Appendix B
Meteorological Data

The following graphs contained wind speed[1] and wind direction data collected from various sites in southeastern California and southwestern Arizona. Note that wind speed measurements may be taken at any time during the hour and by different instruments. Some instruments measure in Scalar which are quantities that are fully described by a magnitude (or numerical value) alone and some measure in Vector which are quantities that are fully described by both a magnitude and a direction. Resultant wind speed is the magnitude of the wind observation into components from south and west, summing over the given period, obtaining the averages, and reconverting the average components into a single vector. The following graphs reflect the observed measured time and not necessarily, a whole hour but all graphs reflect time in PST.

FIGURE B-1
METEOROLOGICAL SITES USED IN THIS DOCUMENT

Fig B-1: The sites depicted are representative of air quality and meteorological sites used in this document. Google Earth base map

[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

IMPERIAL COUNTY STATIONS
FIGURES B-2 THROUGH B-8

FIGURE B-2
IMPERIAL COUNTY AIRPORT (KIPL)
WIND SPEED, GUSTS, AND DIRECTION
MAY 21, 2015 AND MAY 22, 2015

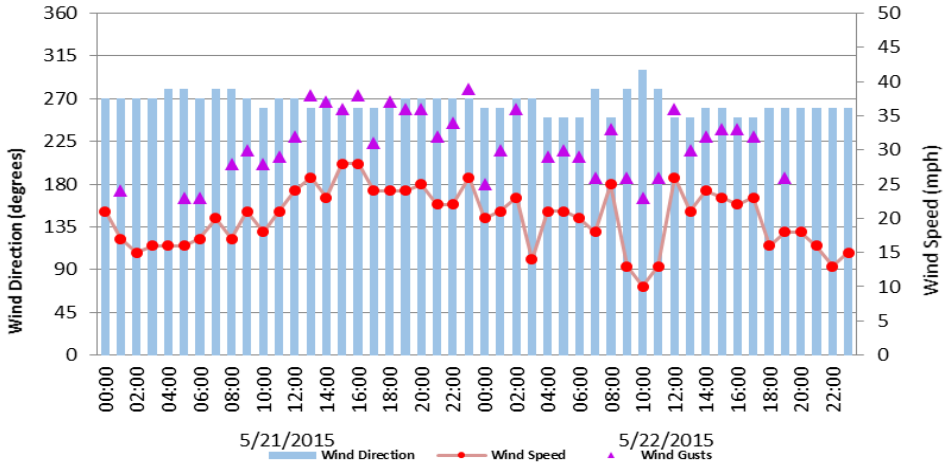
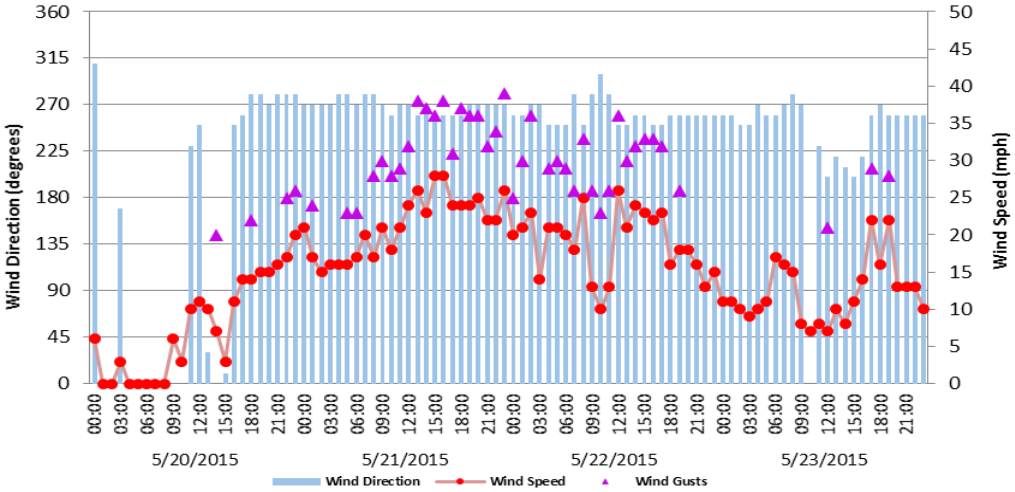


FIGURE B-3
IMPERIAL COUNTY AIRPORT (KIPL)
WIND SPEED, GUSTS, AND DIRECTION
MAY 20, 2015 THROUGH MAY 23, 2015



Figs B-2 & B-3: Imperial Airport meteorological data for May 20, 2015 through May 23, 2015, showing a dramatic increase in wind speed. This location is southwest of Brawley. Data from the NCEI's QCLCD system

