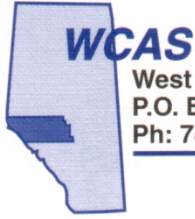


**TransAlta Utilities Corporation  
Continuous Ambient Air Quality  
Monitoring Program  
Annual Summary for 2013**

**Prepared by:**

**West Central Airshed Society  
Drayton Valley, Alberta**



West Central Airshed Society  
P.O. Box 7421, Drayton Valley, Alberta T7A 1S6  
Ph: 780-514-3533 • Fax: 780-514-3563 • www.wcas.ca

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January 10<sup>th</sup>, 2014

Attention: Mr. Ken Woollard  
GBS Building  
RR#1, Site 4, Box #2  
Duffield Alberta  
T0E 0N0

Dear Sir:

**Re: Annual Ambient Air Quality Monitoring Report January – December 2013.  
For TransAlta Utilities Corporation**

The West Central Airshed Society (WCAS) presents the 2013 Annual Report containing ambient air quality and meteorological information from the following sites:

Network Stations are	AMS 907	Power
Identified as:	AMS 908	Meadows
	AMS 959	Wagner2

The following is a list of the reported ambient air and meteorological parameters measured at each site location:

**AMS 907 (Power)**

SO<sub>2</sub>, NO/ NO<sub>2</sub>/ NO<sub>x</sub>, Particulate Matter (2.5 microns), Wind Speed and Direction, Relative Humidity, and External Temperature.

**AMS 908 (Meadows)**

SO<sub>2</sub>, NO/ NO<sub>2</sub>/ NO<sub>x</sub>, Wind Speed and Direction, Relative Humidity, and External Temperature.

**AMS 959 (Wagner2)**

SO<sub>2</sub>, NO/ NO<sub>2</sub>/ NO<sub>x</sub>, Wind Speed and Direction, Relative Humidity, and External Temperature.

If additional information is required please contact Patrick Andersen at (780) 514-3533.

Sincerely,



Patrick Andersen  
Environmental Specialist



Greg Swain  
Senior Technologist



Jeff McClintock  
Intermediate Technologist

**TransAlta Utilities Corporation  
Frequency Distribution Charts  
Wind Speed and Direction  
Year 2013**

West Central Airshed Society - Power (AMS 907)  
 Annual Summary for 2013  
 Percentage Frequency Distribution of Wind

Speed (kph)							
Direction	>1 to 5	>5 to 11	>11 to 19	>19 to 28	>28 to 38	>38	Totals
N	0.71	1.30	1.61	0.47	0.02	0.00	4.11
NNE	1.11	2.16	1.21	0.35	0.01	0.00	4.84
NE	1.42	2.17	0.54	0.25	0.01	0.00	4.39
ENE	0.83	1.59	0.51	0.05	0.00	0.00	2.98
E	0.83	1.06	0.56	0.05	0.00	0.00	2.50
ESE	0.54	1.67	0.66	0.21	0.06	0.00	3.14
SE	1.04	2.91	2.59	1.47	0.27	0.01	8.29
SSE	0.98	3.55	4.18	0.98	0.10	0.00	9.79
S	1.17	3.71	2.02	0.18	0.00	0.00	7.08
SSW	1.27	2.69	1.46	0.11	0.00	0.00	5.53
SW	1.01	2.93	2.07	0.13	0.00	0.00	6.14
WSW	1.29	3.03	1.98	0.08	0.00	0.00	6.38
W	1.18	3.60	3.22	0.23	0.00	0.00	8.23
WNW	1.26	3.82	3.25	1.03	0.10	0.00	9.46
NW	1.03	2.43	4.00	2.77	0.81	0.15	11.19
NNW	0.71	1.57	2.39	0.83	0.21	0.00	5.71
Totals	15.67	38.62	29.86	8.36	1.38	0.16	94.05

