, the Colorado deserts in southern California, southern Nevada, the Sonoran desert, Willcox Playa in Arizona, White sands in south-central New Mexico and northern portions of the Mexican state of Chihuahua were observed (**Appendix C**).

While elevated wind speeds play a significant and important role in the transportation of dust, gust plays an equally significant role in deposition of particulates onto a monitor and the overall affect onto ambient air.[22] As winds and gusts increased on April 11, 2018 and April 12,2018 and transported windblown dust from open natural mountains and deserts into Imperial County air quality degraded. As mentioned in section I.1 above, the ICAPCD issued an advisory of the potential for elevated particulate matter and the potential of the degradation of air quality to a moderate or unhealthy level. In addition, the NWS service issued Area Forecast Discussions and Urgent Weather Messages advising of the potential for advisory level winds and blowing dust.

[17] National Weather Service, Area Forecast Discussion, Apr. 11, 2018, San Diego office, 250 am PDT; 918 am PDT; & 142pm PDT
[18] National Weather Service, Area Forecast Discussion, Apr. 10, 2018, Phoenix office, 208 pm MST
[19] National Weather Service, Area Forecast Discussion, Apr. 9, 2018, San Diego office, 150 pm PST
[20] National Weather Service, Area Forecast Discussion, Apr. 9, 2018, San Diego office, 336 am PST
[21] National Weather Service, Area Forecast Discussion, Apr. 12, 2018, Phoenix office, 150 pm MST
[22] Gust is a rapid fluctuation of wind speed with variations of 10 knots or more between peaks and lulls; National Weather Service Glossary https://w1.weather.gov/glossary/index.php?letter=g

Figure 3-1 is a captured image by the MODIS instrument onboard the Terra satellite showing transported blowing dust blowing across southeastern California and Imperial County on April 12, 2018.[23]

FIGURE 3-1
DUST OVER SOUTHEASTERN CALIFORNIA APRIL 12, 2018

Fig 3-1: Strong gusty westerly winds on April 12, 2018 transported dust into Imperial County as shown by an image captured by the MODIS instrument onboard the Terra satellite as it made its pass at around 1030 PST (http://ge.ssec.wisc.edu/modis-today/)

Figures 3-2 and 3-3 below provide an illustrations of morning meteorological conditions, as described above and demonstrated in the HYSPLITs, for April 11, 2018 and April 12, 2018, which affected air quality in Imperial County causing an exceedance at the Brawley, Calexico, El Centro, and Niland monitors. As windblown dust emissions, generated within the natural open mountains within San Diego blew into and over natural open deserts within Imperil County air quality was affected by a significant amount of dust.

[23] MODIS (or Moderate Resolution Imaging Spectroradiometer) is a key instrument aboard the Terra (originally known as EOS AM-1) and Aqua (originally known as EOS PM-1) satellites. Terra's orbit around the Earth is timed so that it passes from north to south across the equator in the morning, while Aqua passes south to north over the equator in the afternoon. MODIS Technical Specifications identify the Terra orbit at 1030am and the Aqua at 130pm.

FIGURE 3-2
VISUAL RAMP-UP ANALYSIS AS DISCUSSED FOR APRIL 11, 2018

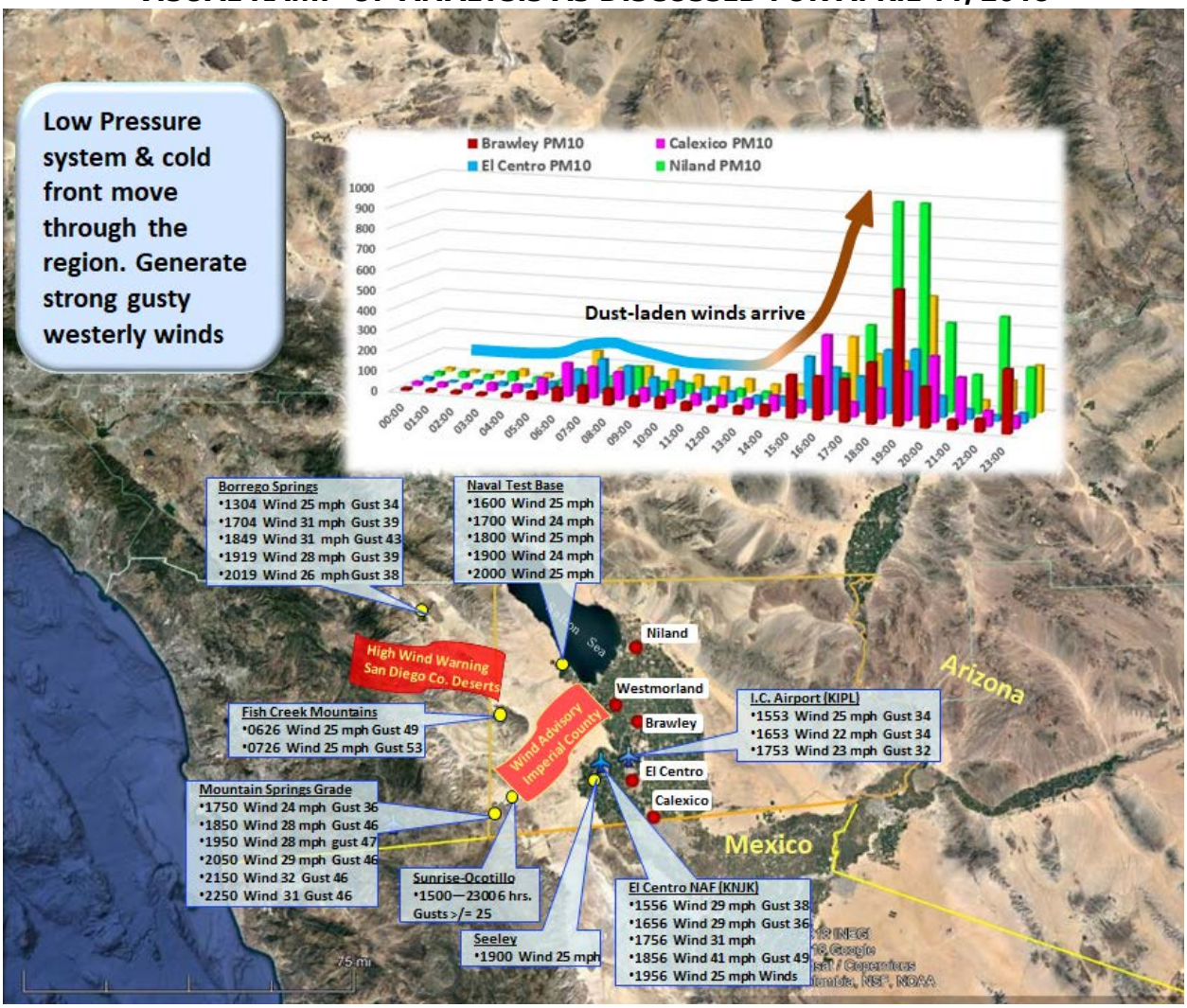


Fig 3-2: Starting April 11, 2018, a low-pressure system and associated cold front moved over the region creating strong gusty westerly winds across southeastern California. Windblown dust caused a spike in hourly concentrations at all monitors during the afternoon and an exceedance of the PM_{10} NAAQS at Niland. Google Earth base map

FIGURE 3-3
VISUAL RAMP-UP ANALYSIS AS DISCUSSED FOR APRIL 12, 2018

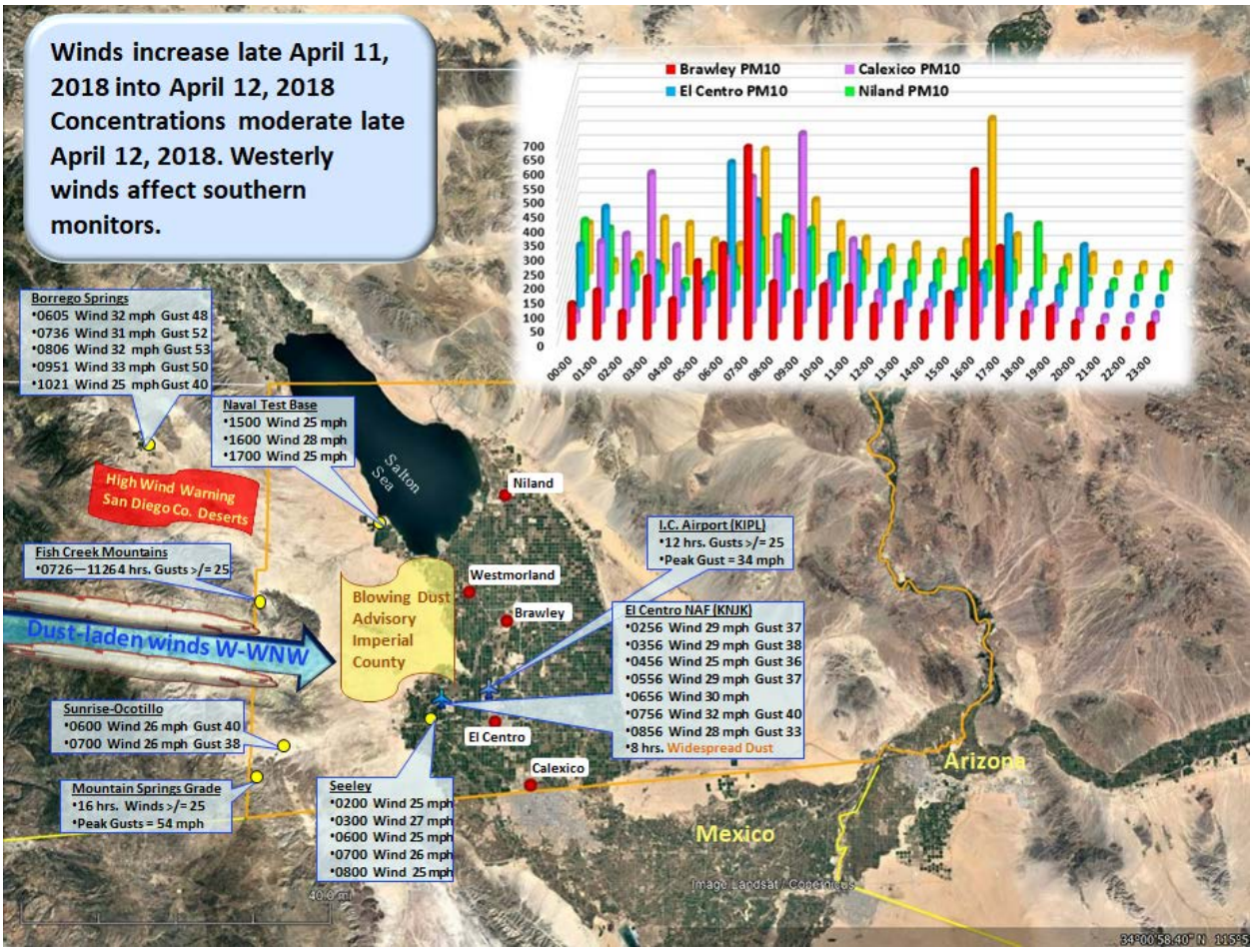


Fig 3-3: Strong, gusty westerly winds continued from April 11, 2018 into April 12, 2018. Windblown dust continues to keep PM_{10} concentrations elevated at the monitors through nearly the entire day. Google Earth base map

An indicator of the affect to air quality can be discerned from the level of visibility at any given time and day. While the ICAPCD air monitoring stations do not measure levels of visibility the local and surrounding airports do.[24] On April 11, 2018, Desert Resorts (Jacqueline Cochran) Airport (KTRM), Imperial County Airport (KIPL), and El Centro NAF (KNJK) all reported reduced visibility coincident with high hourly PM_{10} concentrations at all air quality monitors.

