Appendix B
Meteorological Data

FIGURE B-1
METEOROLOGICAL SITES WITHIN IMPERIAL, RIVERSIDE AND YUMA COUNTIES

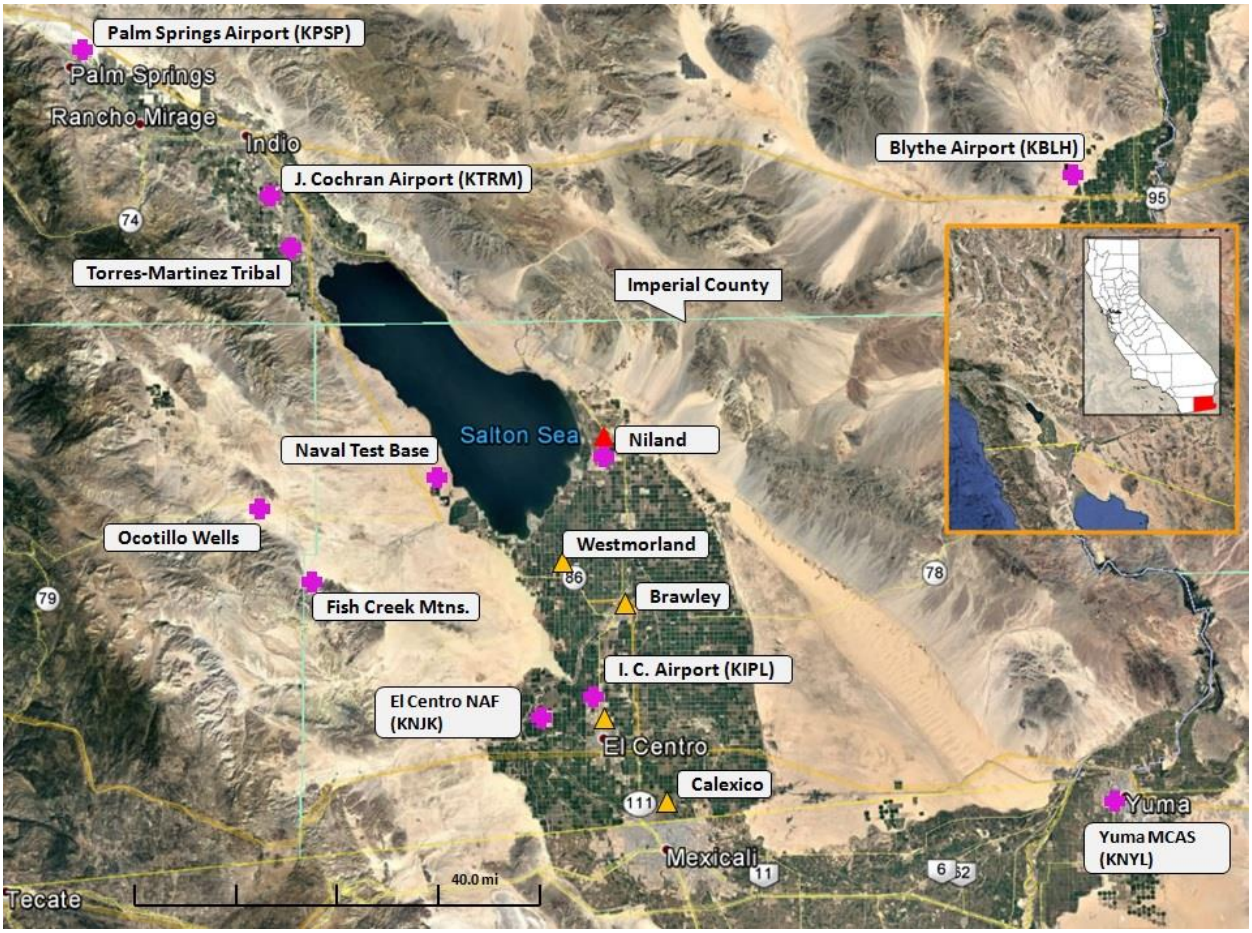


Fig B-1: A depiction of wind sites used in this document as signified by the maroon crosses. Map from Google Earth

The following graphs contain wind speed[1] and wind direction data collected from various sites in southeastern California and southwestern Arizona.

[1] National Weather Service; NOAA's Glossary – Wind Speed: The rate at which air is moving horizontally past a given point. It may be a 2-minute average speed (reported as wind speed) or an instantaneous speed (reported as a peak wind speed, wind gust, or squall)[http://w1.weather.gov/glossary/index.php?letter=w].