Percent Calm	5.95
Number of Data Values	8750
Hours in Time Period	8760

West Central Airshed Society - Meadows (AMS 908)  
 Annual Summary for 2013  
 Percentage Frequency Distribution of Wind

Speed (kph)							
Direction	>1 to 5	>5 to 11	>11 to 19	>19 to 28	>28 to 38	>38	Totals
N	0.92	1.51	0.53	0.06	0.00	0.00	3.02
NNE	0.84	1.57	0.68	0.08	0.00	0.00	3.17
NE	1.39	1.88	0.77	0.14	0.07	0.00	4.25
ENE	1.76	2.34	0.98	0.17	0.13	0.00	5.38
E	2.40	2.30	1.64	0.15	0.00	0.00	6.49
ESE	3.31	4.15	1.85	0.75	0.13	0.01	10.20
SE	1.80	2.46	2.57	1.12	0.25	0.03	8.23
SSE	0.92	1.24	1.16	0.20	0.03	0.00	3.55
S	1.07	0.73	0.30	0.01	0.00	0.00	2.11
SSW	0.81	0.81	0.33	0.00	0.00	0.00	1.95
SW	1.25	0.92	0.54	0.24	0.00	0.00	2.95
WSW	3.11	3.08	0.71	0.09	0.01	0.00	7.00
W	4.42	7.99	1.86	0.14	0.05	0.01	14.47
WNW	1.92	3.34	4.76	1.87	0.21	0.00	12.10
NW	0.90	2.11	3.95	1.70	0.24	0.03	8.93
NNW	0.73	2.30	1.90	0.31	0.01	0.00	5.25
Totals	26.82	36.43	22.63	6.72	1.12	0.08	93.80

Percent Calm	6.20
Number of Data Values	8714
Hours in Time Period	8760

West Central Airshed Society - Wagner2 (AMS 959)  
 Annual Summary for 2013  
 Percentage Frequency Distribution of Wind

Speed (kph)							
Direction	>1 to 5	>5 to 11	>11 to 19	>19 to 28	>28 to 38	>38	Totals
N	3.66	0.18	0.00	0.00	0.00	0.00	3.84
NNE	2.74	0.53	0.00	0.00	0.00	0.00	3.27
NE	2.03	0.33	0.00	0.00	0.00	0.00	2.36
ENE	1.88	0.34	0.00	0.00	0.00	0.00	2.22
E	3.19	2.18	0.31	0.00	0.00	0.00	5.68
ESE	5.27	3.24	1.69	0.16	0.01	0.00	10.37
SE	3.85	2.00	1.06	0.26	0.00	0.00	7.17
SSE	1.95	0.72	0.64	0.02	0.00	0.00	3.33
S	1.51	0.63	0.19	0.00	0.00	0.00	2.33
SSW	0.72	0.09	0.00	0.00	0.00	0.00	0.81
SW	0.70	0.05	0.00	0.00	0.00	0.00	0.75
WSW	1.09	0.16	0.00	0.00	0.00	0.00	1.25
W	2.37	0.56	0.03	0.01	0.00	0.00	2.97
WNW	4.20	4.26	0.80	0.00	0.00	0.00	9.26
NW	7.75	4.68	1.97	0.08	0.00	0.00	14.48
NNW	9.15	2.12	0.18	0.00	0.00	0.00	11.45
Totals	42.91	19.95	6.69	0.53	0.01	0.00	70.09

Percent Calm	29.91
Number of Data Values	8734
Hours in Time Period	8760

**TransAlta Utilities Corporation  
Frequency Distribution Charts  
SO<sub>2</sub> Monthly Averages  
Year 2013**



West Central Airshed Society - Power (AMS 907)  
 Annual Summary for 2013  
 SO2 (ppb)