[24] According to the NWS there is a difference between human visibility and the visibility measured by an Automated Surface Observing System (ASOS) or an Automated Weather Observing System (AWOS). The automated sensors measure clarity of the air vs. how far one can "see". The more moisture, dust, snow, rain, or particles in the light beam the more light scattered. The sensor measures the return every 30 seconds. The visibility value transmitted is the average 1-minute value from the past 10 minutes. The sensor samples only a small segment of the atmosphere, 0.75 feet. Therefore, a representative visibility utilizes an algorithm. Siting of the visibility sensor is critical and large areas should provide multiple sensors to provide a representative observation; http://www.nws.noaa.gov/asos/vsby.htm

On April 12, 2018 both KIPL and KNJK reported significant reduced visibility, coincident with elevated concentrations at the monitors on April 12, 2018. **Figure 3-4** and **Tables 3-1 and 3-2** provide information regarding the reduced visibility in Imperial County and the relation to hourly concentrations at local air monitors.

While **Figure 3-4** is a graphical representation of the reduced visibility within Imperial County and surrounding areas, **Tables 3-1 and 3-2** provide a temporal relationship of wind speeds, wind direction, wind gusts (if available), and PM_{10} concentrations at the Brawley, Calexico, El Centro, and Niland monitors. Together, the data provides the supporting relationship between the elevated winds, blowing dust and reduced visibility.

According to the compiled information found in **Figure 3-4,** visibility reduced at three of the major airports, the El Centro NAF (KNJK), the Imperial County Airport (KIPL) and the Desert Resorts Airport (KTRM) on April 11, 2018 and April 12, 2018 coincident with elevated hourly concentrations at the air quality monitors in Imperial County.

FIGURE 3-4
72-HOUR TIME SERIES PM_{10} CONCENTRATIONS AND VISIBILITY

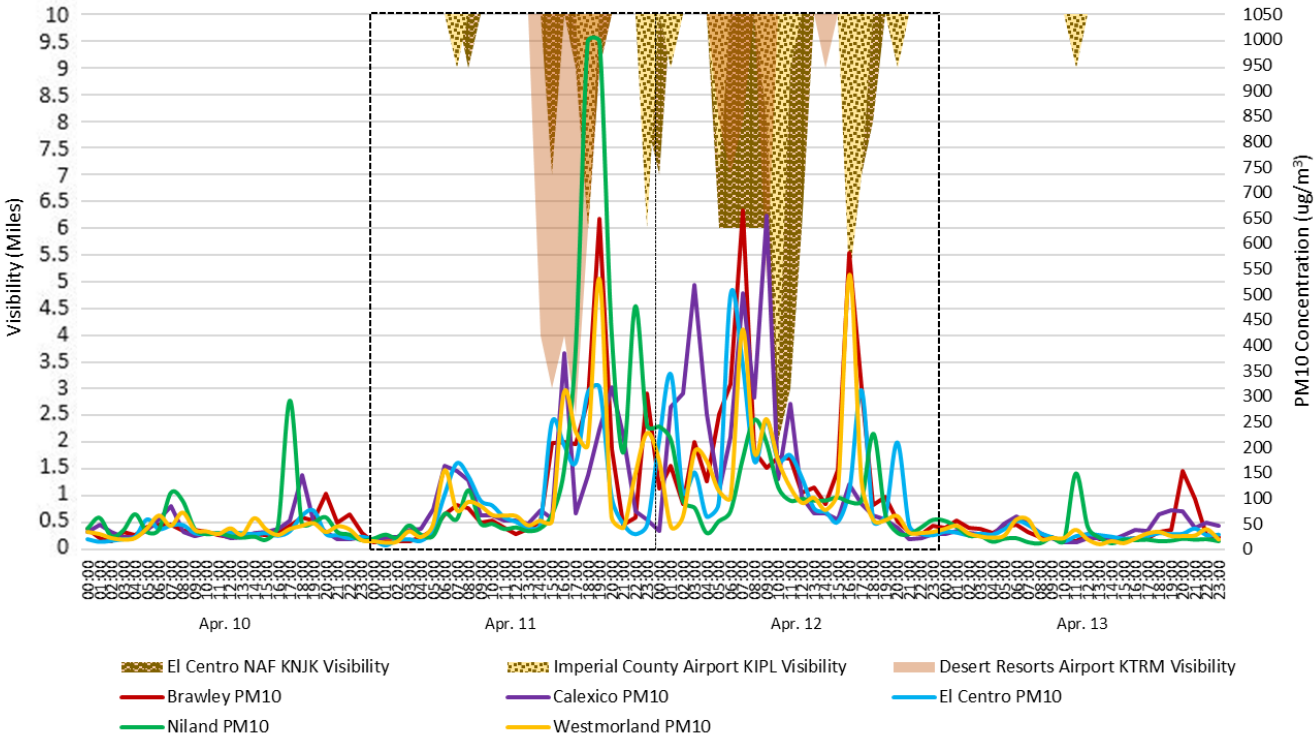


Fig 3-4: is a graphical representation of the compiled data from the Jacqueline Cochran-Desert Resorts Airport (KTRM), the Imperial County Airport (KIPL), the El Centro NAF (KNJK). Reported reduced visibility is coincident with elevated winds and hourly levels of concentrations either just prior to peak concentrations or after. Visibility data from the NCEI's QCLCD data bank https://www.ncdc.noaa.gov/

Because the EPA accepts a high wind threshold for sustained winds of 25 mph in California and 12 other states[25] the **Tables 3-1 and 3-2** are provided in support of the relationship between the elevated winds and elevated concentrations. In each table the measured elevated concentrations of PM_{10} either follow or occur during periods of elevated winds or gusts. Each table has a select group of meteorological sites that compare the hourly winds with the closest measured hourly concentration at all monitors on April 11,2018 and April 12, 2018.

[25] "Treatment of Data Influenced by Exceptional Events; Final Guidance", FR Vol. 81, No. 191, 68279, October 3, 2016

TABLE 3-1
WIND SPEEDS AND PM_{10} CONCENTRATIONS APRIL 11, 2018

	EL CENTRO NAF (KNJK)				IMPERIAL COUNTY AIRPORT (KIPL)			BORREGO SPRINGS (D1021)			FISH CREEK MOUNTAINS (FHCC1)			NAVAL TEST BASE		NILAND		NLD	BRLY	WMLD	CX	EC
HOUR	W/S	W/G	W/D	OBS.	W/S	W/G	W/D	W/S	W/G	W/D	W/S	W/G	W/D	W/S	W/D	W/S	W/D	PM_{10} (ug/m^3)				
000	10		240		9		260	1	5	318	19	35	285	12	269	3	113	20	13	16	18	18
100	6		260		6		250	0			6	24	247	8	262	6	117	28	16	13	23	7
200	3		220		8		250	10	17	241	9	20	234	3	302	5	86	22	16	15	24	17
300	6		220		10		250	11	17	237	3	18	262	4	268	6	88	46	15	35	39	19
400	6		250		7		270	9	12	212	6	17	22	3	194	7	105	28	23	24	40	16
500	3		210		3		160	7	13	270	17	24	253	3	323	6	97	25	39	47	79	38
600	9		160		8		150	9	11	212	25	49	232	4	181	5	102	69	68	155	164	107
700	5		190		7		140	11	16	300	25	53	243	7	216	4	116	58	87	77	153	168
800	3		VRB		6		130	19	26	297	21	43	227	4	149	8	155	115	81	93	136	142
900	0		0		8		80	16	23	305	12	32	214	5	53	8	162	50	53	85	67	95
1000	9		120		7		80	14	21	251	17	31	295	5	0	6	188	49	57	67	67	85
1100	5		VRB		8		90	23	29	266	21	38	285	6	67	4	164	39	42	66	56	62
1200	7		100		6		60	21	33	283	14	37	319	9	74	5	158	42	30	65	56	53
1300	13		140		0		0	25	34	250	15	30	276	8	104	6	139	35	40	47	51	41
1400	21		260		5		VRB	20	30	223	15	28	263	9	124	7	146	40	55	56	76	46
1500	29	38	260		25	34	270	14	25	244	15	37	261	19	278	5	253	67	208	55	60	249
1600	29	36	250		22	34	260	18	24	247	13	35	245	25	277	18	255	151	210	306	384	205
1700	31		250		23	32	250	31	39	261	15	24	213	24	276	21	263	395	206	230	71	170
1800	41	49	250	DU	8		VRB	31	43	287	18	30	224	25	276	26	253	995	294	204	146	306
1900	25		250		8	18	270	28	39	235	13	27	261	24	264	25	250	995	648	529	235	317
2000	24	33	230		20	32	250	26	38	301	5	25	329	25	270	20	255	430	196	64	317	103
2100	17		260		18		260	24	33	307	10	19	257	20	261	18	246	189	49	42	225	49
2200	18		280		17	28	290	27	37	254	2	19	90	25	268	21	256	476	63	147	75	29
2300	21		280		14		300	28	40	227	2	6	202	21	269	20	261	241	306	228	59	48

Wind data for KIPL and KNJK from the NCEI's QCLCD system. Wind data for Fish Creek Mountains (FHCC1) and Borrego Springs (D1021) from the University of Utah's MesoWest system https://mesowest.utah.edu/index.html. Wind data for Naval Test Base from AQMIS2. Wind data for Niland from the EPA's AQS repository. Niland and Naval Test Base do not measure wind gusts. Wind speeds = mph; Direction = degrees. **DU** = widespread dust. Due to the different times that wind data and air quality data is sampled at various sites, the hour given represents the hour in which the measurement was taken