FIGURE B-4
EL CENTRO NAF (KNJK)
WIND SPEED, GUSTS, AND DIRECTION
MAY 21, 2015 AND MAY 22, 2015

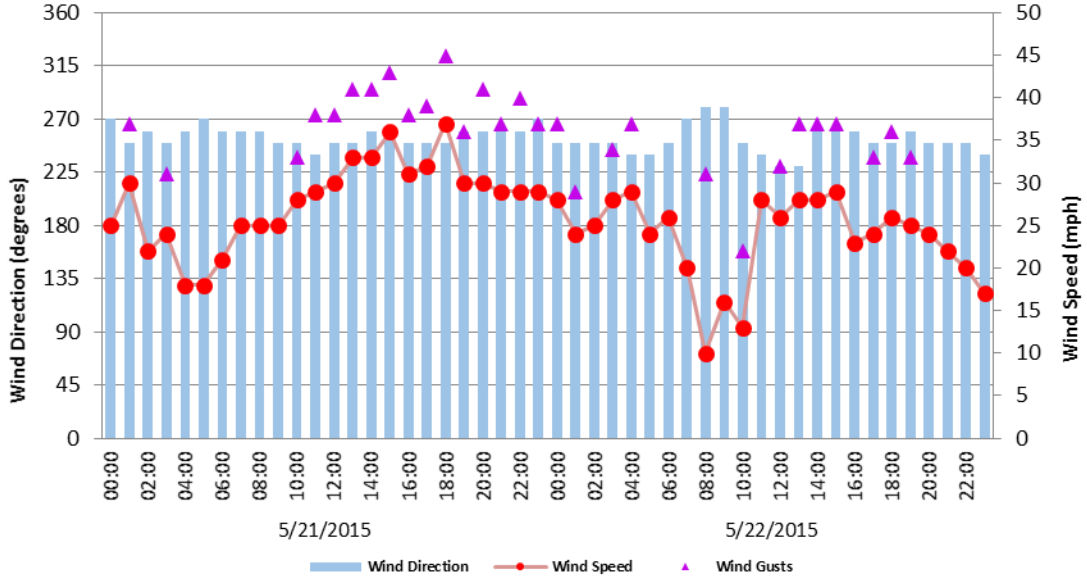
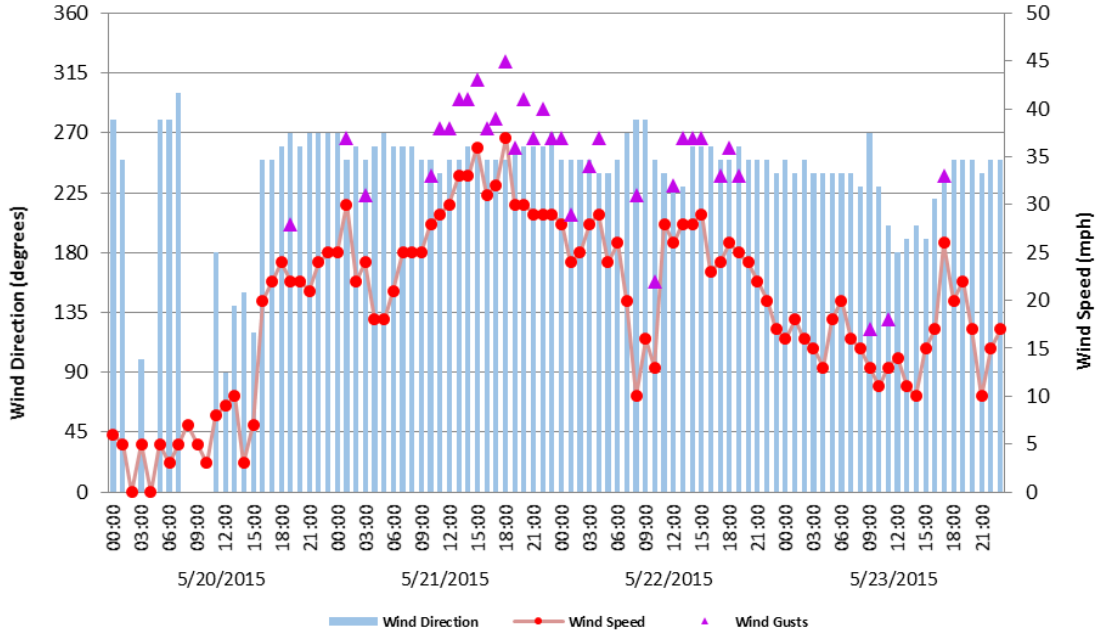


FIGURE B-5
EL CENTRO NAF (KNJK)
WIND SPEED, GUSTS, AND DIRECTION
MAY 20, 2015 THROUGH MAY 23, 2015



Figs B-4 & B-5: El Centro NAF meteorological data shows a similar increase in wind speeds to KIPL. This location is southwest of Brawley and Niland. Data from the NCEI's QCLCD system

FIGURE B-6
NILAND (ENGLISH RD)
WIND SPEED & DIRECTION
MAY 21, 2015 AND MAY 22, 2015

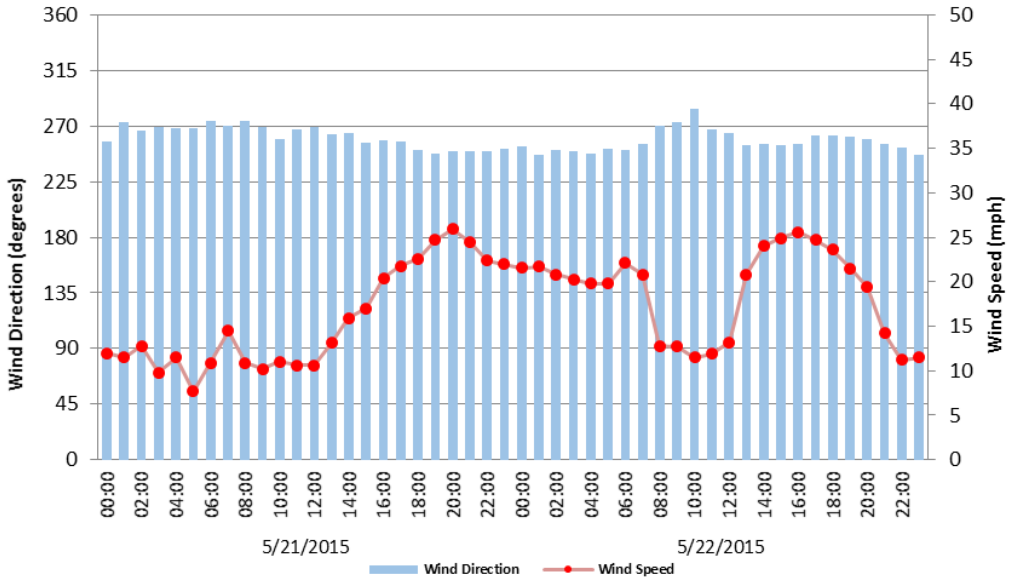
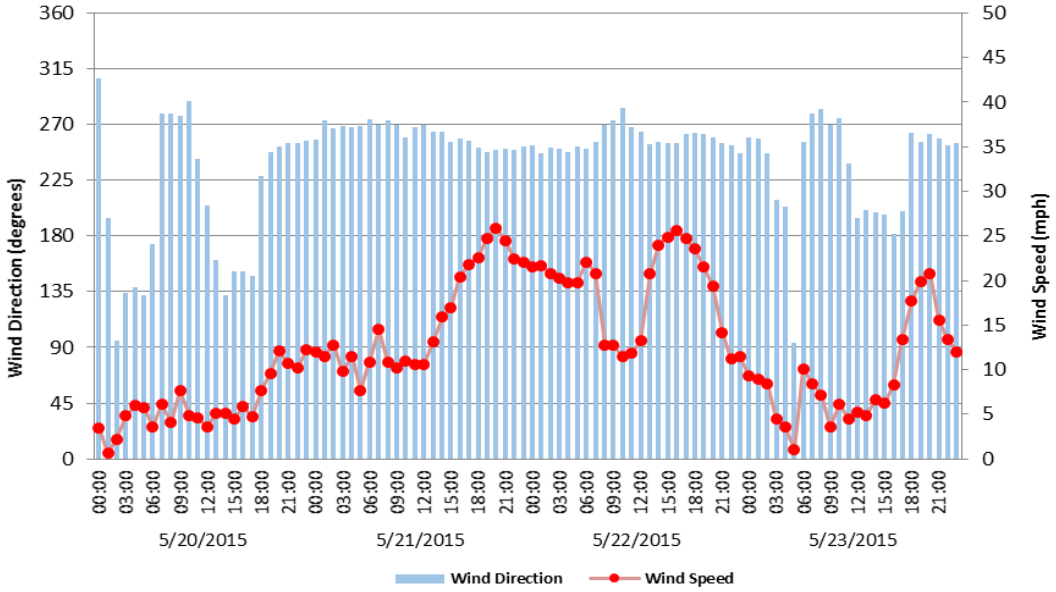