Month	Number of Data	Mean	Maximum 24-Hour Value	Maximum 1-Hour Value	Operational Time (%)	Number 24-Hour Violations	Number 1-Hour Violations	Percent of Data in each Concentration Range					
								<=0.02	>0.02-0.06	>0.06-0.11	>0.11-0.17	>0.17-0.34	>0.34
January	709	0.274	5.008	37.224	100.0	0	0	99.72	0.28	0.00	0.00	0.00	0.00
February	639	0.160	1.314	7.251	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
March	710	0.416	2.490	17.622	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
April	686	0.115	0.996	12.483	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
May	705	0.335	2.599	28.217	99.7	0	0	99.72	0.28	0.00	0.00	0.00	0.00
June	685	0.120	0.983	6.145	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
July	702	0.180	1.807	12.134	99.3	0	0	100.00	0.00	0.00	0.00	0.00	0.00
August	706	0.220	1.057	11.992	99.6	0	0	100.00	0.00	0.00	0.00	0.00	0.00
September	685	0.325	1.307	13.301	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
October	709	0.301	3.036	23.309	100.0	0	0	99.86	0.14	0.00	0.00	0.00	0.00
November	686	0.075	0.617	4.442	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
December	709	0.235	1.365	7.990	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
Annual	8331	0.231	5.008	37.224	99.9	0	0	99.94	0.06	0.00	0.00	0.00	0.00

West Central Airshed Society - Meadows (AMS 908)  
 Annual Summary for 2013  
 SO2 (ppb)

Month	Number of Data	Mean	Maximum 24-Hour Value	Maximum 1-Hour Value	Operational Time (%)	Number 24-Hour Violations	Number 1-Hour Violations	Percent of Data in each Concentration Range					
								<=0.02	>0.02-0.06	>0.06-0.11	>0.11-0.17	>0.17-0.34	>0.34
January	710	0.546	6.535	20.890	100.0	0	0	99.86	0.14	0.00	0.00	0.00	0.00
February	640	0.324	2.449	9.355	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
March	707	0.585	6.012	23.278	100.0	0	0	99.72	0.28	0.00	0.00	0.00	0.00
April	685	0.817	6.792	25.737	100.0	0	0	99.56	0.44	0.00	0.00	0.00	0.00
May	709	0.884	4.456	15.606	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
June	686	0.305	2.624	17.891	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
July	706	0.874	10.286	40.623	100.0	0	0	99.01	0.99	0.00	0.00	0.00	0.00
August	672	0.450	3.864	13.870	94.8	0	0	100.00	0.00	0.00	0.00	0.00	0.00
September	687	0.292	2.172	20.853	100.0	0	0	99.85	0.15	0.00	0.00	0.00	0.00
October	700	0.124	1.639	12.752	98.9	0	0	100.00	0.00	0.00	0.00	0.00	0.00
November	686	0.199	0.985	4.673	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
December	709	0.394	3.021	18.115	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
Annual	8297	0.485	10.286	40.623	99.5	0	0	99.83	0.17	0.00	0.00	0.00	0.00

West Central Airshed Society - Wagner2 (AMS 959)  
 Annual Summary for 2013  
 SO2 (ppb)

Month	Number of Data	Mean	Maximum 24-Hour Value	Maximum 1-Hour Value	Operation Time (%)	Number 24-Hour Violations	Number 1-Hour Violation	Percent of Data in each Concentration Range					
								<=0.02	>0.02-0.06	>0.06-0.11	>0.11-0.17	>0.17-0.34	>0.34
January	710	0.553	2.889	23.371	100.0	0	0	99.86	0.14	0.00	0.00	0.00	0.00
February	640	0.419	2.995	11.133	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
March	708	0.570	3.327	18.296	99.7	0	0	100.00	0.00	0.00	0.00	0.00	0.00
April	675	0.529	2.558	18.720	98.8	0	0	100.00	0.00	0.00	0.00	0.00	0.00
May	708	0.885	3.567	29.208	100.0	0	0	99.86	0.14	0.00	0.00	0.00	0.00
June	683	0.877	2.550	19.531	99.6	0	0	100.00	0.00	0.00	0.00	0.00	0.00
July	706	1.492	4.608	41.222	100.0	0	0	99.29	0.71	0.00	0.00	0.00	0.00
August	696	0.973	4.762	32.338	98.5	0	0	99.14	0.86	0.00	0.00	0.00	0.00
September	684	1.214	3.419	23.673	100.0	0	0	99.56	0.44	0.00	0.00	0.00	0.00
October	706	1.460	4.571	33.936	99.6	0	0	98.87	1.13	0.00	0.00	0.00	0.00
November	685	0.115	1.179	9.181	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
December	709	0.594	6.128	34.226	100.0	0	0	99.58	0.42	0.00	0.00	0.00	0.00
Annual	8310	0.811	6.128	41.222	99.7	0	0	99.68	0.32	0.00	0.00	0.00	0.00