TABLE 3-2
WIND SPEEDS AND PM_{10} CONCENTRATIONS APRIL 12, 2018

	MOUNTAIN SPRINGS GRADE (TNSC1)			SUNRISE-OCOTILLO (IMPSD)			SEELEY (CI068)		EL CENTRO NAF (KNJK)				IMPERIAL COUNTY AIRPORT (KIPL)			BRLY	CX	EC	NLND	WMLD
HOUR	W/S	W/G	W/D	W/S	W/G	W/D	W/S	W/D	W/S	W/G	W/D	OBS.	W/S	W/G	W/D	PM10 (ug/m³)				
000	26	45	209	16	29	242	20	296	7	22	260		24	32	280	119	37	212	240	174
100	27	40	209	18	28	246	15	286	10	23	250		18		260	164	279	342	213	44
200	30	49	209	20	36	241	25	286	10	29	250		18	25	250	89	305	112	94	64
300	27	44	210	22	33	242	27	278	10	29	250		20	25	240	210	519	150	80	192
400	30	45	207	23	33	244	22	267	10	25	250		16	25	250	133	265	63	31	173
500	31	44	209	23	35	239	22	269	6	29	250		22	32	250	266	115	89	54	115
600	30	46	205	26	40	244	25	266	6	30	250	DU	22	34	250	325	221	498	74	101
700	26	51	207	26	38	247	26	267	6	32	250	DU	20		250	664	503	366	175	430
800	29	48	216	23	39	245	25	273	6	28	250	DU	23	32	250	192	298	172	253	190
900	23	40	222	23	38	260	23	264	6	14	310	DU	16	31	280	159	655	252	210	255
1000	24	40	227	16	40	262	21	273	2	16	240	DU	14	23	280	181	137	174	121	174
1100	36	51	214	15	38	253	20	278	3	17	280	DU	16	25	290	179	285	184	95	122
1200	32	51	211	17	34	257	19	272	6	24	270	DU	11		310	112	103	139	98	91
1300	24	46	215	17	33	247	17	276	10	16	290		16	24	290	121	70	80	95	101
1400	23	40	241	19	33	263	16	271	10	21	280		14	25	290	88	70	72	95	77
1500	26	45	232	16	32	250	17	297	10	18	280		16		290	155	59	53	101	113
1600	30	44	241	19	31	252	18	302	6	24	300	DU	21	30	290	582	128	118	92	538
1700	29	52	243	19	32	258	19	290	7	18	280		20	31	290	315	88	311	95	133
1800	28	44	236	16	28	251	16	277	8	22	270		18	30	270	86	67	54	226	57
1900	34	54	232	14	22	281	17	296	10	25	280		16		290	104	58	65	68	57
2000	27	51	224	14	21	256	15	307	10	13	280		15		270	54	42	209	32	65
2100	21	36	220	10	16	257	7	292	10	10	300		11		300	35	19	46	29	33
2200	17	36	225	10	17	238	4	267	10	10	290		8		300	29	22	30	42	32
2300	9	23	221	8	14	242	4	285	10	7	100		6		270	47	29	27	57	34

Wind data for KIPL and KNJK from the NCEI's QCLCD system. Wind data for Mountain Springs Grade (TNSC1), Seeley (CI068), and Sunrise-Ocotillo (IMPSD) from the University of Utah's MesoWest system https://mesowest.utah.edu/index.html. **DU** = widespread dust. Seeley does not measure wind gusts. Wind speeds = mph; Direction = degrees. Due to the different times that wind data and air quality data is sampled at various sites, the hour given represents the hour in which the measurement was taken

As mentioned above, Area Forecast Discussions and Urgent Weather Messages containing Wind or blowing dust advisories described the strong gusty westerly winds for the region extending from the San Diego County mountains and deserts, Imperial County, and western Arizona. As the low-pressure system passed through the region strong gusty westerly winds affected different regional air monitors in Riverside County, Imperial County and Arizona during April 11, 2018 and April 12, 2018 (**Table 2-1**).

The ICAPCD monitors air quality for each of its stations and issues web-based Air Quality Indices in response to changes in air quality. As transported windblown dust entered Imperial County during April 11, 2018 and April 12, 2018 air quality degraded throughout Imperial County. Overall, the strong gusty westerly winds associated with the low-pressure system affected air quality in Imperial County.

FIGURE 3-5
IMPERIAL VALLEY AIR QUALITY INDEX FOR NILAND
APRIL 11, 2018

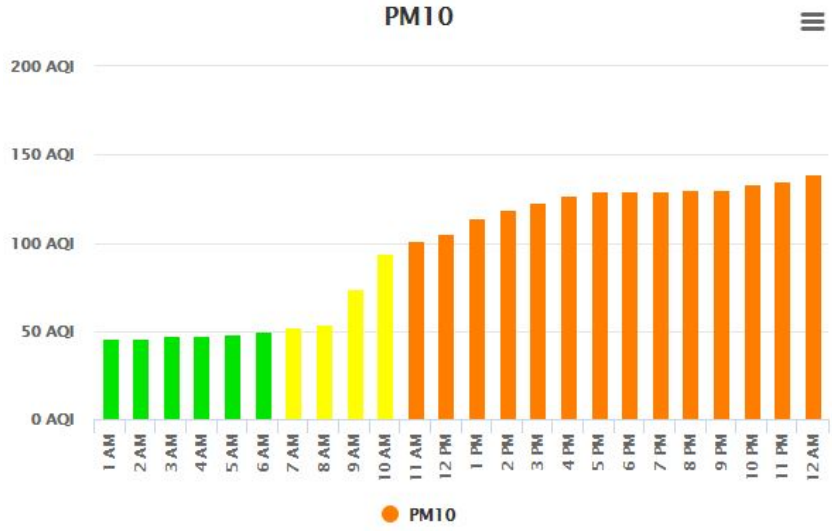


Fig 3-5: The degradation, or affect upon air quality, maybe determined when the AQI changes from a "Yellow" or Moderate level to an "Orange" level or Unhealthy for sensitive groups

FIGURE 3-6
IMPERIAL VALLEY AIR QUALITY INDEX FOR BRAWLEY
APRIL 12, 2018

Fig 3-6: The degradation, or affect upon air quality, maybe determined when the AQI changes to an "Orange" level or Unhealthy for sensitive groups

FIGURE 3-7
IMPERIAL VALLEY AIR QUALITY INDEX FOR CALEXICO
APRIL 12, 2018

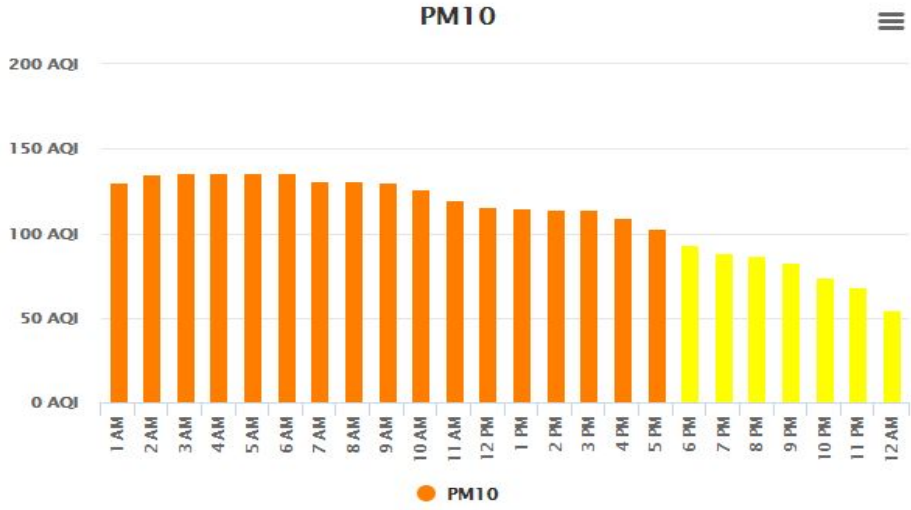


Fig 3-7: The degradation, or affect upon air quality, maybe determined when the AQI changes to an "Orange" level or Unhealthy for sensitive groups

FIGURE 3-8
IMPERIAL VALLEY AIR QUALITY INDEX FOR EL CENTRO
APRIL 12, 2018

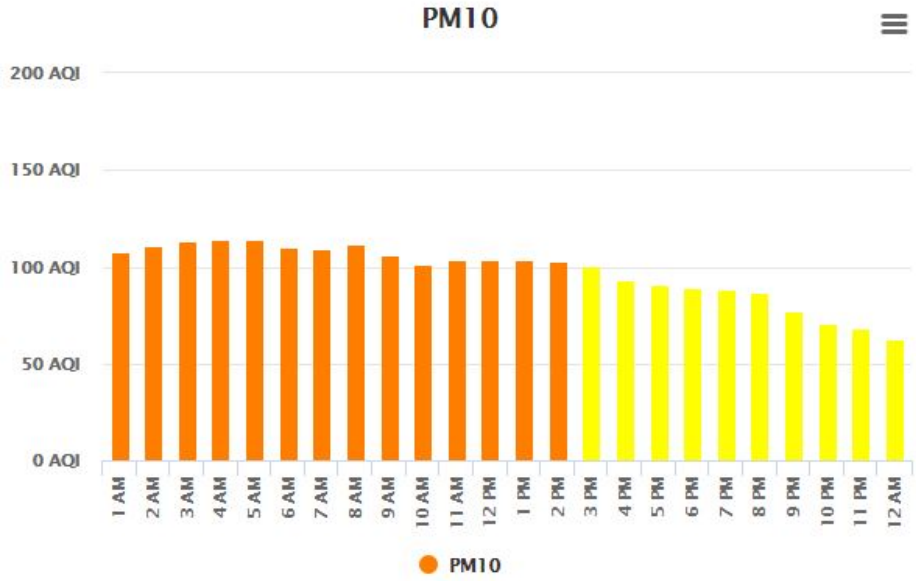


Fig 3-8: The degradation, or affect upon air quality, maybe determined when the AQI changes to an "Orange" level or Unhealthy for sensitive groups

III.1 Summary of Forecasts and Warnings

Area Forecast Discussions issued by the NWS offices in Phoenix and San Diego described strong gusty westerly winds accompanying a fast moving but strong Pacific low-pressure system that was forecast to move inland over the western states on Wednesday, April 11, 2019 and Thursday, April 12, 2018. The magnitude of the winds caused the NWS offices to issue twenty (20) Urgent Weather Messages, containing wind and/or blowing dust advisories. **Appendix A** contains all pertinent NWS notices.

III.2 Summary of Wind Observations

As demonstrated above wind data during the event were available from airports in eastern Riverside County, southeastern San Diego County, southwestern Yuma County (Arizona), northern Mexico, and Imperial County as well as from other automated meteorological instruments upwind from the monitors. Data analysis indicates that on April 11, 2018 and April 12, 2018 different sites measured wind speeds at or above 25 mph.

IV Concentration to Concentration Analysis – An analyses comparing the event-influenced concentrations to concentrations at the same monitoring site at other times

While naturally occurring high wind events may recur seasonally and at times frequently and qualify for exclusion under the EER, historical comparisons of the particulate concentrations and associated winds provide insight into the frequency of events within an identified area.

Figures 4-1 through 4-8 show the time series of available FRM and BAM 24-hr PM_{10} concentrations at the Brawley, Calexico, El Centro and Niland monitors for the period of January 1, 2010 through April 12, 2018. The compiled data set below includes non-regulatory data prior to 2013. As a consequence, continuous monitoring data (hourly concentrations) prior to 2013 were not reported into the US EPA Air Quality System (AQS).[26] The difference between the standard and local condition concentrations is not significant enough to change the outcome of the analysis.