FIGURE B-7
NILAND (ENGLISH RD)
WIND SPEED & DIRECTION
MAY 20, 2015 THROUGH MAY 23, 2015



Figs B-6 & B-7: Niland meteorological data for May 20, 2015 through May 23, 2015, shows a dramatic increase in wind speed staring the afternoon hours on May 21, 2015 indicating the impact of wind event. Data from the EPA's AQS data bank

FIGURE B-8
IMPERIAL COUNTY AIRPORT WIND ROSE
MAY 21, 2015 AND MAY 22, 2015

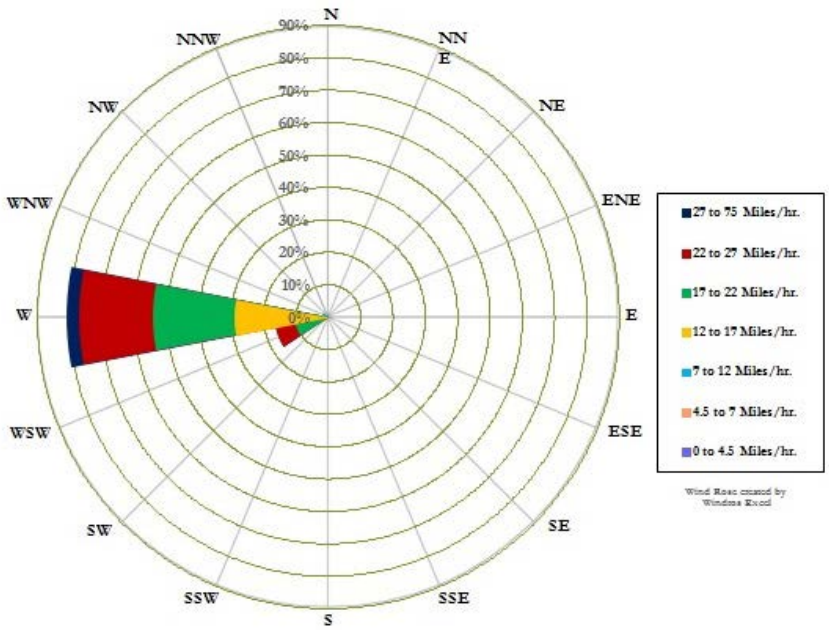
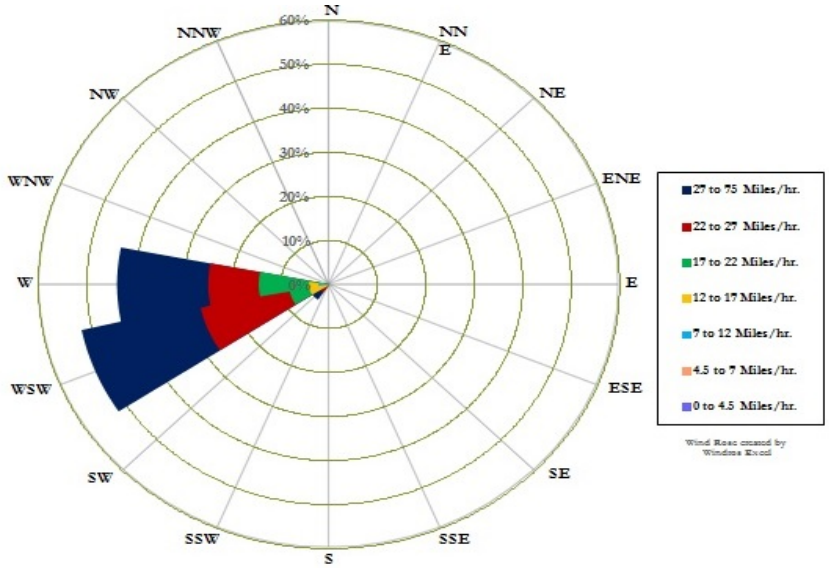


FIGURE B-9
EL CENTRO NAF WIND ROSE
MAY 21, 2015 AND MAY 22, 2015



Figs B-8 & B-9: Strong west and west-southwest winds were recorded at the two airfields in Imperial County