**TransAlta Utilities Corporation  
Frequency Distribution Charts  
NO<sub>2</sub> Monthly Averages  
Year 2013**

West Central Airshed Society - Power (AMS 907)  
 Annual Summary for 2013  
 NO2 (ppb)

Month	Number of Data	Mean	Maximum 24-Hour Value	Maximum 1-Hour Value	Operational Time (%)	Number 24-Hour Violations	Number 1-Hour Violations	Percent of Data in each Concentration Range			
								<=0.05	>0.05-0.11	>0.11-0.21	>0.21
January	709	4.339	14.615	35.739	100.0	0	0	100.00	0	0	0
February	639	4.960	15.638	30.233	100.0	0	0	100.00	0	0	0
March	709	5.448	10.682	23.052	100.0	0	0	100.00	0	0	0
April	685	2.235	4.737	12.779	100.0	0	0	100.00	0	0	0
May	705	1.889	5.663	24.192	99.7	0	0	100.00	0	0	0
June	684	1.614	4.760	9.913	100.0	0	0	100.00	0	0	0
July	699	1.645	3.607	14.581	99.3	0	0	100.00	0	0	0
August	705	2.607	5.301	12.157	99.6	0	0	100.00	0	0	0
September	685	2.755	6.987	13.969	100.0	0	0	100.00	0	0	0
October	709	2.584	7.970	34.310	100.0	0	0	100.00	0	0	0
November	686	5.270	13.297	34.325	100.0	0	0	100.00	0	0	0
December	708	4.840	16.806	28.808	100.0	0	0	100.00	0	0	0
Annual	8323	3.343	16.806	35.739	99.9	0	0	100.00	0	0	0

West Central Airshed Society - Meadows (AMS 908)  
 Annual Summary for 2013  
 NO2 (ppb)

Month	Number of Data	Mean	Maximum 24-Hour Value	Maximum 1-Hour Value	Operational Time (%)	Number 24-Hour Violations	Number 1-Hour Violations	Percent of Data in each Concentration Range			
								<=0.05	>0.05-0.11	>0.11-0.21	>0.21
January	708	10.657	28.284	41.718	100.0	0	0	100.00	0	0	0
February	640	12.046	25.316	39.362	100.0	0	0	100.00	0	0	0
March	707	9.434	18.191	48.551	100.0	0	0	100.00	0	0	0
April	684	4.710	14.522	45.362	100.0	0	0	100.00	0	0	0
May	708	4.703	9.907	34.126	100.0	0	0	100.00	0	0	0
June	685	2.927	6.008	20.251	100.0	0	0	100.00	0	0	0
July	703	3.079	8.059	22.064	100.0	0	0	100.00	0	0	0
August	671	4.572	9.169	23.906	94.8	0	0	100.00	0	0	0
September	686	6.157	15.567	36.765	100.0	0	0	100.00	0	0	0
October	699	6.734	15.289	34.828	98.9	0	0	100.00	0	0	0
November	686	10.688	24.652	37.635	100.0	0	0	100.00	0	0	0
December	707	9.625	23.482	41.449	100.0	0	0	100.00	0	0	0
Annual	8284	7.096	28.284	48.551	99.5	0	0	100.00	0	0	0