Compiled and plotted 24-hour averaged PM_{10} concentrations, between January 1, 2010 and April 12, 2018, as measured by the Brawley, Calexico, El Centro, and Niland monitors, were used to establish the historical and seasonal variability over time.[27] All figures illustrate that the exceedance, which occurred on April 11, 2018 and April 12, 2108, were outside the normal historical concentrations when compared to event and non-event days. Air quality data for all graphs obtained through the EPA's AQS data bank.

[26] Pollutant concentration data contained in EPA's Air Quality System (AQS) are required to be reported in units corrected to standard temperature and pressure (25 C, 760 mm Hg). Because the PM_{10} concentrations prior to 2013 were not reported into the AQS database all BAM (FEM) data prior to 2013 within this report are expressed as micrograms per cubic meter (mg/m^3) at local temperature and pressure (LTP) as opposed to standard temperature and pressure (STP 760torr and 25C). The difference in concentration measurements between standard conditions and local conditions is insignificant and does not alter or cause any significant changes in conclusions to comparisons of PM_{10} concentrations to PM_{10} concentrations with in this demonstration.

[27] FRM sampling ended December 2016.

FIGURE 4-1
BRAWLEY HISTORICAL COMPARISON
FRM AND FEM PM_{10} 24-HR AVG CONCENTRATIONS
JANUARY 1, 2010 TO APRIL 12, 2018

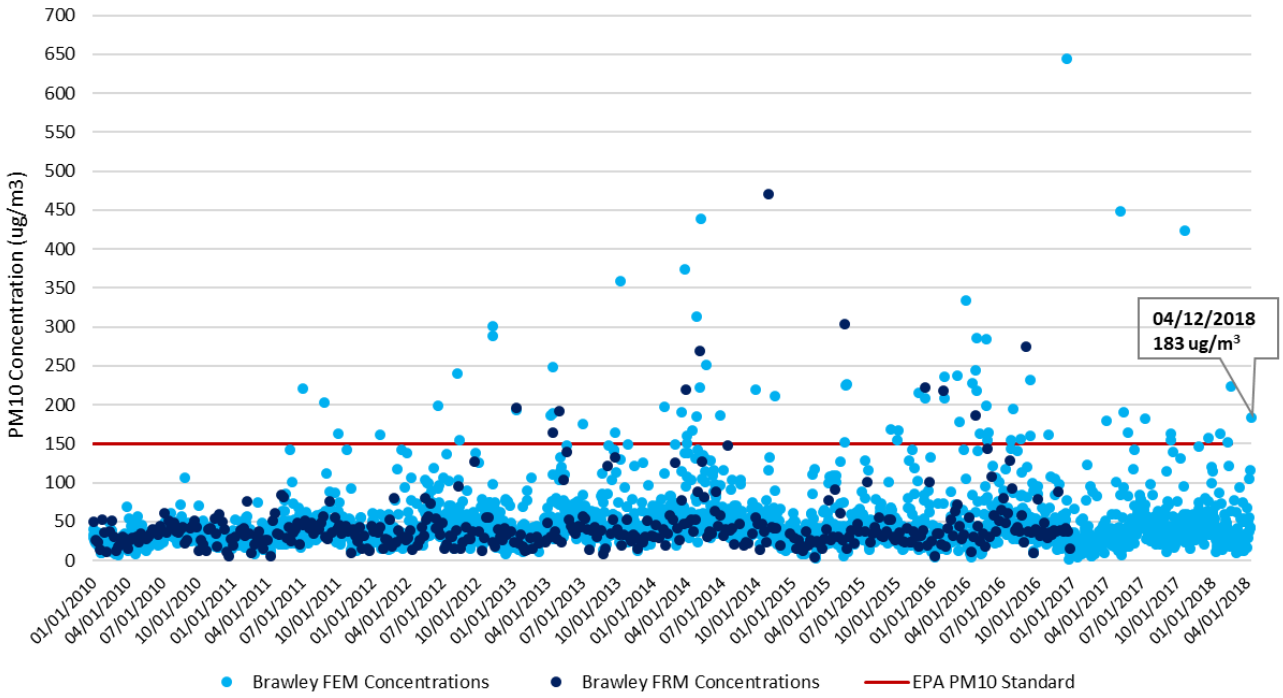


Fig 4-1: A comparison of PM_{10} historical concentrations demonstrates that the measured concentration of 183 µg/m^3 on April 12, 2018 by the Brawley monitor was outside the normal historical concentrations when compared to similar event days and non-event days

The time series, **Figure 4-1,** for Brawley includes 3,024 sampling days (January 1, 2010 through April 12, 2018). Of the 3,024 sampling days the Brawley monitor measured 71 exceedance days which translates into an occurrence rate less than 2.5%. Historically, there were fourteen (14) exceedance days measured during the first quarter; twenty-eight (28) exceedance days measured during the second quarter; sixteen (16) exceedance days measured during the third quarter; and thirteen (13) exceedance days measured during the fourth quarter.

FIGURE 4-2
CALEXICO HISTORICAL COMPARISON
FRM AND FEM PM_{10} 24-HR AVG CONCENTRATIONS
JANUARY 1, 2010 TO APRIL 12, 2018

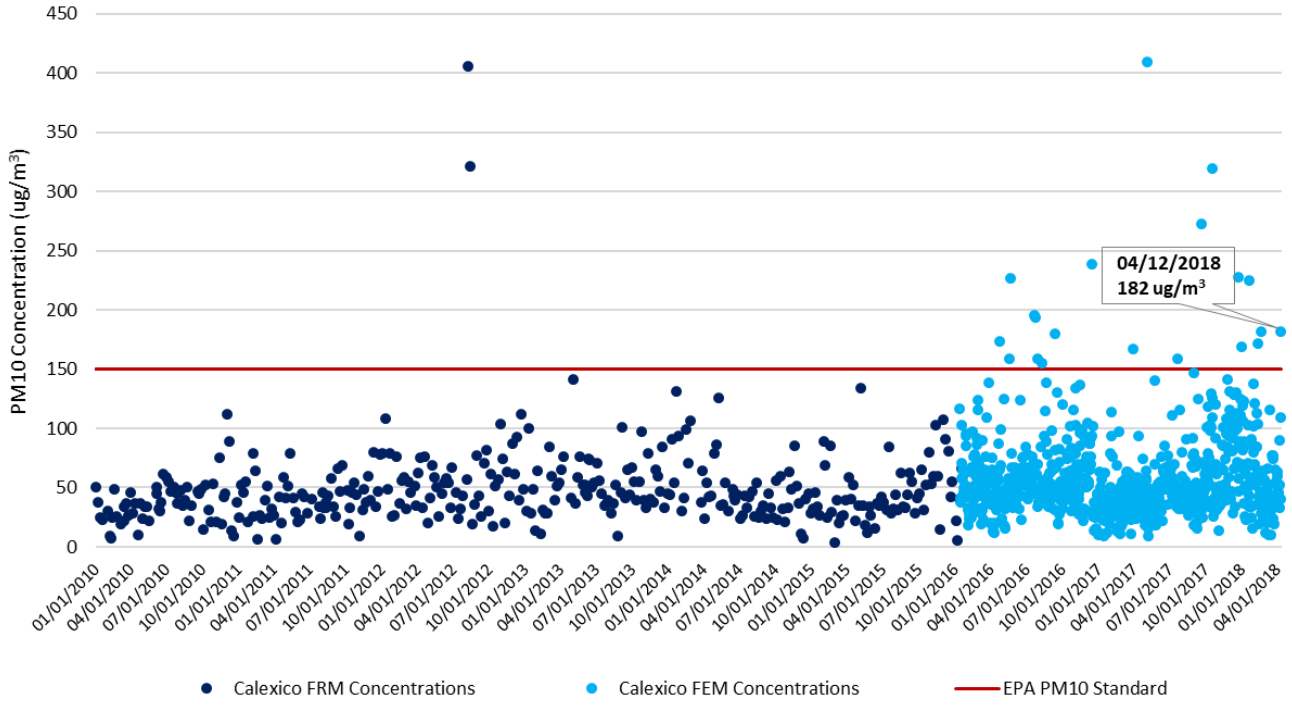


Fig 4-2: A comparison of PM_{10} historical concentrations demonstrates that the measured concentration of 182 µg/m^3 on April 12, 2018 by the Calexico monitor was outside the normal historical concentrations when compared to similar event days and non-event days

The time series, **Figure 4-2,** for Calexico includes 1,235 sampling days (January 1, 2010 through April 12, 2018). Of the 1,235 sampling days the Calexico monitor measured 22 exceedance days which translates an occurrence rate less than 2%. Historically, there were five (5) exceedance days measured during the first quarter; five (5) exceedance days measured during the second quarter; nine (9) exceedance days measured during the third quarter; and three (3) exceedance days measured during the fourth quarter.

FIGURE 4-3
EL CENTRO HISTORICAL COMPARISON
FRM AND FEM PM_{10} 24-HR AVG CONCENTRATIONS
JANUARY 1, 2010 TO APRIL 12, 2018

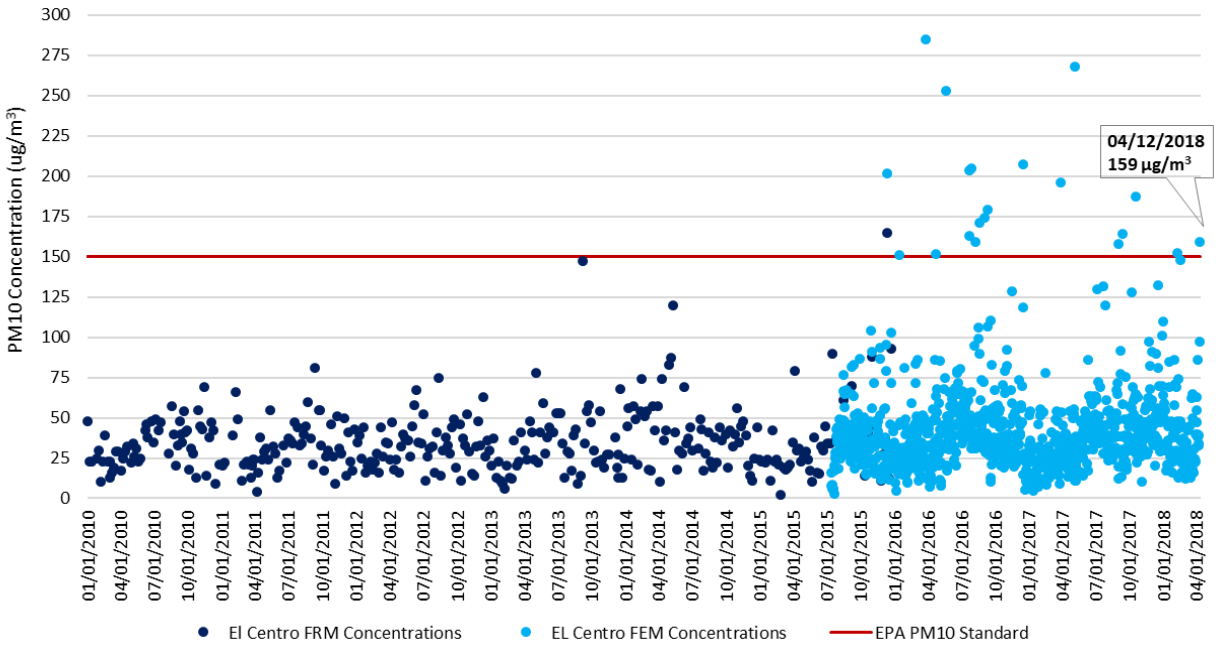


Fig 4-3: A comparison of PM_{10} historical concentrations demonstrates that the measured concentration of 159 µg/m^3 on April 12, 2018 by the El Centro monitor was outside the normal historical concentrations when compared to similar event days and non-event days.