EASTERN RIVERSIDE COUNTY STATIONS

FIGURE B-10
PALM SPRINGS AIRPORT (KPSP)
WIND SPEED, GUSTS AND DIRECTION
MAY 20, 2015 THROUGH MAY 23, 2015

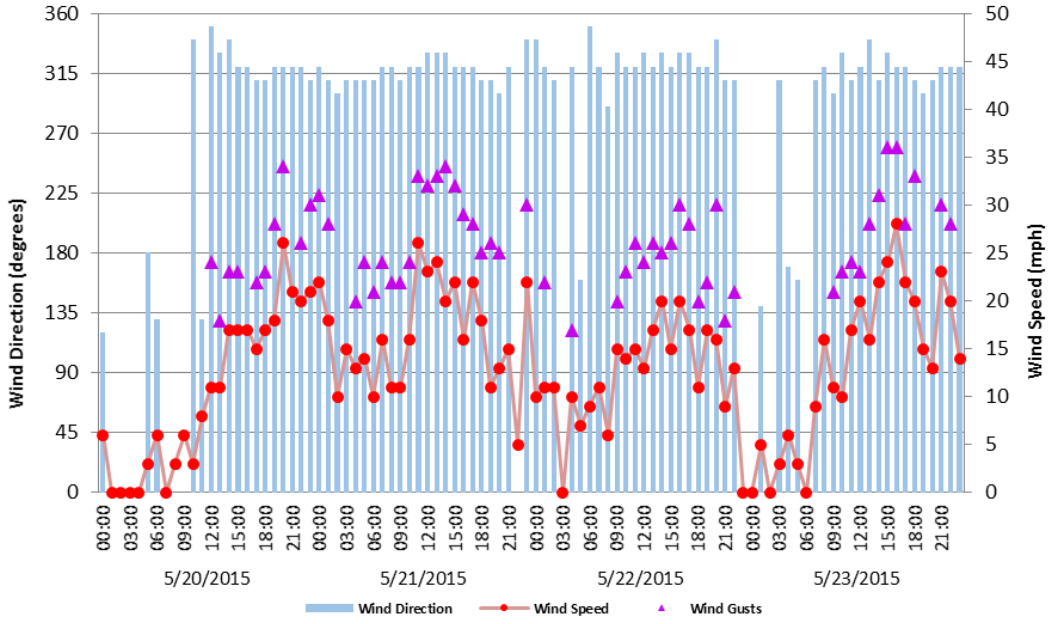


FIGURE B-11
JACQUELINE COCHRAN REGIONAL AIRPORT (KTRM)
WIND SPEED, GUSTS AND DIRECTION
MAY 20, 2015 THROUGH MAY 23, 2015

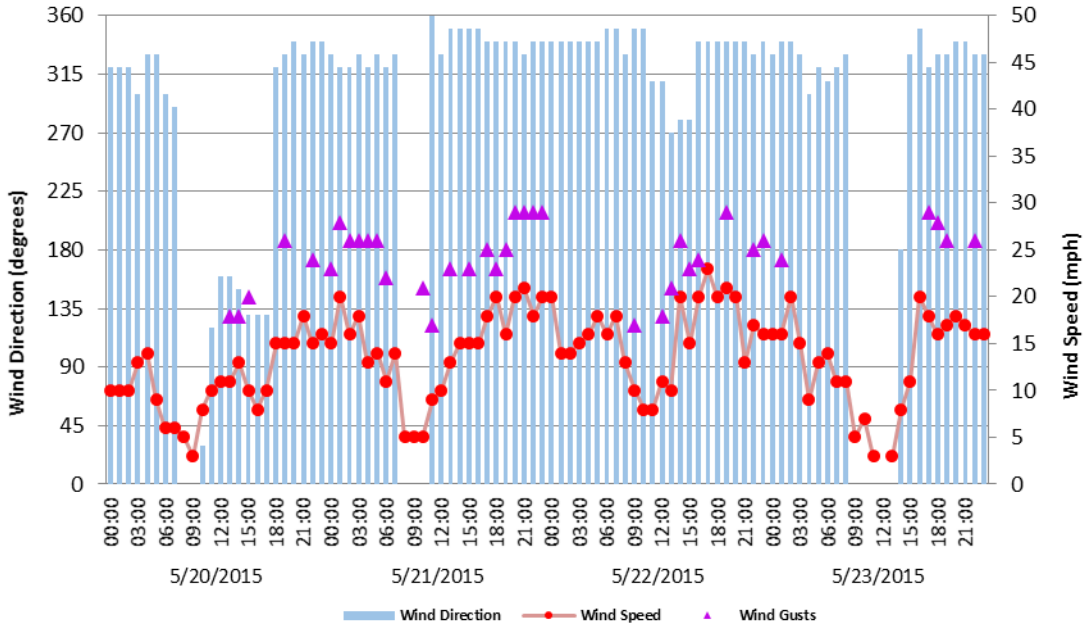
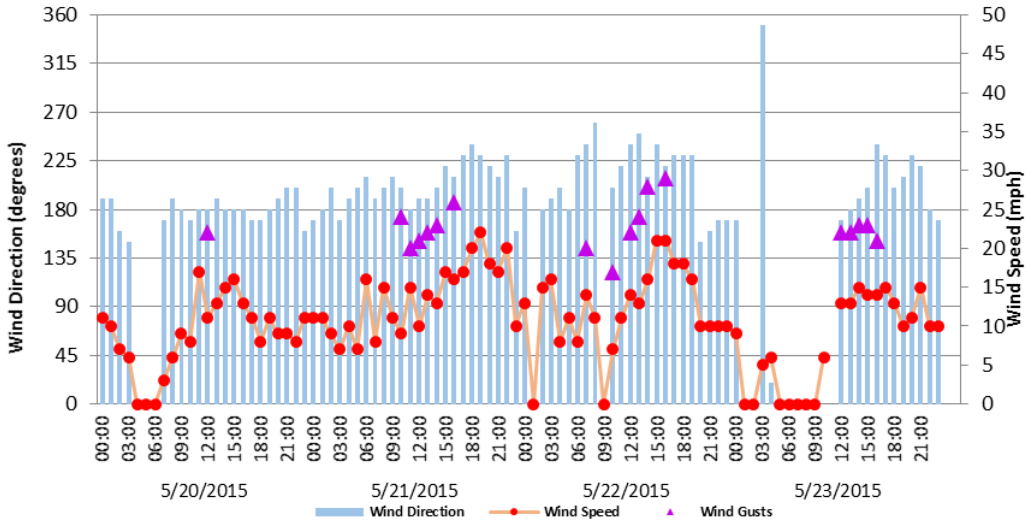


FIGURE B-12
BLYTHE AIRPORT (KBLH)
WIND SPEED, GUSTS AND DIRECTION
MAY 20, 2015 THROUGH MAY 23, 2015



Figs B-10 through B-12: Palm Springs Airport (KPSP), Jacqueline Cochran Airport (KTRM), and Blythe Airport (KBLH) show an increase in wind speeds May 21, 2015 through May 22, 2015. KPSP and KTRM are northwest of Niland and Brawley; KBLH is northeast