FIGURE B-2
IMPERIAL COUNTY AIRPORT (KIPL)-MARCH 17, 2014
WIND SPEED, GUSTS & DIRECTION

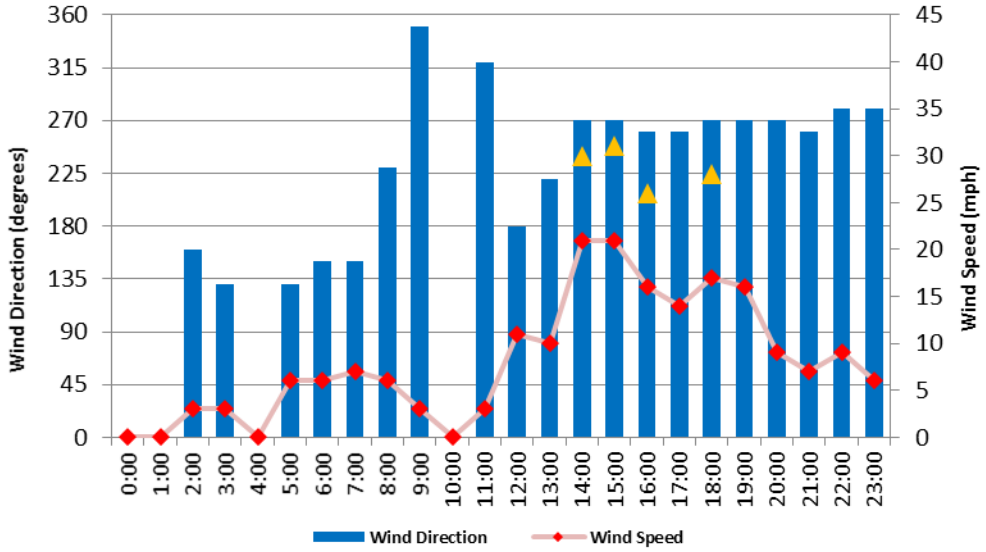
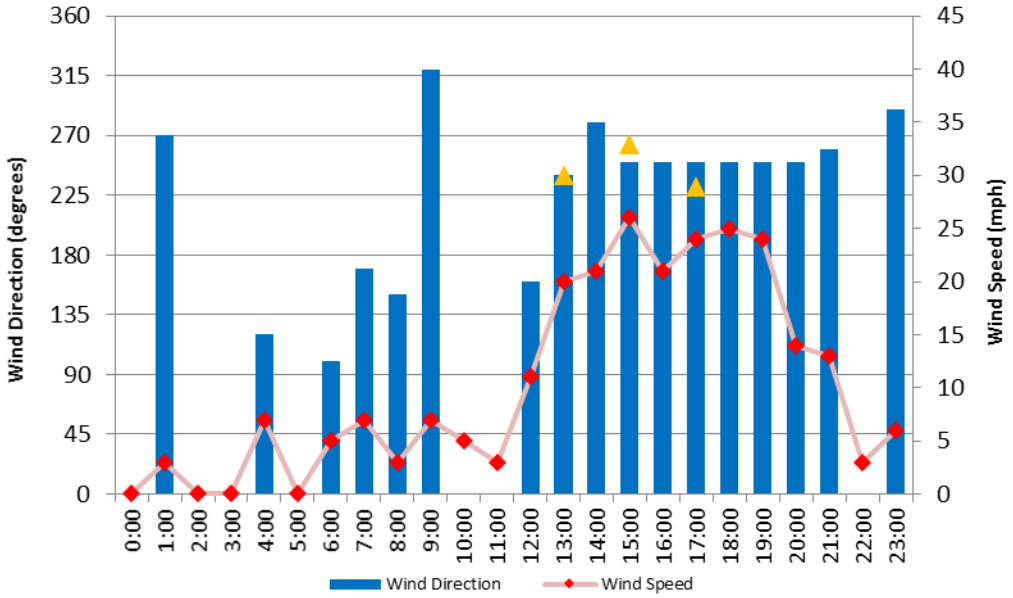


FIGURE B-3
EL CENTRO NAF (KNJK)-MARCH 17, 2014
WIND SPEED, GUSTS & DIRECTION



Figs B-2 & B-3: Imperial Airport (Brawley Monitor) and the El Centro Naval Air Facility meteorological data for March 17, 2014, showing a dramatic increase in wind speed accompanied by sustained gusts over 30 mph. Wind data from the NCEI's QCLCD data bank

FIGURE B-4
NILAND (ENGLISH RD)-MARCH 17, 2014
WIND SPEED AND DIRECTION

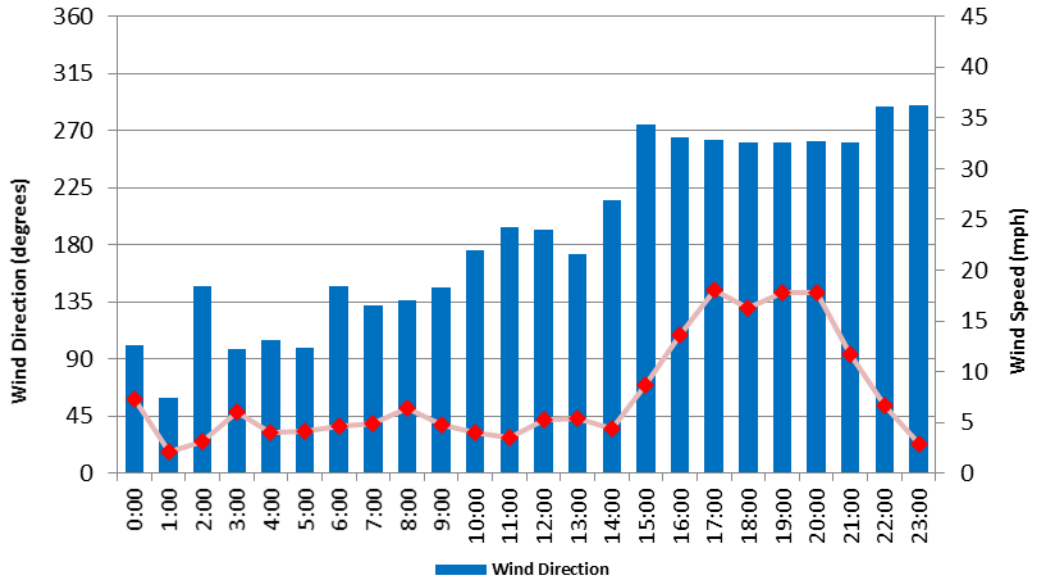


Fig B-4: Niland wind speed and wind direction confirming high winds in Imperial County during the afternoon of March 17, 2014. Wind speed from the EPA's AQS data bank