West Central Airshed Society - Wagner2 (AMS 959)  
 Annual Summary for 2013  
 NO2 (ppb)

Month	Number of Data	Mean	Maximum 24-Hour Value	Maximum 1-Hour Value	Operational Time (%)	Number 24-Hour Violations	Number 1-Hour Violations	Percent of Data in each Concentration Range			
								<=0.05	>0.05-0.11	>0.11-0.21	>0.21
January	709	7.334	17.787	34.892	100.0	0	0	100.00	0	0	0
February	639	7.978	18.574	46.746	100.0	0	0	100.00	0	0	0
March	709	7.158	11.794	23.640	100.0	0	0	100.00	0	0	0
April	675	5.067	12.123	31.575	98.8	0	0	100.00	0	0	0
May	708	4.830	9.558	28.166	100.0	0	0	100.00	0	0	0
June	682	5.343	7.686	20.906	99.6	0	0	100.00	0	0	0
July	696	5.059	9.573	21.601	99.9	0	0	100.00	0	0	0
August	695	6.135	19.929	58.372	98.5	0	0	99.86	0.14	0	0
September	684	5.432	10.290	26.190	100.0	0	0	100.00	0	0	0
October	704	5.890	11.209	27.813	99.6	0	0	100.00	0	0	0
November	685	7.946	21.333	36.673	100.0	0	0	100.00	0	0	0
December	709	7.672	17.904	37.086	100.0	0	0	100.00	0	0	0
Annual	8295	6.315	21.333	58.372	99.7	0	0	99.99	0.01	0	0

**TransAlta Utilities Corporation  
Frequency Distribution Charts  
PM Monthly Averages  
Year 2013**



West Central Airshed Society - Power (AMS 907)  
 Annual Summary for 2013  
 PM<sub>2.5</sub> (µg/m<sup>3</sup>)