SOUTHWESTERN ARIZONA

FIGURE B-13
YUMA, ARIZONA MCAS
WIND SPEED, GUSTS AND DIRECTION
MAY 20, 2015 THROUGH MAY 23, 2015

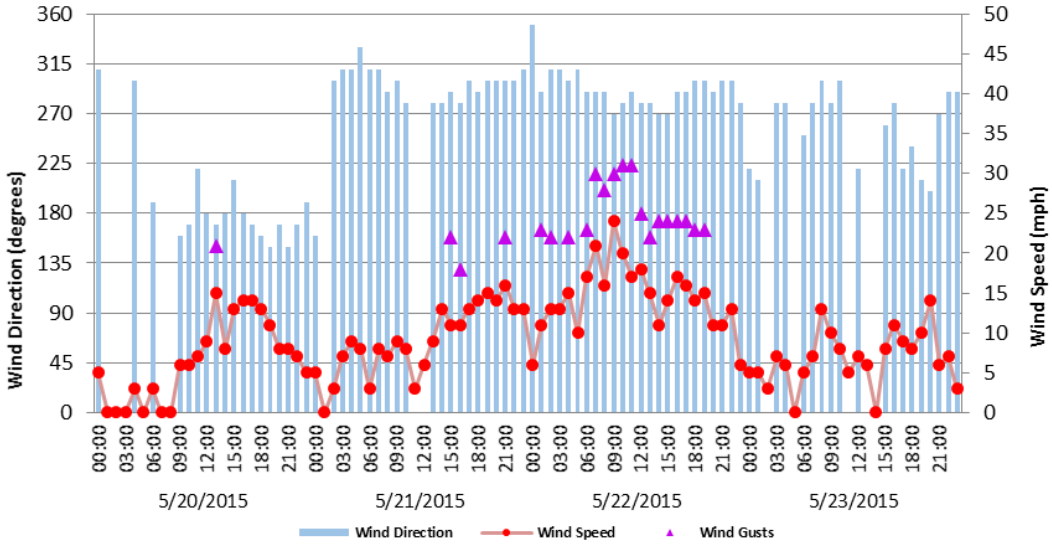


Fig B-13: KNYL shows a similar trend in wind speeds as the preceding sites

UPSTREAM WIND SITES

FIGURE B-14
FISH CREEK MOUNTAINS
WIND SPEED, GUSTS AND DIRECTION
MAY 20, 2015 THROUGH MAY 23, 2015

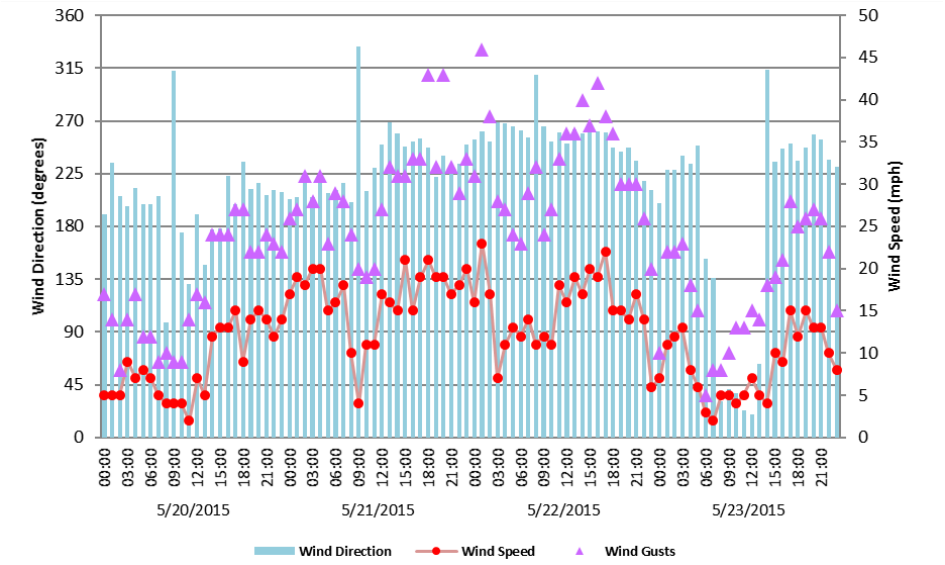


Fig B-14: The Fish Creek Mountains site is to the west of Brawley, and WSW of Niland. MesoWest Station ID: FHCC1

FIGURE B-15
OCOTILLO WELLS
WIND SPEED, GUSTS AND DIRECTION
MAY 20, 2015 THROUGH MAY 23, 2015

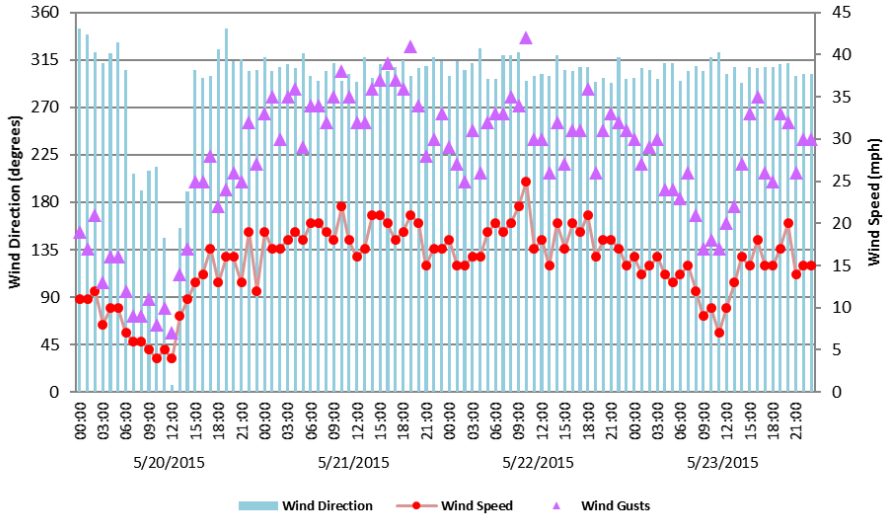


Fig B-15: Ocotillo Wells is to the WSW of Niland, and WNW of Brawley. MesoWest Station ID: KD6RSQ-5