FIGURE B-5
PALM SPRINGS INTERNATIONAL AIRPORT (KPSP)-MARCH 17, 2014
WIND SPEED, GUSTS & DIRECTION

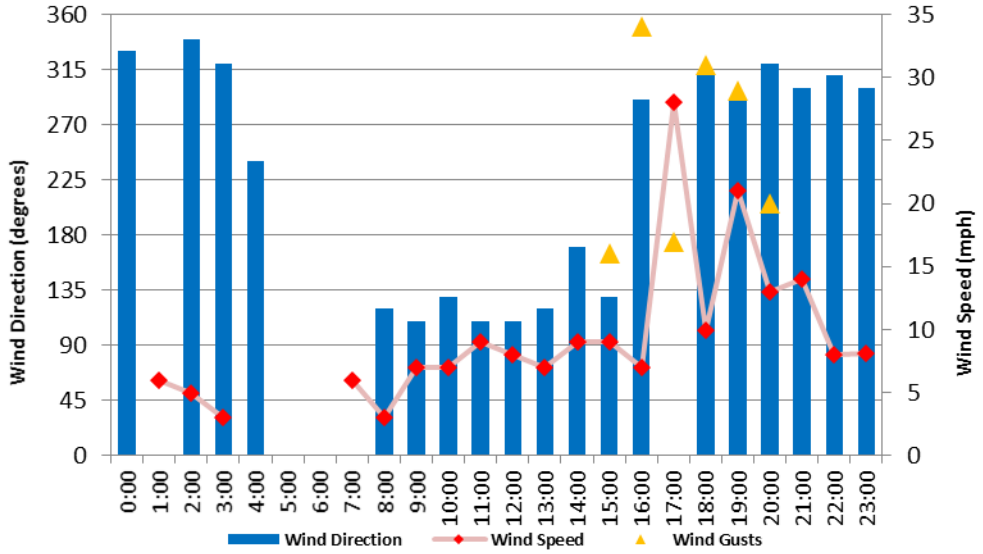
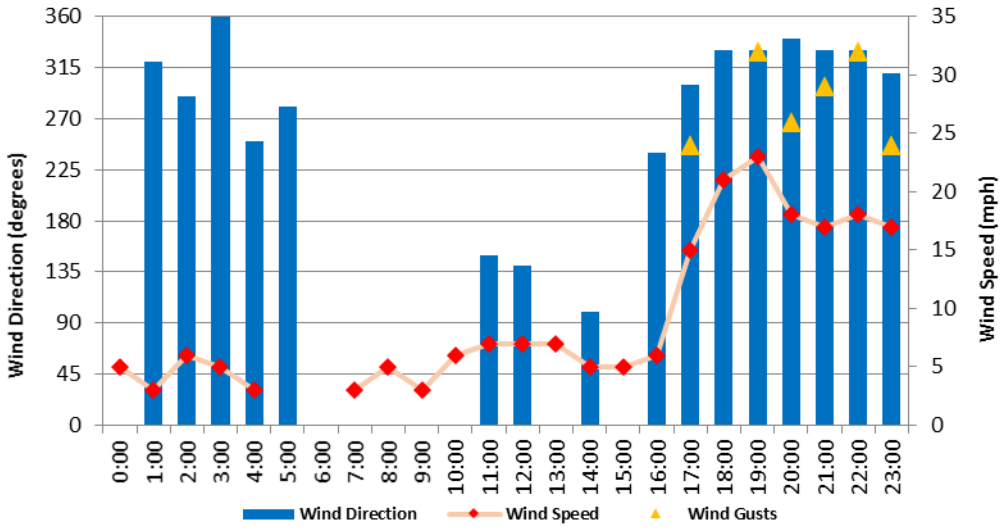


FIGURE B-6
JACQUELINE COCHRAN AIRPORT (KTRM)–March 17, 2014
WIND SPEED, GUSTS & DIRECTION



Figs B-5 and B-6: Palm Springs Airport (KPSP) and Jacqueline Cochran-Thermal Airport meteorological data for March 17, 2014, showing an increase in wind speed accompanied by sustained gusts over 30 mph. Both locations are located roughly northwest of Brawley. Wind data from the NCEI's QCLCD data bank

FIGURE B-7
BLYTHE AIRPORT (KBLH)–MARCH 17, 2014
WIND SPEED, GUSTS & DIRECTION

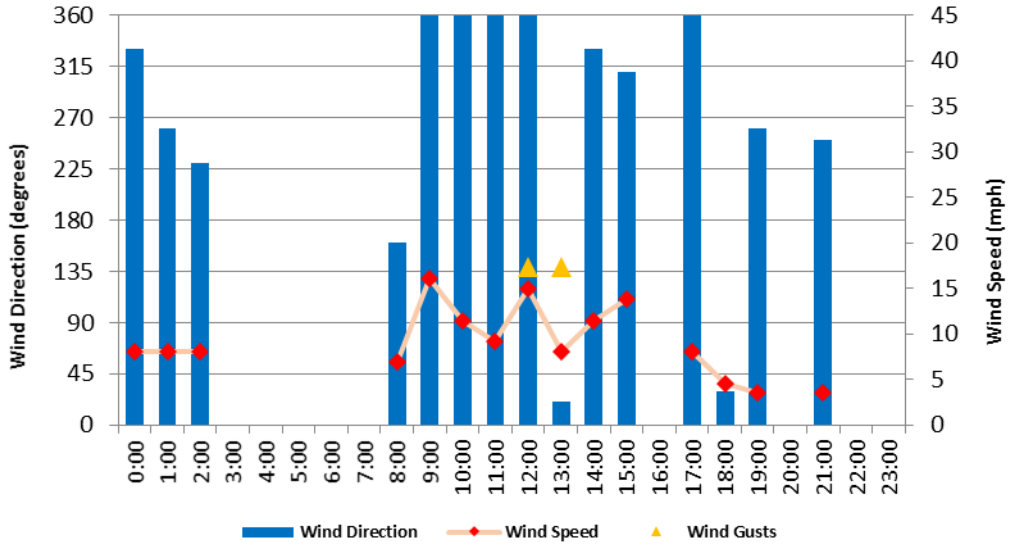


Fig B-7: Blythe Airport is located northeast of Brawley. Wind data from the University of Utah's MesoWest data bank