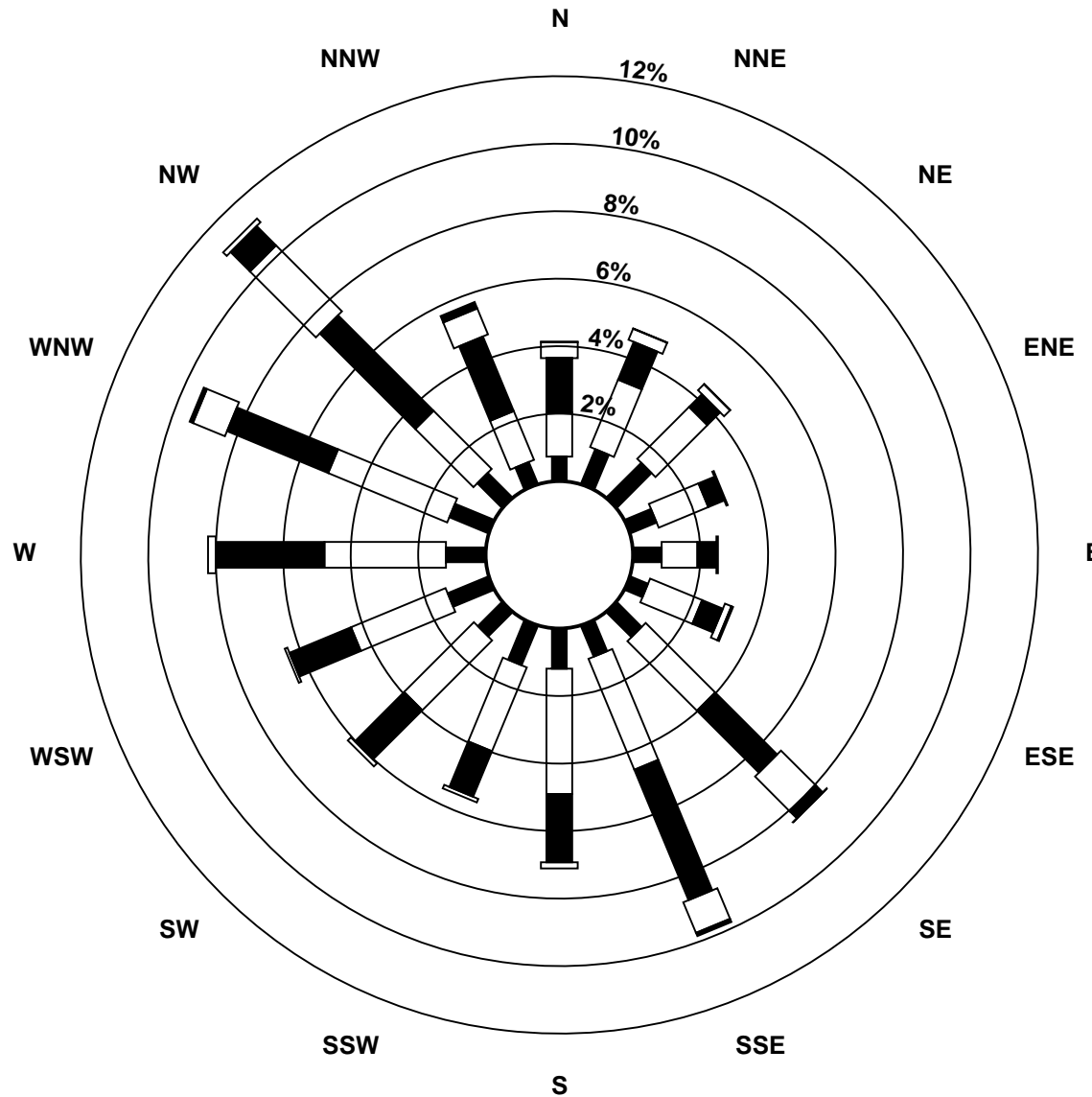
Month	Number of Data	Mean	Maximum 24-Hour Value	Maximum 1-Hour Value	Operational Time (%)	Number 24-Hour Violations	Number 1-Hour Violations
January	714	2.4	5.9	13.4	96.0	0	0
February	667	2.7	9.0	16.8	100.0	0	0
March	736	3.6	7.9	14.1	98.9	0	0
April	720	2.4	6.0	14.9	100.0	0	0
May	736	5.1	11.9	51.6	99.1	0	0
June	719	3.2	7.1	22.7	99.9	0	0
July	730	4.1	11.0	25.9	98.8	0	0
August	735	5.0	10.2	26.6	99.3	0	0
September	718	4.7	10.4	28.0	99.7	0	0
October	744	2.2	5.4	22.5	100.0	0	0
November	716	3.7	12.5	30.9	100.0	0	0
December	744	2.7	6.4	32.4	100.0	0	0
Annual	8679	3.5	12.5	51.6	99.29	0	0