The time series, **Figure 4-3,** for El Centro includes 1,361 sampling days (January 1, 2010 through April 12, 2018). Of the 1,361 sampling days the El Centro monitor measured 17 exceedance days which translates into an occurrence rate less than 1.5%. Historically, there were two (2) exceedance days measured during the first quarter; three (3) exceedance days measured during the second quarter; nine (9) exceedance days measured during the third quarter; and three (3) exceedance days measured during the fourth quarter.

FIGURE 4-4
NILAND HISTORICAL COMPARISON
FRM AND FEM PM_{10} 24-HR AVG CONCENTRATIONS
JANUARY 1, 2010 TO APRIL 11, 2018

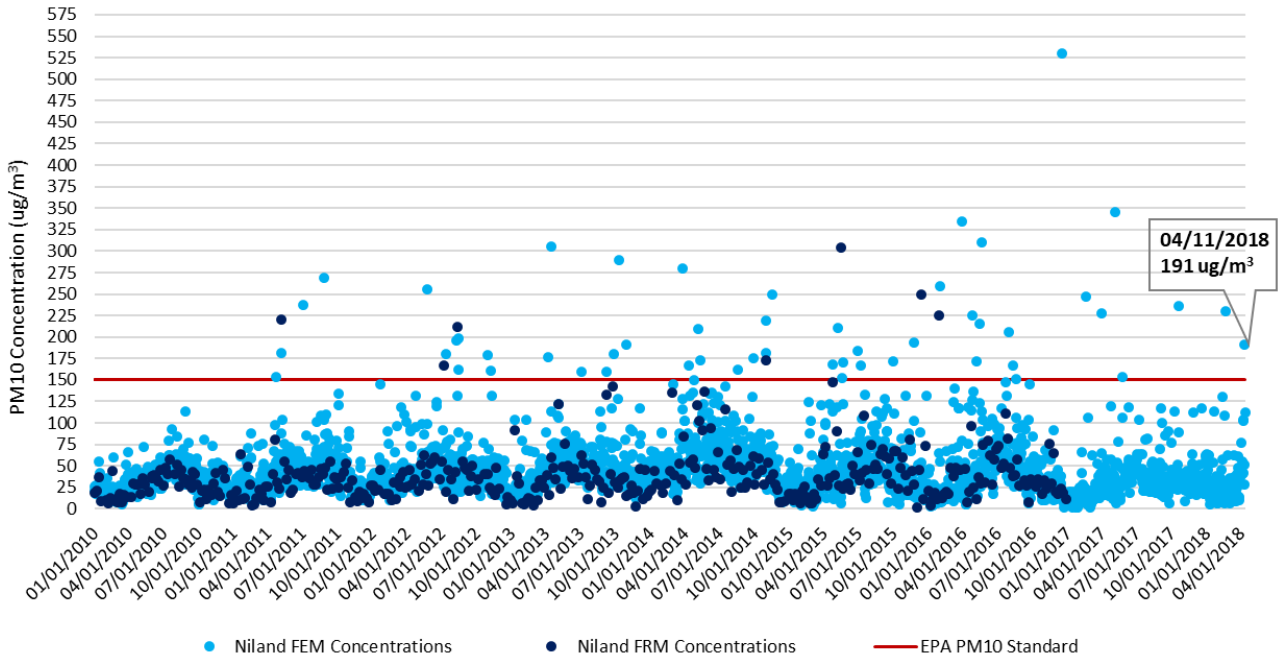
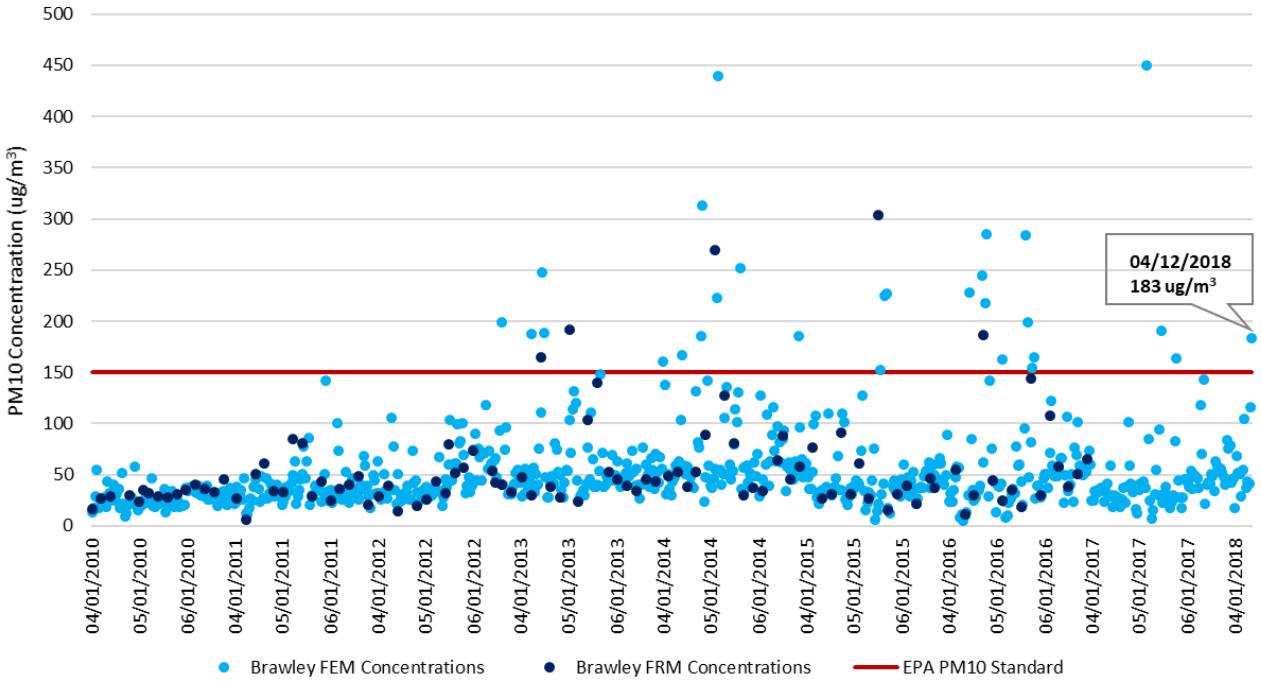


Fig 4-4: A comparison of PM_{10} historical concentrations demonstrates that the measured concentration of 191 µg/m^3 on April 11, 2018 by the Niland monitor was outside the normal historical concentrations when compared to similar event days and non-event days

The time series, **Figure 4-4,** for Niland includes 3,023 sampling days (January 1, 2010 through April 11, 2018). Of 3,024 sampling days the Niland monitor measured 52 exceedance days which translates into an occurrence rate less than 2%. Historically, there were six (6) exceedance days measured during the first quarter; nineteen (19) exceedance days measured during the second quarter; fifteen (15) exceedance days during the third quarter; and twelve (12) exceedance days measured during the fourth quarter.

FIGURE 4-5
BRAWLEY SEASONAL COMPARISON
FRM AND FEM PM_{10} 24-HR AVG CONCENTRATIONS
***APRIL 1, 2010 TO APRIL 12, 2018**

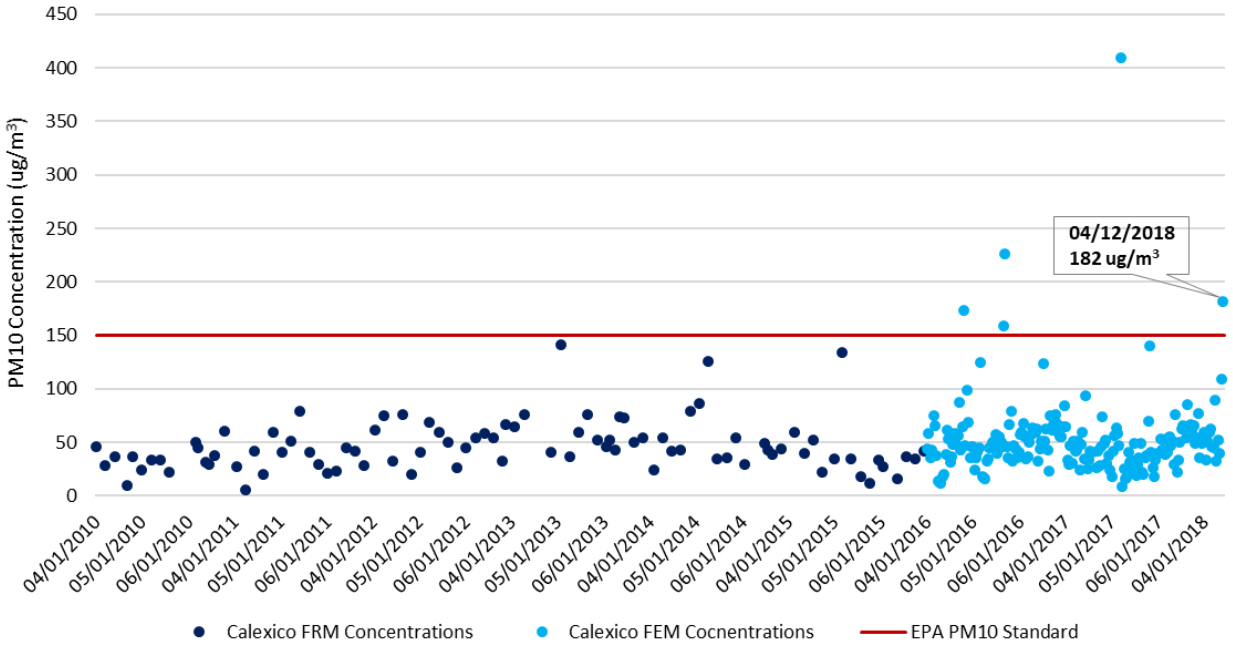


***Quarterly: April 1, 2010 to June 30, 2017 and April 1, 2018 to April 12, 2018**

Fig 4-5: A comparison of PM_{10} seasonal concentrations demonstrate that the measured concentration of 183 µg/m^3 by the Brawley monitor on April 12, 2018 was outside the normal seasonal concentrations when compared to similar days and non-event days

Figure 4-5 illustrates the seasonal fluctuations over a period of 740 sampling days, 843 credible samples and twenty-eight (28) exceedance days. This translates to less than a 4% seasonal exceedance occurrence rate.