FIGURE B-8
YUMA, ARIZONA MCAS (KNYL –MARCH 17, 2014
WIND SPEED, GUSTS & DIRECTION *MST

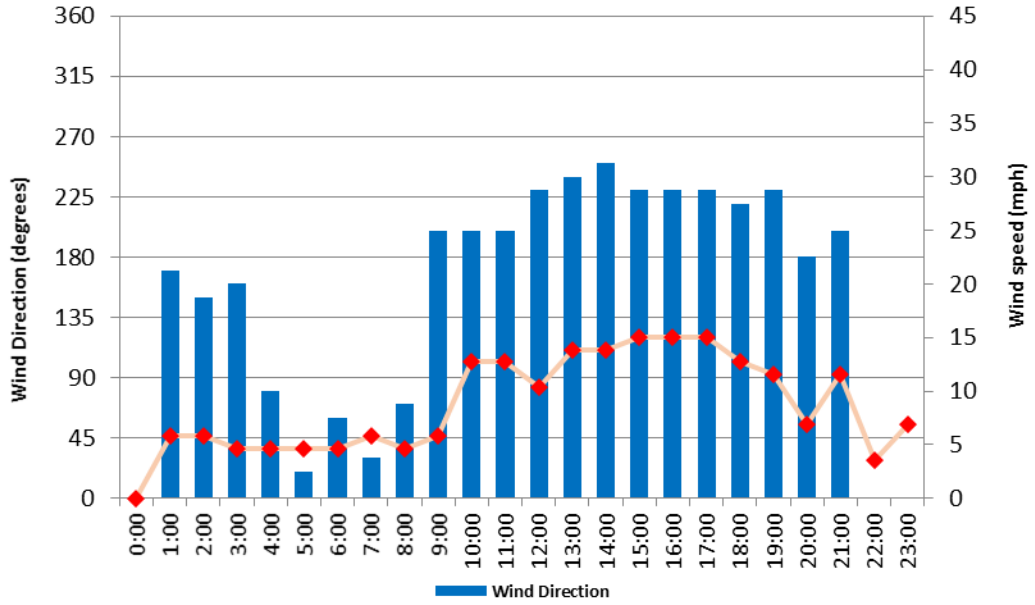


Fig B-8: Yuma, Arizona MCAS is located southeast of Brawley. Wind data from the University of Utah's MesoWest data bank

FIGURE B-9
OCOTILLO WELLS – MARCH 17, 2014
WIND SPEED, GUSTS & DIRECTION

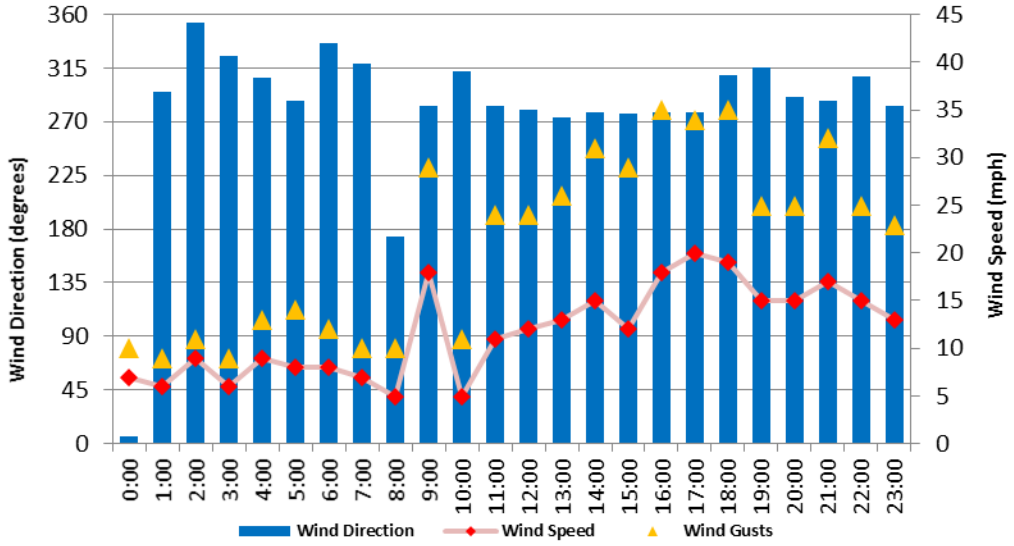


Fig B-9: Ocotillo Wells is located WNW of Brawley. Wind data from the University of Utah's MesoWest data bank

FIGURE B-10
FISH CREEK MTNS. – MARCH 17, 2014
WIND SPEED, GUSTS & DIRECTION

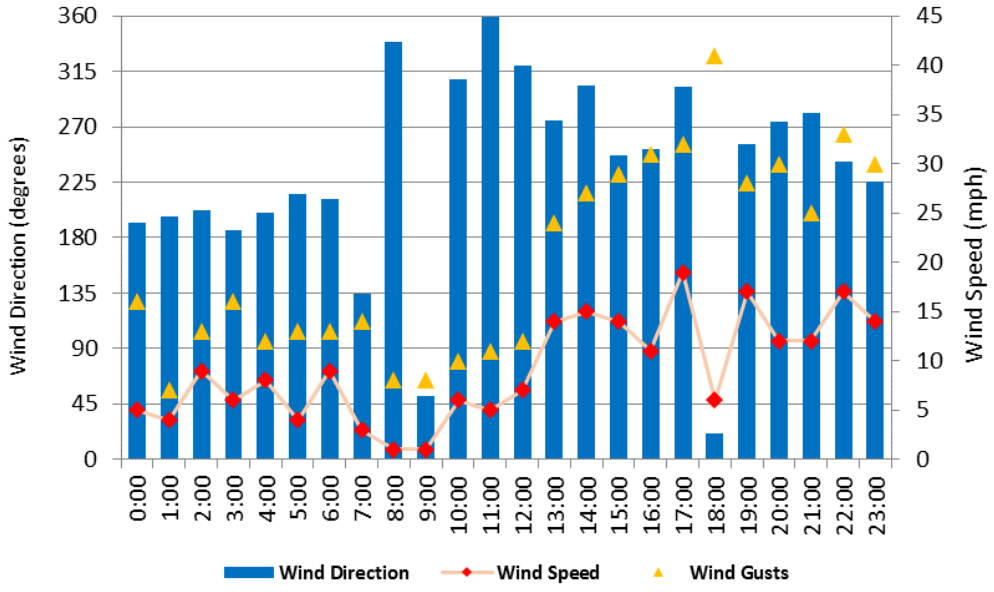


Fig B-10: The Fish Creek Mountains are located west of Brawley. Wind data from the University of Utah's MesoWest data bank