FIGURE B-16
NAVAL TEST BASE
WIND SPEED AND DIRECTION
MAY 20, 2015 THROUGH MAY 23, 2015

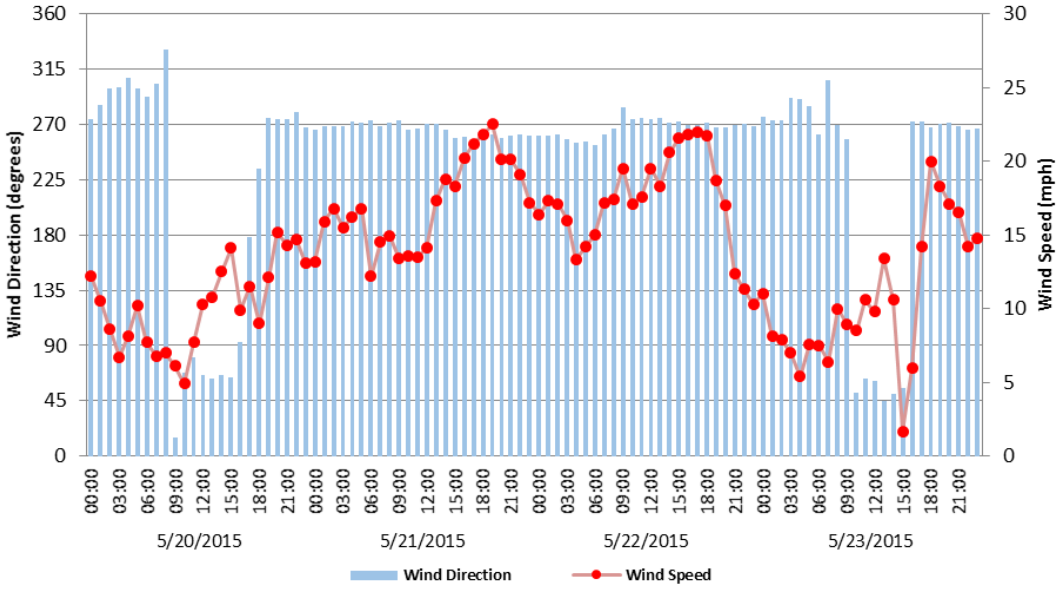


Fig B-19: The Naval Test Base site is to the WSW of Niland, and WNW of Brawley

FIGURE B-20
SUNRISE-OCOTILLO
WIND SPEED, GUSTS AND DIRECTION
MAY 20, 2015 THROUGH MAY 23, 2015

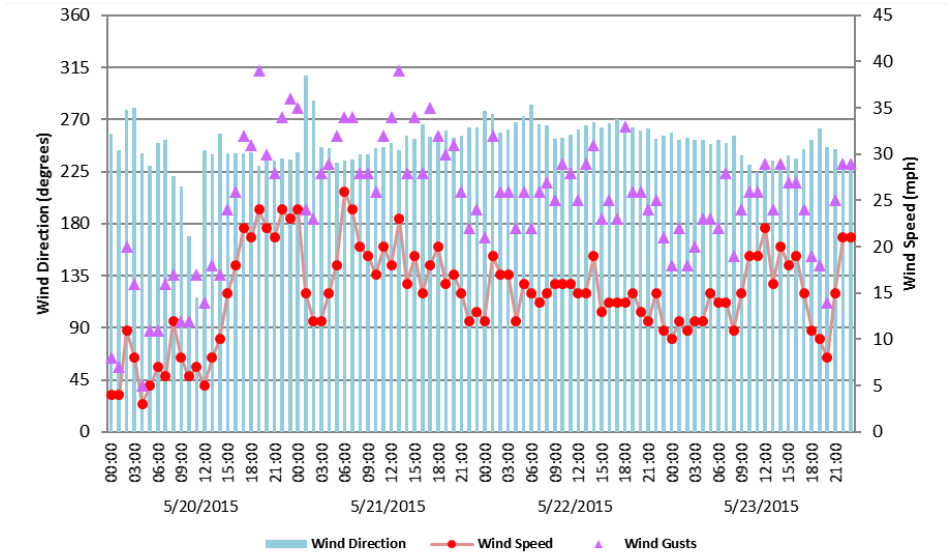


Fig B-20: Sunrise-Ocotillo is to the SW of Niland and Brawley. MesoWest Station ID: IMPSD

FIGURE B-21
IMPERIAL COUNTY AIRPORT QCLCD

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

QUALITY CONTROLLED LOCAL CLIMATOLOGICAL DATA
(final)
HOURLY OBSERVATIONS TABLE
IMPERIAL COUNTY AIRPORT (03144)
IMPERIAL, CA
(05/2015)

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 (F)	Dry Bulb Temp (C)	Wet Bulb Temp (F)	Wet Bulb Temp (C)	Dew Point Temp (F)	Dew Point Temp (C)	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)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
21	0053	12	CLR	10.00		66	18.9	54	12.4	44	6.7	45	21	270		29.84			29.78	AA		29.78
21	0153	12	CLR	10.00		65	18.3	54	12.2	44	6.7	47	17	270	24	29.84			29.78	AA		29.78
21	0253	12	CLR	10.00		64	17.8	53	11.5	42	5.6	45	15	270		29.84			29.78	AA		29.78
21	0353	12	CLR	10.00		64	17.8	53	11.5	42	5.6	45	16	270		29.85			29.79	AA		29.79
21	0453	12	CLR	10.00		63	17.2	53	11.5	43	6.1	48	16	280		29.85			29.79	AA		29.79
21	0553	12	CLR	10.00		65	18.3	54	12.2	44	6.7	47	16	280	23	29.86			29.80	AA		29.80
21	0653	12	CLR	10.00		66	18.9	54	12.2	43	6.1	43	17	270	23	29.87			29.81	AA		29.81
21	0753	12	CLR	10.00		71	21.7	56	13.1	42	5.6	35	20	280		29.87			29.81	AA		29.81
21	0853	12	CLR	10.00		73	22.8	57	13.6	42	5.6	33	17	280	28	29.88			29.81	AA		29.82
21	0953	12	CLR	10.00		76	24.4	58	14.3	42	5.6	30	21	270	30	29.88			29.82	AA		29.82
21	1053	12	CLR	10.00		77	25.0	57	14.1	40	4.4	27	18	260	28	29.88			29.81	AA		29.82
21	1153	12	CLR	10.00		78	25.6	57	13.9	38	3.3	24	21	270	29	29.87			29.80	AA		29.81
21	1253	12	CLR	10.00		78	25.6	58	14.3	40	4.4	26	24	270	32	29.86			29.79	AA		29.80
21	1353	12	CLR	10.00		78	25.6	58	14.3	40	4.4	26	26	260	38	29.84			29.78	AA		29.78
21	1453	12	CLR	10.00		78	25.6	58	14.3	40	4.4	26	23	270	37	29.83			29.77	AA		29.77
21	1553	12	CLR	10.00		76	24.4	57	14.0	41	5.0	29	28	260	36	29.82			29.76	AA		29.76
21	1653	12	CLR	10.00		74	23.3	56	13.4	40	4.4	29	28	260	38	29.82			29.75	AA		29.76
21	1753	12	CLR	10.00		71	21.7	55	12.9	41	5.0	34	24	260	31	29.84			29.78	AA		29.78
21	1853	12	CLR	10.00		67	19.4	54	12.0	41	5.0	39	24	260	37	29.86			29.80	AA		29.80
21	1953	12	CLR	10.00		66	18.9	54	12.0	42	5.6	42	24	270	36	29.87			29.81	AA		29.81
21	2053	12	CLR	10.00		65	18.3	53	11.5	41	5.0	42	25	270	36	29.89			29.83	AA		29.83
21	2153	12	CLR	10.00		63	17.2	52	11.0	41	5.0	45	22	270	32	29.90			29.84	AA		29.84
21	2253	12	CLR	10.00		63	17.2	53	11.5	43	6.1	48	22	270	34	29.91			29.85	AA		29.85
21	2353	12	CLR	10.00		63	17.2	52	11.2	42	5.6	46	26	270	39	29.91			29.85	AA		29.85