FIGURE 4-6
CALEXICO SEASONAL COMPARISON
FRM AND FEM PM_{10} 24-HR AVG CONCENTRATIONS
***APRIL 1, 2010 TO APRIL 12, 2018**

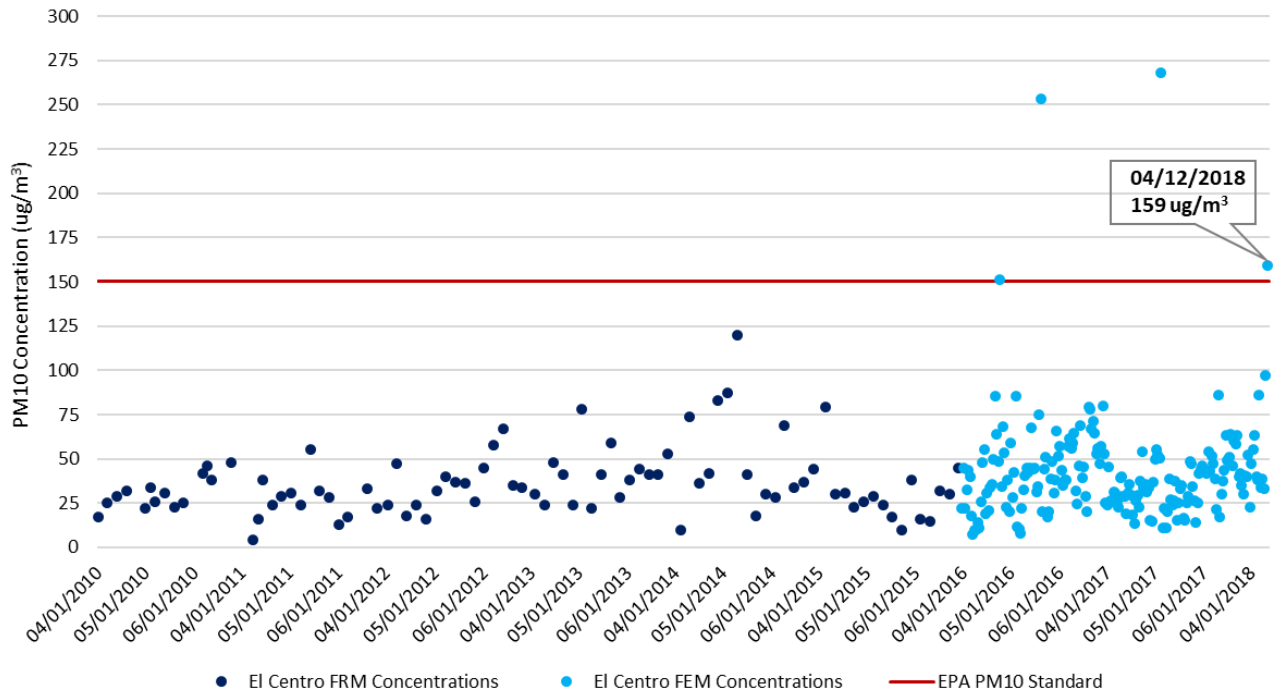


***Quarterly: April 1, 2010 to June 30, 2017 and April 1, 2018 to April 12, 2018**

Fig 4-6: A comparison of PM_{10} seasonal concentrations demonstrate that the measured concentration of 182 µg/m³ by the Calexico monitor on April 12, 2018 was outside the normal seasonal concentrations when compared to similar days and non-event days

Figure 4-6 illustrates the seasonal fluctuations over a period of 297 sampling days, 284 credible samples and five (5) exceedance days. This translates to less than a 2% seasonal exceedance occurrence rate.

FIGURE 4-7
EL CENTRO SEASONAL COMPARISON
FRM AND FEM PM_{10} 24-HR AVG CONCENTRATIONS
***APRIL 1, 2010 TO APRIL 12, 2018**

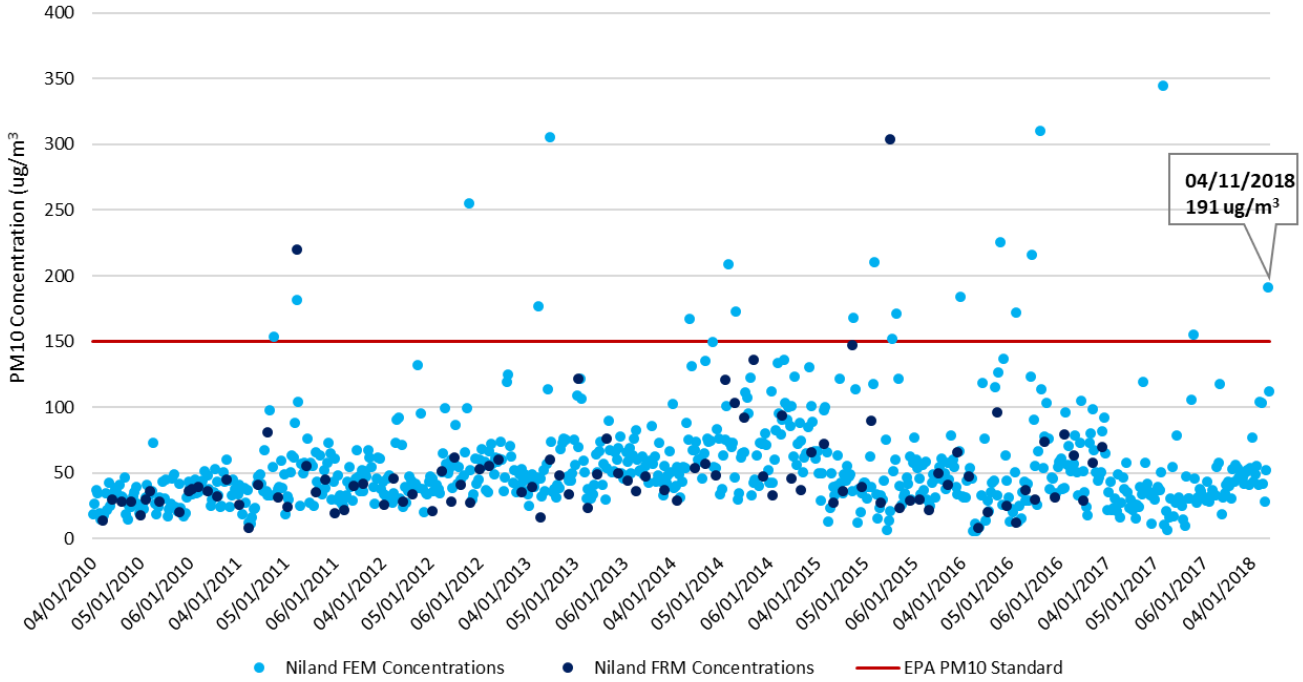


***Quarterly: April 1, 2010 to June 30, 2017 and April 1, 2018 to April 12, 2018**

Fig 4-7: A comparison of PM_{10} seasonal concentrations demonstrate that the measured concentration of 159 µg/m^3 by the El Centro monitor on April 12, 2018 was outside the normal seasonal concentrations when compared to similar days and non-event days

Figure 4-7 illustrates the seasonal fluctuations over a period of 287 sampling days, 282 credible samples and three (3) exceedance days. This translates to less than a 1.0% seasonal exceedance occurrence rate.

FIGURE 4-8
NILAND SEASONAL COMPARISON
FRM AND FEM PM_{10} 24-HR AVG CONCENTRATIONS
***APRIL 1, 2010 TO APRIL 11, 2018**



***Quarterly: April 1, 2010 to June 30, 2017 and April 1, 2018 to April 11, 2018**

Fig 4-8: A comparison of PM_{10} seasonal concentrations demonstrate that the measured concentration of 191 µg/m^3 by the Niland monitor on April 11, 2018 was outside the normal seasonal concentrations when compared to similar days and non-event days

Figure 4-8 illustrates the seasonal fluctuations over a period of 739 sampling days, 893 credible samples and nineteen (19) exceedance days. This translates to less than a 2.5% seasonal exceedance occurrence rate.

Examining the historical and seasonal time series concentrations as they relate to the April 11, 2018 and April 12, 2018 measured exceedances, the exceedances measured on April 11, 2018 and April 12, 2018 are clearly outside the normal concentration levels when comparing to similar event days and non-event days.

V Both Not Reasonably Controllable and Not Reasonably Preventable – A demonstration that the event was both not reasonably controllable and not reasonably preventable

The analysis above, under the Clear Causal Relationship, indicates that the primary sources affecting air quality in Imperial County originated within the natural open areas of the San Diego Mountains and the natural open deserts to the west and southwest of Imperial County. The origination of these emissions from these areas affected all the air quality monitors significantly on April 11, 2018 and April 12, 2018. Since Imperial County does not have jurisdiction over emissions emanating from San Diego County, it is not reasonably controllable or preventable by Imperial County. For a brief description of the controls implemented by sources beyond the control of Imperial County see section V.1 below.

As mentioned above in section I.4, Mitigation of Exceptional Events contains significant information regarding the application of Best Available Control Measures that are used as measures to abate or minimize contributing controllable sources of identified pollutants (**Page 12, sub-section II.2 of the High Wind Mitigation Plan**). In addition, the mitigation plan explains the methods utilized to minimize public exposure to high concentrations of identified pollutants, the process utilized to collect and maintain data pertinent to any identified event, and the mechanisms utilized to consult with other air quality managers within the affected area regarding the appropriate responses to abate and minimize affects.

Inhalable particulate matter (PM_{10}) contributes to effects that are harmful to human health and the environment, including premature mortality, aggravation of respiratory and cardiovascular disease, decreased lung function, visibility impairment, and damage to vegetation and ecosystems. Upon enactment of the 1990 Clean Air Act (CAA) amendments, Imperial County was classified as moderate nonattainment for the PM_{10} NAAQS under CAA sections 107(d)(4)(B) and 188(a). By November 15, 1991, such areas were required to develop and submit State Implementation Plan (SIP) revisions providing for, among other things, implementation of reasonably available control measures (RACM).

Partly to address the RACM requirement, ICAPCD adopted local Regulation VIII rules to control PM_{10} from sources of fugitive dust on October 10, 1994, and revised them on November 25, 1996. USEPA did not act on these versions of the rules with respect to the federally enforceable SIP.

On August 11, 2004, USEPA reclassified Imperial County as a serious nonattainment area for PM_{10}. As a result, CAA section 189(b)(1)(B) required all BACM to be implemented in the area within four years of the effective date of the reclassification, i.e., by September 10, 2008.

On November 8, 2005, partly to address the BACM requirement, ICAPCD revised the Regulation VIII rules to strengthen fugitive dust requirements. On July 8, 2010, USEPA finalized a limited approval of the 2005 version of Regulation VIII, finding that the seven Regulation VIII rules largely fulfilled the relevant CAA requirements. Simultaneously, USEPA also finalized a limited disapproval of several of the rules, identifying specific deficiencies that needed to be addressed to fully demonstrate compliance with CAA requirements regarding BACM and enforceability.