FIGURE B-10
NAVAL TEST BASE – MARCH 17, 2014
WIND SPEED, GUSTS & DIRECTION

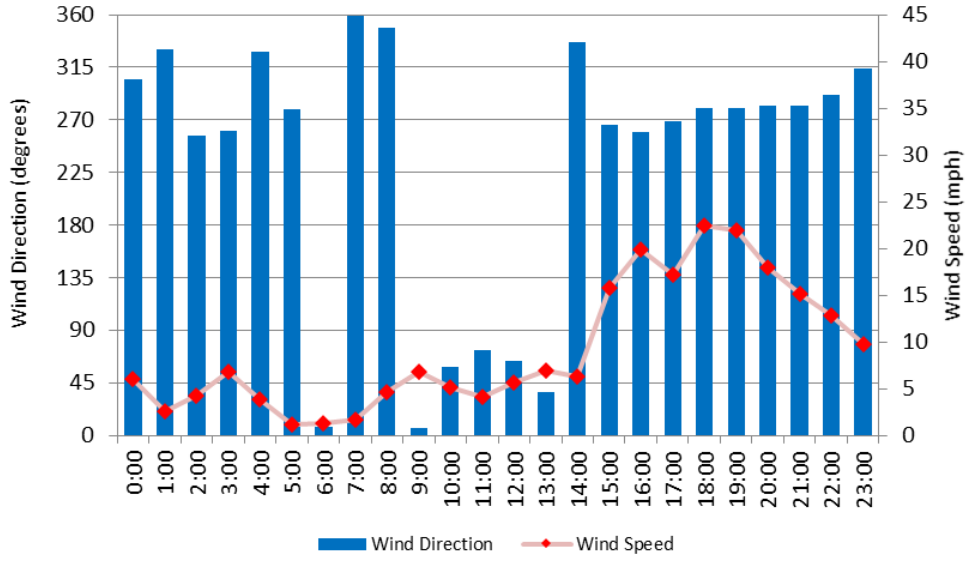


Fig B-10: The Fish Creek Mountains are located west of Brawley. Wind data from the University of Utah's MesoWest data bank

The following wind roses for March 17 are depicted in **Figure 5-3**. As stated in the text, they help support that wind was focused on Brawley from the WSW, W, and WNW, allowing lofted dust to impact the Brawley monitor. Ocotillo Wells and the Fish Creek Mountains wind roses utilize gusts. The others use winds.