Dynamically generated Mon Mar 21 16:42:04 EDT 2016 via http://www.ncdc.noaa.gov/qclcd/QCLCD

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

QUALITY CONTROLLED LOCAL CLIMATOLOGICAL DATA
(final)
HOURLY OBSERVATIONS TABLE
IMPERIAL COUNTY AIRPORT (03144)
IMPERIAL, CA
(05/2015)

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 (F)	Dry Bulb Temp (C)	Wet Bulb Temp (F)	Wet Bulb Temp (C)	Dew Point Temp (F)	Dew Point Temp (C)	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)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
22	0053	12	CLR	10.00		63	17.2	53	11.7	44	6.7	50	20	260	25	29.91			29.85	AA		29.85
22	0153	12	CLR	10.00		63	17.2	53	11.5	43	6.1	48	21	260	30	29.91			29.85	AA		29.85
22	0253	12	CLR	10.00		63	17.2	53	11.5	43	6.1	48	23	270	36	29.93			29.87	AA		29.87
22	0353	12	CLR	10.00		61	16.1	51	10.7	42	5.6	50	14	270		29.94			29.88	AA		29.88
22	0453	12	CLR	10.00		62	16.7	52	11.0	42	5.6	48	21	250	29	29.95			29.89	AA		29.89
22	0553	12	CLR	10.00		63	17.2	53	11.5	43	6.1	48	21	250	30	29.97			29.91	AA		29.91
22	0653	12	CLR	10.00		66	18.9	54	12.2	43	6.1	43	20	250	29	29.98			29.91	AA		29.92
22	0753	12	CLR	10.00		69	20.6	55	12.7	42	5.6	38	18	280	26	29.98			29.91	AA		29.92
22	0853	12	CLR	10.00		71	21.7	56	13.2	42	5.6	35	25	250	33	29.98			29.91	AA		29.92
22	0953	12	CLR	10.00		73	22.8	56	13.4	41	5.0	32	13	280	26	29.98			29.91	AA		29.92
22	1053	12	CLR	10.00		75	23.9	57	13.6	40	4.4	28	10	300	23	29.97			29.91	AA		29.91
22	1153	12	BKN080 BKN090	10.00		76	24.4	57	13.9	40	4.4	27	13	280	26	29.96			29.90	AA		29.90
22	1253	12	BKN080	10.00		78	25.6	59	14.7	42	5.6	28	26	250	36	29.95			29.89	AA		29.89
22	1353	12	FEW075	10.00		78	25.6	59	14.7	42	5.6	28	21	250	30	29.95			29.89	AA		29.89
22	1453	12	CLR	10.00		76	24.4	58	14.3	42	5.6	30	24	260	32	29.94			29.88	AA		29.88
22	1553	12	CLR	10.00		76	24.4	58	14.5	43	6.1	31	23	260	33	29.94			29.88	AA		29.88
22	1653	12	CLR	10.00		74	23.3	58	14.3	44	6.7	34	22	250	33	29.95			29.88	AA		29.89
22	1753	12	CLR	10.00		71	21.7	57	13.8	45	7.2	39	23	250	32	29.95			29.89	AA		29.89
22	1853	12	CLR	10.00		68	20.0	56	13.1	45	7.2	44	16	260		29.97			29.91	AA		29.91
22	1953	12	CLR	10.00		66	18.9	55	12.9	46	7.8	49	18	260	26	29.98			29.92	AA		29.92
22	2053	12	CLR	10.00		66	18.9	55	12.7	45	7.2	47	18	260		30.00			29.94	AA		29.94
22	2153	12	CLR	10.00		65	18.3	54	12.2	44	6.7	47	16	260		30.00			29.93	AA		29.94
22	2253	12	CLR	10.00		64	17.8	54	12.0	44	6.7	48	13	260		30.00			29.94	AA		29.94
22	2353	12	CLR	10.00		63	17.2	53	11.7	44	6.7	50	15	260		30.00			29.94	AA		29.94

Dynamically generated Mon Mar 21 16:42:24 EDT 2016 via http://www.ncdc.noaa.gov/qclcd/QCLCD

FIGURE B-22
EL CENTRO NAF QCLCD

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
(05/2015)