In September 2010, ICAPCD and the California Department of Parks and Recreation (DPR) filed petitions with the Ninth Circuit Federal Court of Appeals for review of USEPA's limited disapproval of the rules. After hearing oral argument on February 15, 2012, the Ninth Circuit directed the parties to consider mediation before rendering a decision on the litigation. On July 27, 2012, ICAPCD, DPR and USEPA reached agreement on a resolution to the dispute, which included a set of specific revisions to Regulation VIII. The October 16, 2012 adopted revision reflects the specific revisions to Regulation VIII, which USEPA approved on April 22, 2013. Since 2006, ICAPCD had implemented regulatory measures to control emissions from fugitive dust sources and open burning in Imperial County.

FIGURE 5-1
REGULATION VIII GRAPHIC TIMELINE DEVELOPMENT

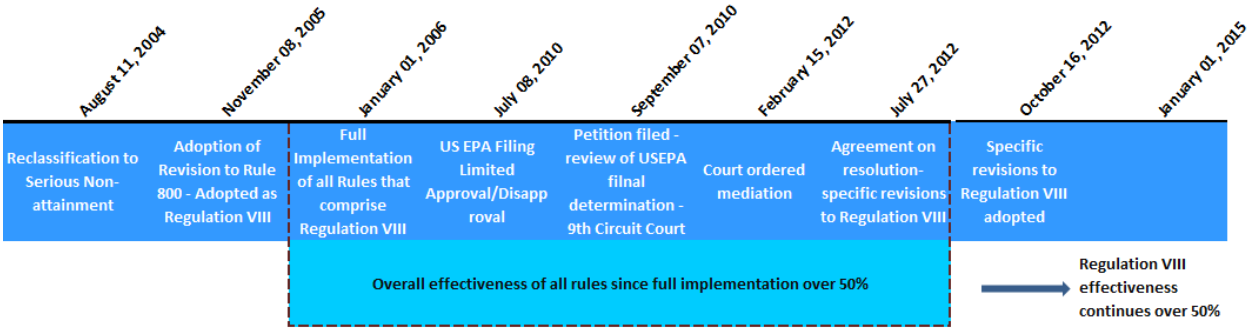


Fig 5-1: Regulation VIII Graphic Timeline

V.1 Other PM_{10} Control Measures

In addition to the rules and regulations listed above, other PM_{10} control measures have been committed to, and implemented by, local California air districts bordering ICAPCD. San Diego County (to the west of Imperial County) and eastern Riverside County (outside

of the Coachella Valley Planning Area and to the north and northeast of Imperial County) are both designated unclassified for the PM_{10} NAAQS and are not required to have BACM controls for PM_{10}. The Coachella Valley Planning Area in Riverside County, to the north and northwest of Imperial County, is designated a PM_{10} nonattainment area, and a redesignation request and maintenance plan were submitted to USEPA in 2010. These three areas and their relevant PM_{10} rules are indicated in **Tables 5-1 to 5-3**.

TABLE 5-1
SAN DIEGO AIR POLLUTION CONTROL DISTRICT (SDAPCD)

RULES REGULATING EXISTING AND NEW NON-POINT SOURCES IN SAN DIEGO COUNTY	
RULE NUMBER AND TITLE	DESCRIPTION
Rule 52 – Particulate Matter	Limits the amount of particulate matter that may be discharged from any source.
Rule 52.1 – NSPS and NESHAPS Particulate Matter Requirements	Ensures that sources subject to NSPS or NESHAPS also conform to Regulation X and XI, respectively.
Rule 54 – Dust and Fumes	Minimizes the amount of dust that can be discharged in a specified time period.
Rule 55 – Fugitive Dust Control	Provides a mechanism to regulate operations that may cause fugitive dust emissions.
Rule 101 – Burning Control	Establishes conditions, including high winds, under which burning would be curtailed or prohibited.

TABLE 5-2
MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT (AQMD)

RULES REGULATING EXISTING AND NEW NON-POINT SOURCES IN EASTERN RIVERSIDE COUNTY OUTSIDE OF THE COACHELLA VALLEY PLANNING AREA	
RULE NUMBER AND TITLE	DESCRIPTION
Rule 403 – Fugitive Dust	Limits the amount of particulate matter that may be discharged from specific sources, not including unpaved public roads or farm roads, or industrial or commercial facilities.
Rule 404 – Particulate Matter Concentration	Limits the concentration of PM_{10} allowed in discharged gas.
Rule 405 – Solid Particulate Matter Weight	Limits the amount of PM_{10} that can be discharged on an hourly basis.

TABLE 5-3
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD)
RULES REGULATING
EXISTING AND NEW NON-POINT SOURCES IN RIVERSIDE COUNTY
AND THE COACHELLA VALLEY, INSIDE OF THE COACHELLA VALLEY PLANNING AREA

RULE NUMBER AND TITLE	DESCRIPTION
Rule 403– Fugitive Dust	Requires implementation of control measures to prevent, reduce, or mitigate fugitive dust emissions.
Rule 403.1 – Supplemental Fugitive Dust Control Requirements for Coachella Valley Sources	Establishes special requirements for Coachella Valley dust sources under high-wind conditions and requires SCAPCD approval of dust control plans for sources not subject to local government ordinances.
Rule 1156 – Further Reductions of Particulate Emissions from Cement Manufacturing Facilities	Establishes requirements to reduce particulate matter emissions from cement manufacturing operations and properties.
Rule 1157 – PM_{10} Emission Reductions from Aggregate and Related Operations	Establishes additional source specific performance standards and specifies operational PM_{10} controls specific to aggregate and related operations.
Rule 1186 – PM_{10} Emissions from Paved and Unpaved Roads and Livestock Operation	Limits the amount of particulate matter entrained as a result of vehicular travel on paved and unpaved public roads, and at livestock operations.
Rule 1466 – Control of Particulate Emissions from Soils with Toxic Air Contaminants	Establishes a PM_{10} ambient dust concentration limit, dust control measures, and notification requirements prior to earth-moving activities or when PM_{10} dust concentrations are exceeded.

V.2 Wind Observations

As previously discussed, wind data analysis indicates that on April 11, 2018 and April 12, 2018 different sites measured wind speeds at or above (in some instances far in excess of) 25 mph. Wind speeds of 25 mph are normally sufficient to overcome most PM_{10} control measures. During the April 11, 2018 and April 12, 2018 event, wind speeds were above the 25 mph threshold, overcoming the BACM in place.

V.3 Review of Source Permitted Inspections and Public Complaints

A query of the ICAPCD permit database was compiled and reviewed for active permitted sources throughout Imperial County and specifically around the Brawley, Calexico, El Centro, and Niland monitors during the April 11, 2018 and April 12, 2018 PM_{10} exceedances. Both permitted and non-permitted sources are required to comply with Regulation VIII requirements that address fugitive dust emissions. The identified permitted sources are Aggregate Products, Inc., US Gypsum Quarry, Imperial Aggregates (Val-Rock, Inc., and Granite Construction), US Gypsum Plaster City, Clean Harbors (Laidlaw Environmental Services), Bullfrog Farms (Dairy), Burrtec Waste Industries, Border Patrol Inspection station, Centinela State Prison, various communications towers not listed and various agricultural operations. Non-permitted sources include the wind farm known as Ocotillo Express, and a solar facility known as CSolar IV West. Finally, the desert regions are under the jurisdiction of the Bureau of Land Management and the California Department of Parks (Including Anza Borrego State Park and Ocotillo Wells).

An evaluation of all inspection reports, air quality complaints, compliance reports, and other documentation indicate no evidence of unusual anthropogenic-based PM_{10} emissions. There was no complaint filed on April 11, 2018 and April 12, 2018, officially declared as No Burn Days, related to agricultural burning, waste burning or dust. There was however a complaint filed by a resident of the City of El Centro regarding smoke and noxious odors. Upon investigation, by qualified personnel, no evidence of any smoke, illegal burning or noxious odors were found (**Appendix C**).

FIGURE 5-2
PERMITTED SOURCES

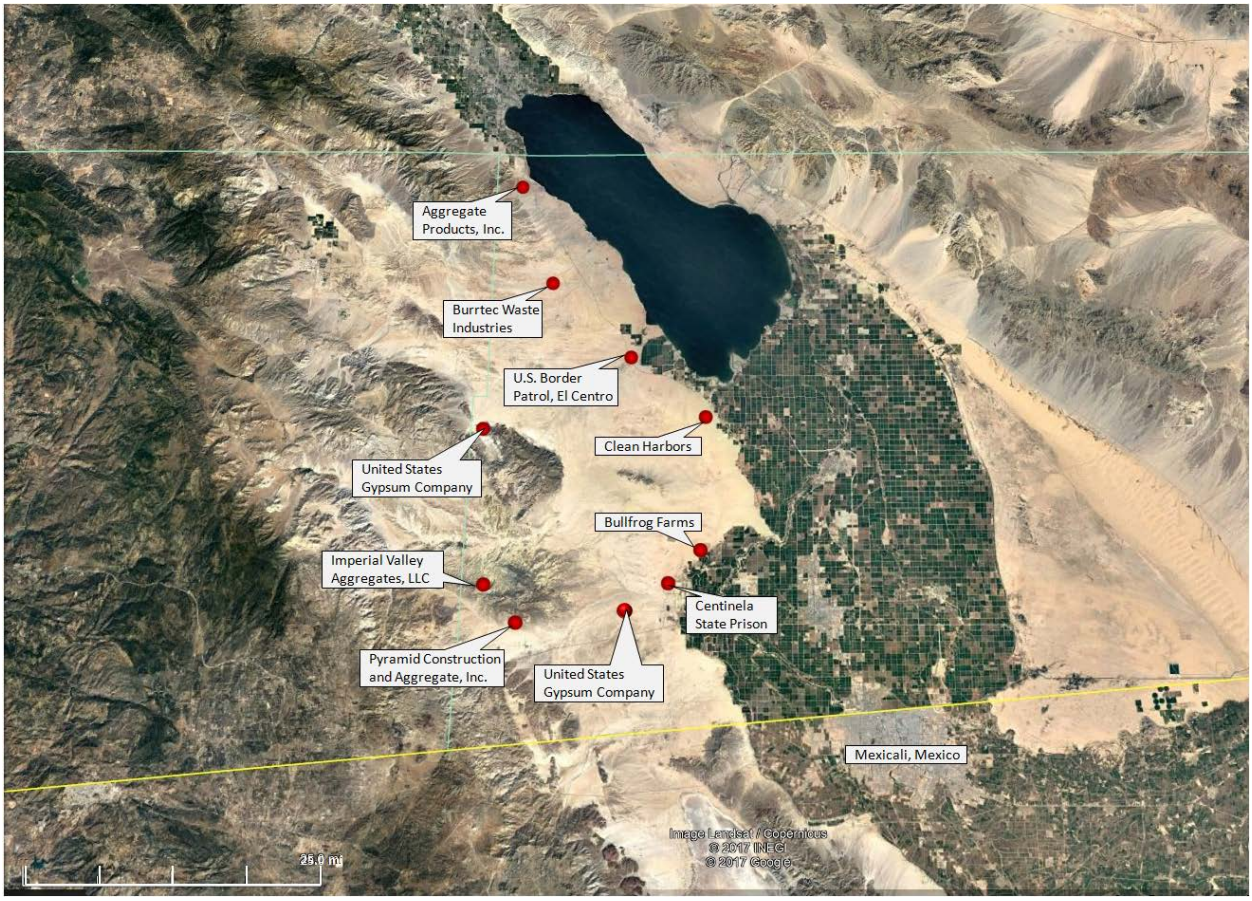


Fig 5-2: The above map identifies those permitted sources located west, northwest and southwest of the Brawley, Calexico, El Centro, and Niland monitors. The green line to the north denotes the political division between Imperial and Riverside counties. The yellow line below denotes the international border between the United States and Mexico. The green checker-boarded areas are a mixed use of agricultural and community parcels. In addition, either the Bureau of Land Management or the California Department of Parks manages the desert areas. Base map from Google Earth