FIGURE B-11
IMPERIAL COUNTY AIRPORT WIND ROSE

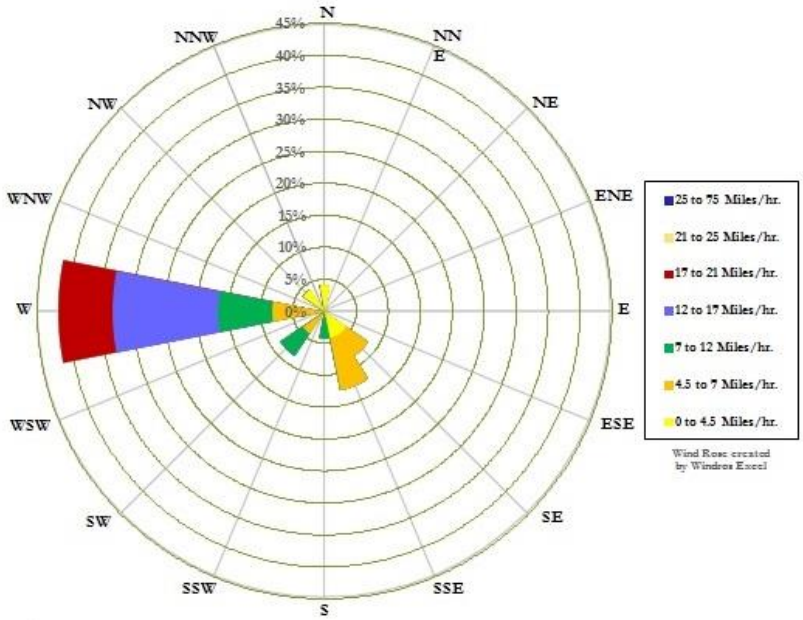


FIGURE B-12
EL CENTRO NAF WIND ROSE

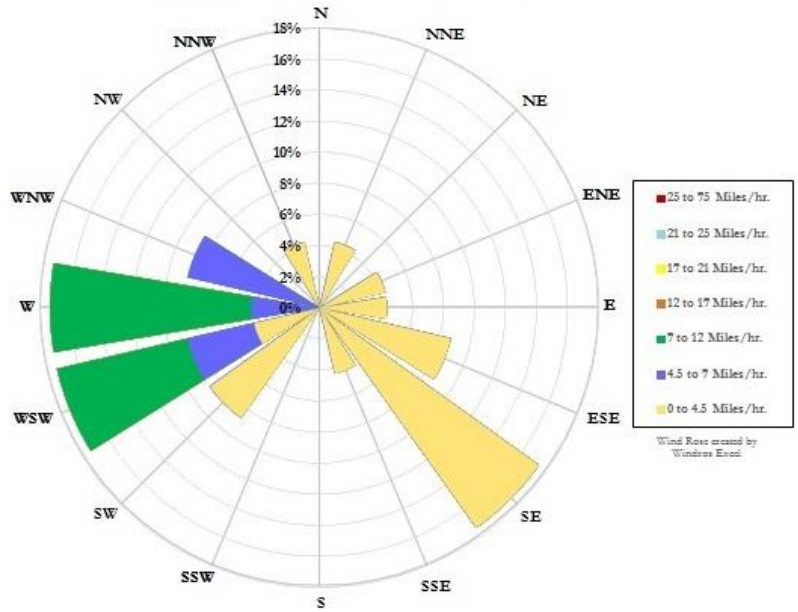


FIGURE B-13
FISH CREEK MTNS. WIND ROSE

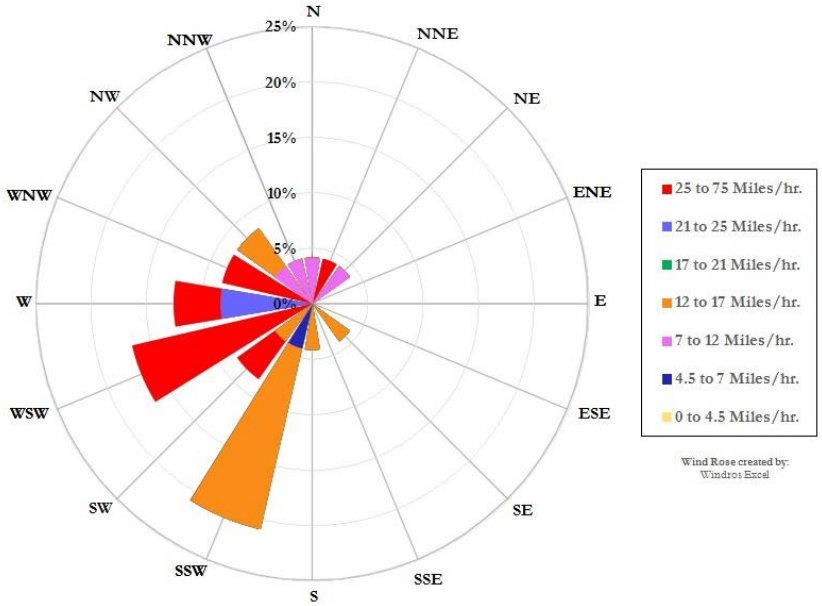


FIGURE B-14
OCOTILLO WELLS WIND ROSE

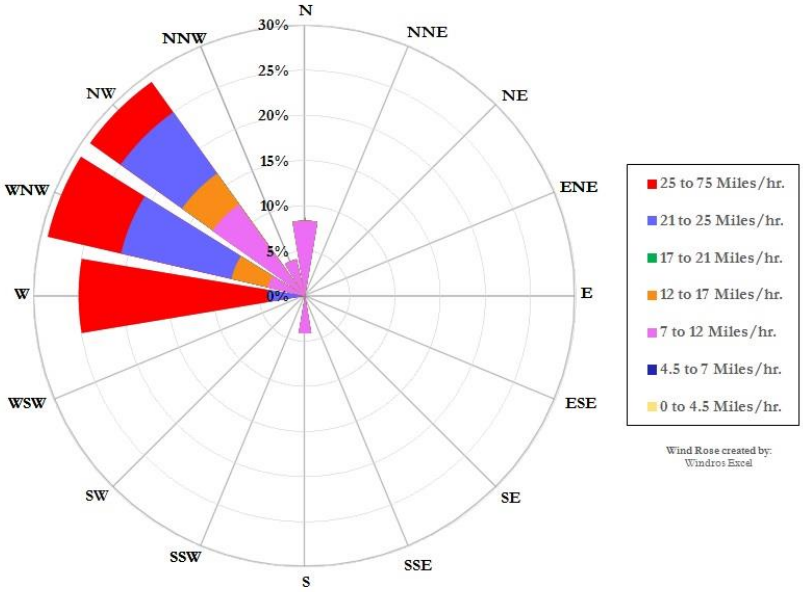


FIGURE B-15
NAVAL TEST BASE WIND ROSE

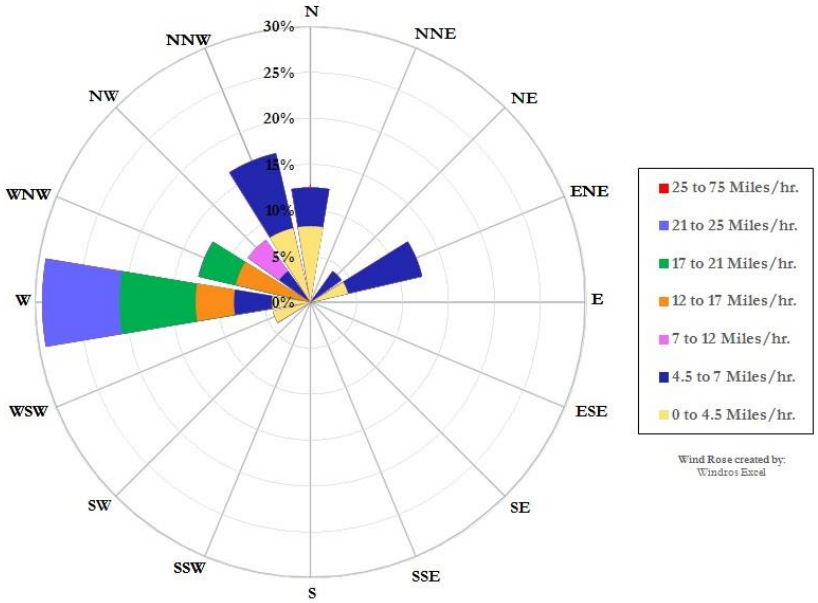


FIGURE B-16
IMPERIAL COUNTY AIRPORT QCLCD – MARCH 17

11/18/2015 QUALITY CONTROLLED Local Climatological Data: IMPERIAL COUNTY AIRPORT

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

QUALITY CONTROLLED LOCAL CLIMATOLOGICAL DATA (final)
HOURLY OBSERVATIONS TABLE
IMPERIAL COUNTY AIRPORT (03144)
IMPERIAL, CA
(03/2014)