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 (F)	Dry Bulb Temp (C)	Wet Bulb Temp (F)	Wet Bulb Temp (C)	Dew Point Temp (F)	Dew Point Temp (C)	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)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
21	0056	5	CLR	10.00		66	18.9	54	12.2	43	6.1	43	25	270		29.85			29.85	AA		29.81
21	0156	5	CLR	10.00		66	18.9	54	12.2	43	6.1	43	30	250	37	29.85			29.85	AA		29.81
21	0256	5	CLR	10.00		66	18.9	53	11.5	40	4.4	39	22	260		29.84			29.85	AA		29.80
21	0356	5	CLR	10.00		65	18.3	53	11.5	41	5.0	42	24	250	31	29.85			29.86	AA		29.81
21	0456	5	BKN250	10.00		64	17.8	52	11.3	41	5.0	43	18	260		29.85			29.86	AA		29.81
21	0556	5	FEW070 SCT180 BKN250	10.00		66	18.9	54	12.0	42	5.6	42	18	270		29.87			29.87	AA		29.83
21	0656	5	FEW060 SCT180 SCT250	10.00		68	20.0	54	12.2	41	5.0	38	21	260		29.88			29.88	AA		29.84
21	0756	5	FEW070 SCT250	10.00		73	22.8	56	13.2	40	4.4	30	25	260		29.88			29.88	AA		29.84
21	0856	5	FEW060 SCT250	10.00		75	23.9	57	13.6	40	4.4	28	25	260		29.88			29.88	AA		29.84
21	0956	5	FEW060 FEW180 SCT250	10.00		77	25.0	57	13.9	39	3.9	26	25	250		29.88			29.89	AA		29.84
21	1056	5	FEW060 FEW180 SCT250	10.00		78	25.6	57	14.1	39	3.9	25	28	250	33	29.88			29.88	AA		29.84
21	1156	5	FEW060 SCT250	10.00		80	26.7	58	14.3	38	3.3	22	29	240	38	29.88			29.88	AA		29.84
21	1256	5	FEW060 FEW250	10.00		79	26.1	58	14.3	39	3.9	24	30	250	38	29.87			29.88	AA		29.83
21	1356	5	FEW060 FEW250	10.00		79	26.1	58	14.3	39	3.9	24	33	250	41	29.86			29.86	AA		29.82
21	1456	5	FEW060 FEW250	10.00		78	25.6	57	13.9	38	3.3	24	33	260	41	29.85			29.85	AA		29.81
21	1556	5	FEW060	10.00		77	25.0	57	13.9	39	3.9	26	36	260	43	29.84			29.84	AA		29.80
21	1656	5	FEW060	10.00		74	23.3	56	13.2	39	3.9	28	31	250	38	29.83			29.84	AA		29.79
21	1756	5	FEW060 FEW250	10.00		71	21.7	55	12.7	40	4.4	33	32	250	39	29.85			29.85	AA		29.81
21	1856	5	FEW060 FEW250	10.00		68	20.0	54	12.0	40	4.4	36	37	250	45	29.87			29.88	AA		29.83
21	1956	5	FEW250	10.00		66	18.9	53	11.7	41	5.0	40	30	260	36	29.88			29.89	AA		29.84
21	2056	5	SCT250	10.00		65	18.3	53	11.5	41	5.0	42	30	260	41	29.90			29.91	AA		29.86
21	2156	5	SCT250	10.00		64	17.8	52	10.8	39	3.9	40	29	260	37	29.91			29.92	AA		29.87
21	2256	5	CLR	10.00		64	17.8	53	11.5	42	5.6	45	29	260	40	29.92			29.93	AA		29.88
21	2356	5	CLR	10.00		64	17.8	53	11.5	42	5.6	45	29	270	37	29.92			29.92	AA		29.88

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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
(05/2015)

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 (F)	Dry Bulb Temp (C)	Wet Bulb Temp (F)	Wet Bulb Temp (C)	Dew Point Temp (F)	Dew Point Temp (C)	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)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
22	0056	5	CLR	10.00		64	17.8	53	11.7	43	6.1	47	28	250	37	29.92			29.92	AA		29.88
22	0156	5	CLR	10.00		64	17.8	53	11.5	42	5.6	45	24	250	29	29.93			29.93	AA		29.89
22	0256	5	CLR	10.00		63	17.2	52	11.2	42	5.6	46	25	250		29.95			29.95	AA		29.91
22	0356	5	CLR	10.00		63	17.2	52	10.8	40	4.4	43	28	250	34	29.94			29.95	AA		29.90
22	0456	5	FEW060	10.00		63	17.2	52	11.0	41	5.0	45	29	240	37	29.96			29.96	AA		29.92
22	0556	5	FEW060	10.00		64	17.8	53	11.5	42	5.6	45	24	240		29.98			29.98	AA		29.94
22	0656	5	FEW060 FEW250	10.00		67	19.4	54	12.0	41	5.0	39	26	250		29.98			29.99	AA		29.94
22	0756	5	FEW060 FEW250	10.00		70	21.1	55	12.7	41	5.0	35	20	270		29.99			29.99	AA		29.95
22	0856	5	FEW060	10.00		72	22.2	55	12.7	39	3.9	30	10	280	31	29.99			29.99	AA		29.95
22	0956	5	FEW060	10.00		74	23.3	56	13.2	39	3.9	28	16	280		29.98			29.99	AA		29.94
22	1056	5	FEW060	10.00		76	24.4	57	13.7	39	3.9	26	13	250	22	29.98			29.98	AA		29.94
22	1156	5	SCT080	10.00		78	25.6	58	14.3	40	4.4	26	28	240		29.97			29.97	AA		29.93
22	1256	5	SCT080	10.00		77	25.0	57	14.1	40	4.4	27	26	230	32	29.96			29.96	AA		29.92
22	1356	5	SCT080	10.00		78	25.6	58	14.3	40	4.4	26	28	230	37	29.96			29.96	AA		29.92
22	1456	5	FEW080	10.00		78	25.6	58	14.5	41	5.0	27	28	260	37	29.95			29.96	AA		29.91
22	1556	5	FEW080	10.00		76	24.4	57	14.1	41	5.0	29	29	260	37	29.96			29.96	AA		29.92
22	1656	5	FEW080	10.00		75	23.9	57	14.1	42	5.6	31	23	260		29.96			29.96	AA		29.92
22	1756	5	CLR	10.00		72	22.2	57	13.6	43	6.1	35	24	250	33	29.96			29.96	AA		29.92
22	1856	5	CLR	10.00		69	20.6	56	13.4	45	7.2	42	26	250	36	29.97			29.98	AA		29.93
22	1956	5	CLR	10.00		67	19.4	55	12.9	45	7.2	45	25	260	33	29.99			29.99	AA		29.95
22	2056	5	CLR	10.00		66	18.9	54	12.2	43	6.1	43	24	250		30.01			30.01	AA		29.97
22	2156	5	CLR	10.00		66	18.9	54	12.2	43	6.1	43	22	250		30.01			30.01	AA		29.97
22	2256	5	CLR	10.00		65	18.3	54	12.0	43	6.1	45	20	250		30.01			30.01	AA		29.97
22	2356	5	CLR	10.00		64	17.8	53	11.7	43	6.1	47	17	240		30.01			30.01	AA		29.97

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