FIGURE 5-3
NON-PERMITTED SOURCES

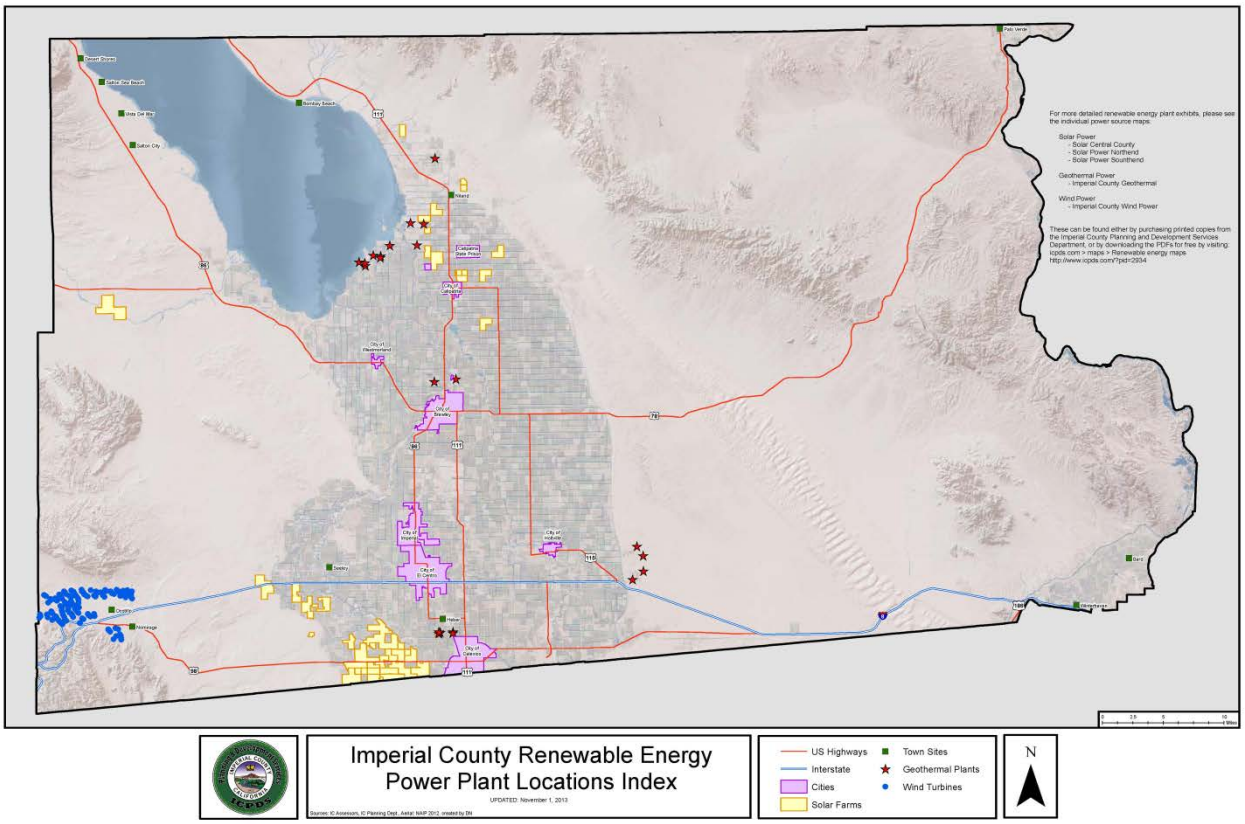


Fig 5-3: The above map identifies those power sources located west, northwest and southwest of the Brawley, Calexico, El Centro, and Niland monitors. Blue indicate the Wind Turbines, Yellow are the solar farms and stars are geothermal plants

VI A Natural Event – A demonstration that the event was a human activity that is unlikely to recur at a particular location or was a natural event.

Typically, Pacific weather disturbances during this time of year will bring westerly winds. The strong gusty westerly winds on April 11, 2018 and April 12, 2019 resulted from what the NWS identified as a Pacific trough that strengthened the onshore surface pressure gradient and generated strong gusty westerly winds across the region from southern and southeastern California to western Arizona. Strong gusty westerly winds blew through the region and were of a magnitude that prompted the NWS offices in San Diego and Phoenix to issue twenty (20) separate Urgent Weather Messages. Strong gusty westerly winds blew over and through the San Diego Mountains generating and transporting dust emissions down slopes onto the open natural desert floor west of Imperial County.

Strong gusty westerly winds blew over the open natural deserts within the San Diego County mountains during the morning hours of April 11, 2018 through April 12, 2018 transporting dust onto the air quality monitors in Imperial County. Although the system brought scattered and light showers there was sufficient moisture within Imperial County for the El Centro NAF (KNJK) to measure trace precipitation on April 12, 2018.[28] Although not all the air quality monitors in Imperial County exceeded the NAAQS, all air quality monitors did measure a 24-hour average above 100 $\mu g/m^3$, except the El Centro monitor which was shy a single $\mu g/m^3$. This can be partly explained by urbanization and precipitation levels. First, unlike other cities in Imperial County, the City of El Centro, is much more centralized, as its given name denotes, with less agriculture or open desert within its surroundings. Although Calexico, is similarly urbanized with less agriculture and desert surroundings, Calexico is a direct neighbor to a metropolitan international city, that is easily three times its size. Thus, unlike other cities when rain does occur, absent extreme heat, the City of El Centro remains damp much longer than other cities and is less susceptible to re-entrained dust. Second, as moisture levels increased within the San Diego Mountains, levels of transported emissions similarly reduced sufficiently to allow less saltation and deposition of particulates at air quality monitors. With lower levels of suspended particulates, and sufficient moisture levels within portions of Imperial County, some monitors on April 11, 2018 and April 12, 2018 did not exceedance while others did (**Table 2-1**). In any event, the intensity of the gusty westerly winds over the two-day period was sufficient to overcome BACM in Imperial County.

[28] National Weather Service, Area Forecast Discussion, April 12, 2018, San Diego office, 930 am PDT

VI.1 Affects Air Quality

The preamble to the revised EER states that an event is considered to have affected air quality if it can be demonstrated that the event affected air quality in such a way that there exists a clear causal relationship between the specific event and the monitored exceedance or violation. Given the information presented in this demonstration, particularly Section III, we can reasonably conclude that there exists a clear causal relationship between the monitored exceedance and the April 11, 2018 and April 12, 2018 event, which changed or affected air quality in Imperial County.

VI.2 Not Reasonably Controllable or Preventable

In order for an event to be defined as an exceptional event under section 50.1(j) of 40 CFR Part 50 an event must be "not reasonably controllable or preventable." The revised preamble explains that the nRCP has two prongs, not reasonably preventable and not reasonably controllable. The nRCP is met for natural events where high wind events entrain dust from desert areas, whose sources are controlled by BACM, where human activity played little or no direct causal role. This demonstration provides evidence that the primary source areas of windblown dust transported into Imperial County came from San Diego where Imperial County has no jurisdiction. In any event, despite BACM in place within Imperial County, high winds overwhelmed all BACM controls where human activity played little to no direct causal role. The PM_{10} exceedances measured at the Brawley, Calexico, El Centro, and Niland monitors were caused by naturally occurring gusty westerly winds that transported windblown dust into Imperial County and other parts of southern California from areas located within the Sonoran Desert regions to the west and southwest of Imperial County. These facts provide strong evidence that the PM_{10} exceedance at the Niland monitor on April 11, 2018 and the Brawley, Calexico and El Centro monitors on April 12, 2018, were not reasonably controllable or preventable.

VI.3 Natural Event

The revised preamble to the EER clarifies that a "Natural Event" (50.1(k) of 40 CFR Part 50) is an event with its resulting emissions, which may recur at the same location, in which human activity plays little or no direct causal role. Anthropogenic sources that are reasonably controlled are considered not to play a direct role in causing emissions. As discussed within this demonstration, the PM_{10} exceedance that occurred at the Brawley, Calexico, El Centro, and Niland monitors on April 11, 2018 and April 12, 2018, were caused by the transport of windblown dust into Imperial County by strong gusty westerly winds associated with a Pacific low-pressure system that passed through the region. At the time of the event, anthropogenic sources, within Imperial County were reasonably controlled

with BACM. The event therefore qualifies as a natural event.

VI.4 Clear Causal Relationship

The comparative analysis of different meteorological sites to PM_{10} concentrations measured at the Brawley, Calexico, El Centro, and Niland monitors in Imperial County demonstrates a consistency of elevated gusty westerly winds with elevated concentrations of PM_{10} on April 11, 2018 and April 12, 2018. In addition, temporal analysis indicates that the elevated PM_{10} concentrations and the gusty westerly winds were an event that was widespread, regional and not preventable. Days before the high wind event PM_{10} concentrations were well below the NAAQS. Overall, the demonstration provides evidence of the strong correlation between the natural event and the transported windblown dust to the exceedance on April 11, 2018 and April 12, 2018.

VI.5 Concentration to Concentration Analysis

The historical annual and seasonal 24-hr average PM_{10} measured concentrations at the Brawley, Calexico, El Centro, and Niland monitors were outside the normal historical concentrations when compared to event and non-event days.

VI.6 Conclusion

The preceding discussion, graphs, figures, and tables provide wind direction, speed and concentration data illustrating the spatial and temporal effects of the strong gusty westerly winds that preceded the identified cold front associated with the upper trough as it passed through the southern region of California. The information provides a clear causal relationship between the entrained windblown dust and the PM_{10} exceedance measured at the Brawley, Calexico, El Centro and Niland monitors in Imperial County on April 11, 2018 and April 12, 2018.

In particular, the clear causal relationship and not reasonably controllable or preventable sections provide evidence that high gusty westerly winds transported fugitive emissions from open natural Mountain and desert areas, located within the San Diego County and Imperial County (all part of the Sonoran Desert). In addition, because anthropogenic sources in upwind areas were reasonably controlled at the time of the event, this event meets the definition of a Natural Event.[29]

[29] Title 40 Code of Federal Regulations part 50: §50.1(k) Natural event means an event and its resulting emissions, which may recur at the same location, in which human activity plays little or no direct causal role. For purposes of the definition of a natural event, anthropogenic sources that are reasonably controlled shall be considered to not play a direct role in causing emissions.