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

Elevation: -58 ft. below sea level
Latitude: 32.834
Longitude: -115.578
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
17	0053	12	CLR	10.00		60	15.6	45	7.0	24	-4.4	25	0	000		30.05			29.98	AA		29.99
17	0153	12	CLR	10.00		59	15.0	43	5.9	18	-7.8	20	0	000		30.01			29.95	AA		29.95
17	0253	12	CLR	10.00		57	13.9	43	6.0	23	-5.0	27	3	160		29.98			29.92	AA		29.92
17	0353	12	CLR	10.00		57	13.9	43	6.2	24	-4.4	28	3	130		29.97			29.91	AA		29.91
17	0453	12	CLR	10.00		55	12.8	44	6.5	29	-1.7	37	0	000		29.96			29.90	AA		29.90
17	0553	12	CLR	10.00		54	12.2	43	6.0	28	-2.2	37	6	130		29.95			29.88	AA		29.89
17	0653	12	CLR	10.00		57	13.9	45	7.0	29	-1.7	34	6	150		29.94			29.88	AA		29.88
17	0753	12	CLR	10.00		64	17.8	49	9.2	31	-0.6	29	7	150		29.93			29.87	AA		29.87
17	0853	12	CLR	10.00		73	22.8	53	11.6	32	0.0	22	6	230		29.92			29.85	AA		29.86
17	0953	12	CLR	10.00		78	25.6	56	13.5	36	2.2	22	3	350		29.92			29.85	AA		29.86
17	1053	12	CLR	10.00		84	28.9	57	14.0	31	-0.6	15	0	000		29.88			29.82	AA		29.82
17	1153	12	CLR	10.00		88	31.1	57	13.9	24	-4.4	10	3	320		29.84			29.78	AA		29.78
17	1253	12	CLR	10.00		90	32.2	58	14.6	26	-3.3	10	11	180		29.77			29.71	AA		29.71
17	1353	12	CLR	10.00		92	33.3	58	14.2	19	-7.2	7	10	220		29.72			29.66	AA		29.66
17	1453	12	CLR	10.00		93	33.9	58	14.6	21	-6.1	7	21	270	30	29.69			29.63	AA		29.63
17	1553	12	CLR	10.00		90	32.2	58	14.5	26	-3.3	10	21	270	31	29.67			29.61	AA		29.61
17	1653	12	CLR	10.00		84	28.9	57	13.9	31	-0.6	15	16	260	26	29.67			29.61	AA		29.61
17	1753	12	CLR	9.00		79	26.1	54	12.4	28	-2.2	15	14	260		29.66			29.60	AA		29.60
17	1853	12	CLR	10.00		79	26.1	54	11.9	25	-3.9	14	17	270	28	29.66			29.59	AA		29.60
17	1953	12	CLR	10.00		75	23.9	54	11.9	31	-0.6	20	16	270		29.68			29.62	AA		29.62
17	2053	12	CLR	10.00		70	21.1	52	11.3	34	1.1	27	9	270		29.70			29.64	AA		29.64
17	2153	12	CLR	10.00		66	18.9	51	10.7	36	2.2	33	7	260		29.72			29.65	AA		29.66
17	2253	12	CLR	10.00		63	17.2	50	9.7	35	1.7	35	9	280		29.71			29.65	AA		29.65
17	2353	12	CLR	10.00		65	18.3	49	9.5	31	-0.6	28	6	280		29.72			29.66	AA		29.66

Dynamically generated Wed Nov 18 18:55:34 EST 2015 via http://www.ncdc.noaa.gov/qclcd/QCLCD

FIGURE B-17
EL CENTRO NAF QCLCD – MARCH 17

11/18/2015

QUALITY CONTROLLED Local Climatological Data: NAF

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

QUALITY CONTROLLED LOCAL CLIMATOLOGICAL DATA
(may be updated)
HOURLY OBSERVATIONS TABLE
NAF (23199)
EL CENTRO, CA
(03/2014)

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

Elevation: -42 ft. below sea level
Latitude: 32.816
Longitude: -115.683
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
17	0056	5	CLR	10.00		54	12.2	41	4.7	20	-6.7	26	0	000		30.03			30.03	AA		29.99
17	0156	5	CLR	10.00		54	12.2	41	4.9	21	-6.1	28	3	270		29.99			30.00	AA		29.95
17	0256	5	CLR	10.00		57	13.9	42	5.7	21	-6.1	25	0	000		29.96			29.97	AA		29.92
17	0356	5	CLR	10.00		55	12.8	43	5.9	26	-3.3	33	0	000		29.95			29.95	AA		29.91
17	0456	5	FEW220	10.00		51	10.6	42	5.5	30	-1.1	45	7	120		29.94			29.94	AA		29.90
17	0556	5	FEW160 FEW220	10.00		48	8.9	38	3.6	24	-4.4	39	0	000		29.93			29.93	AA		29.89
17	0656	5	FEW220	9.00		56	13.3	45	7.3	32	0.0	40	5	100		29.92			29.92	AA		29.88
17	0756	5	FEW220	6.00	HZ	64	17.8	50	10.2	36	2.2	36	7	170		29.91			29.91	AA		29.87
17	0856	5	FEW220	6.00	HZ	71	21.7	55	12.5	39	3.9	31	3	150		29.90			29.91	AA		29.86
17	0956	5	SCT220 BKN300	10.00		78	25.6	56	13.1	34	1.1	20	7	320		29.90			29.90	AA		29.86
17	1056	5	SCT220 BKN300	10.00		86	30.0	57	13.7	26	-3.3	11	5	VR		29.86			29.86	AA		29.82
17	1156	5	SCT200 BKN280	10.00		89	31.7	59	14.9	30	-1.1	12	3	VR		29.82			29.82	AA		29.78
17	1256	5	BKN250	10.00		90	32.2	59	14.7	27	-2.8	10	11	160		29.75			29.75	AA		29.71
17	1356	5	BKN250	10.00		95	35.0	59	14.9	19	-7.2	6	20	240	30	29.71			29.71	AA		29.67
17	1456	5	BKN250	10.00		95	35.0	58	14.4	13	-10.6	5	21	280		29.68			29.69	AA		29.64
17	1556	5	BKN250	10.00		91	32.8	59	14.8	26	-3.3	9	26	250	33	29.67			29.68	AA		29.63
17	1656	5	SCT250	10.00		87	30.6	57	13.9	26	-3.3	11	21	250		29.66			29.67	AA		29.62
17	1756	5	BKN250	10.00		81	27.2	55	12.8	28	-2.2	14	24	250	29	29.65			29.66	AA		29.61
17	1856	5	BKN250	10.00		80	26.7	53	11.7	21	-6.1	11	25	250		29.65			29.66	AA		29.61
17	1956	5	BKN250	10.00		77	25.0	54	12.2	30	-1.1	18	24	250		29.67			29.67	AA		29.63
17	2056	5	BKN250	10.00		74	23.3	53	11.8	32	0.0	21	14	250		29.68			29.68	AA		29.64
17	2156	5	BKN250	10.00		69	20.6	52	10.8	33	0.6	26	13	260		29.69			29.70	AA		29.65
17	2256	5	CLR	10.00		69	20.6	51	10.5	31	-0.6	24	3	VR		29.69			29.70	AA		29.65
17	2356	5	CLR	10.00		67	19.4	49	9.1	26	-3.3	21	6	290		29.70			29.70	AA		29.66

Dynamically generated Wed Nov 18 18:54:38 EST 2015 via http://www.ncdc.noaa.gov/qclcd/QCLCD

FIGURE B-18
FISH CREEK MOUNTAINS TABULAR DATA – MARCH 17

SOURCE: UNIVERSITY OF UTAH'S MESOWEST http://mesowest.utah.edu/

STATION: FHCC1
STATION NAME: FISH CREEK MOUNTAINS
LATITUDE: 32.990306
LONGITUDE: -116.066972
ELEVATION [ft]: 781
STATE: CA

Station_ID	Date_Time	wind_speed_set_1 Miles/hour	wind_direction_set_1 Degrees	wind_gust_set_1 Miles/hour
FHCC1	03/17/2014 00:26 PDT	5.0	192	16.0
FHCC1	03/17/2014 01:26 PDT	4.0	197	7.0
FHCC1	03/17/2014 02:26 PDT	9.0	202	13.0
FHCC1	03/17/2014 03:26 PDT	6.0	186	16.0
FHCC1	03/17/2014 04:26 PDT	8.0	200	12.0
FHCC1	03/17/2014 05:26 PDT	4.0	215	13.0
FHCC1	03/17/2014 06:26 PDT	9.0	211	13.0
FHCC1	03/17/2014 07:26 PDT	3.0	134	14.0
FHCC1	03/17/2014 08:26 PDT	1.0	339	8.0
FHCC1	03/17/2014 09:26 PDT	1.0	51	8.0
FHCC1	03/17/2014 10:26 PDT	6.0	309	10.0
FHCC1	03/17/2014 11:26 PDT	5.0	359	11.0
FHCC1	03/17/2014 12:26 PDT	7.0	320	12.0
FHCC1	03/17/2014 13:26 PDT	14.0	275	24.0
FHCC1	03/17/2014 14:26 PDT	15.0	303	27.0
FHCC1	03/17/2014 15:26 PDT	14.0	247	29.0
FHCC1	03/17/2014 16:26 PDT	11.0	252	31.0
FHCC1	03/17/2014 17:26 PDT	19.0	302	32.0
FHCC1	03/17/2014 18:26 PDT	6.0	21	41.0
FHCC1	03/17/2014 19:26 PDT	17.0	256	28.0
FHCC1	03/17/2014 20:26 PDT	12.0	274	30.0
FHCC1	03/17/2014 21:26 PDT	12.0	281	25.0
FHCC1	03/17/2014 22:26 PDT	17.0	242	33.0
FHCC1	03/17/2014 23:26 PDT	14.0	225	30.0

FIGURE B-19
OCOTILLO WELLS TABULAR DATA – MARCH 17

SOURCE: UNIVERSITY OF UTAH'S MESOWEST http://mesowest.utah.edu/

STATION: AS938
STATION NAME: KD6RSQ-5 Ocotillo Wells
LATITUDE: 33.15044
LONGITUDE: -116.18041
ELEVATION [ft]: 419
STATE: CA

Station_ID	Date_Time	wind_speed_set_1 Miles/hour	wind_direction_set_1 Degrees	wind_gust_set_1 Miles/hour
AS938	03/17/2014 00:54 PDT	7.0	6	10.0
AS938	03/17/2014 01:56 PDT	6.0	295	9.0
AS938	03/17/2014 02:56 PDT	9.0	353	11.0
AS938	03/17/2014 03:56 PDT	6.0	325	9.0
AS938	03/17/2014 04:59 PDT	9.0	307	13.0
AS938	03/17/2014 05:56 PDT	8.0	288	14.0
AS938	03/17/2014 06:56 PDT	8.0	336	12.0
AS938	03/17/2014 07:54 PDT	7.0	319	10.0
AS938	03/17/2014 08:41 PDT	5.0	174	10.0
AS938	03/17/2014 09:56 PDT	18.0	283	29.0
AS938	03/17/2014 10:56 PDT	5.0	312	11.0
AS938	03/17/2014 11:56 PDT	11.0	283	24.0
AS938	03/17/2014 12:55 PDT	12.0	280	24.0
AS938	03/17/2014 13:51 PDT	13.0	274	26.0
AS938	03/17/2014 14:40 PDT	15.0	278	31.0
AS938	03/17/2014 15:57 PDT	12.0	277	29.0

AS938	03/17/2014 16:51 PDT	18.0	278	35.0
AS938	03/17/2014 17:51 PDT	20.0	278	34.0
AS938	03/17/2014 18:52 PDT	19.0	309	35.0
AS938	03/17/2014 19:56 PDT	15.0	315	25.0
AS938	03/17/2014 20:56 PDT	15.0	291	25.0
AS938	03/17/2014 21:36 PDT	17.0	287	32.0
AS938	03/17/2014 22:57 PDT	15.0	308	25.0
AS938	03/17/2014 23:41 PDT	13.0	283	23.0

FIGURE B-20
NAVAL TEST BASE TABULAR DATA – MARCH 17

SOURCE: AQMIS

https://www.arb.ca.gov/aqmis2/display.php?param=WINSPD&units=012&year=2014&mon=3&day=17&report=HVAL&ptype=met&site=5409

DATE	HOUR	W/S	W/D
	0	6.0	305
3/17/2014	1	2.5	330
3/17/2014	2	4.2	256
3/17/2014	3	6.8	261
3/17/2014	4	3.9	328
3/17/2014	5	1.2	279
3/17/2014	6	1.3	7
3/17/2014	7	1.6	359
3/17/2014	8	4.6	349
3/17/2014	9	6.9	6
3/17/2014	10	5.1	59
3/17/2014	11	4.1	73
3/17/2014	12	5.6	64
3/17/2014	13	7.0	37
3/17/2014	14	6.3	337
3/17/2014	15	15.8	266
3/17/2014	16	19.9	259
3/17/2014	17	17.2	269
3/17/2014	18	22.5	280
3/17/2014	19	21.9	281
3/17/2014	20	17.9	282
3/17/2014	21	15.1	282
3/17/2014	22	12.9	291
3/17/2014	23	9.7	313