**TransAlta Utilities Corporation  
Frequency Distribution Charts  
Meteorological Measurements  
Year 2013**

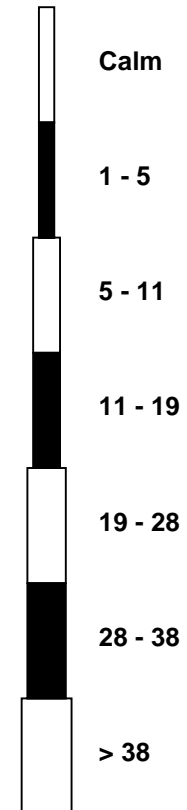
WCAS - Power  
Wind Speed Rose



Wind Speed (WS) - kph  
2013



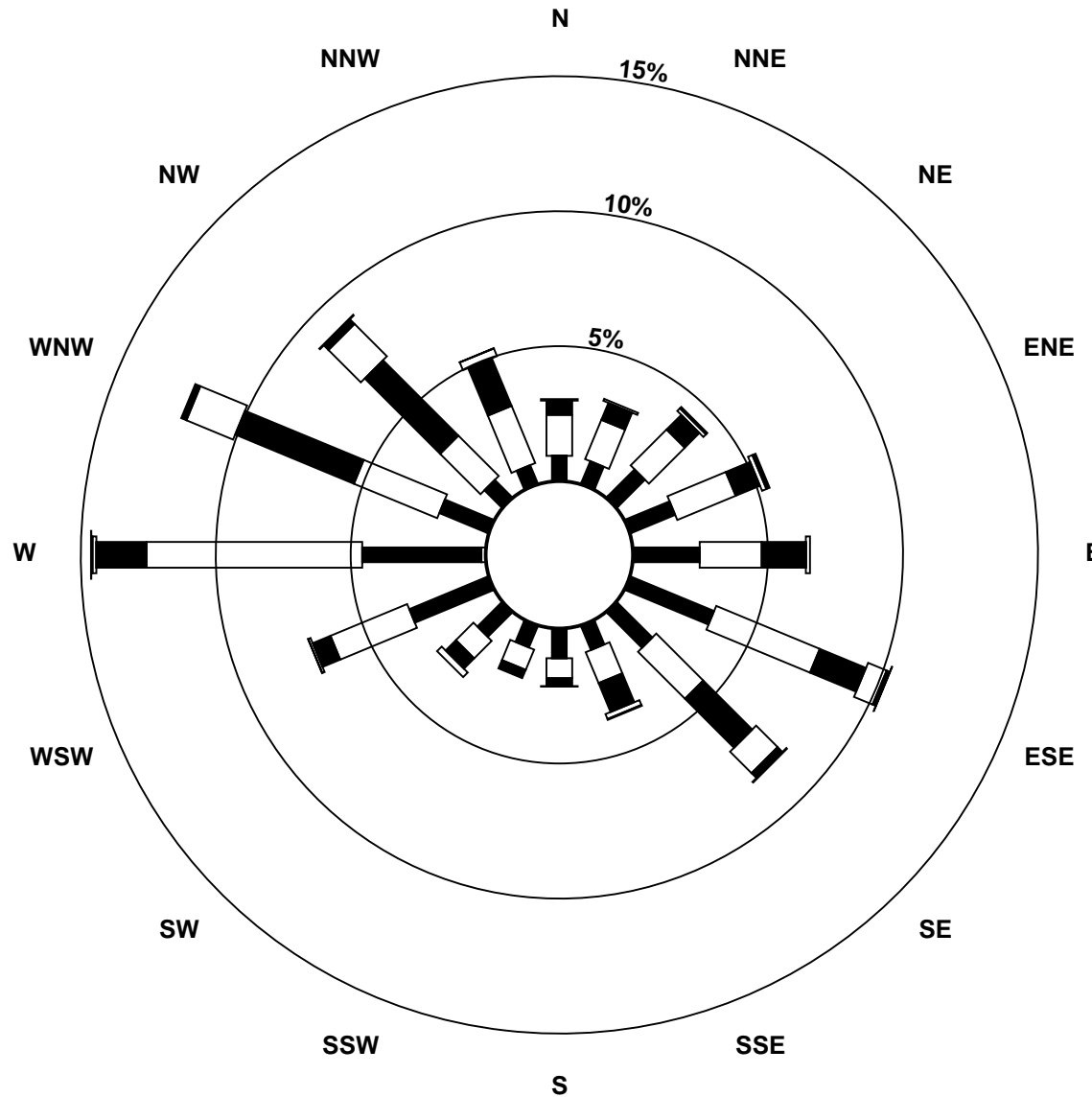
Wind Frequency (kph)



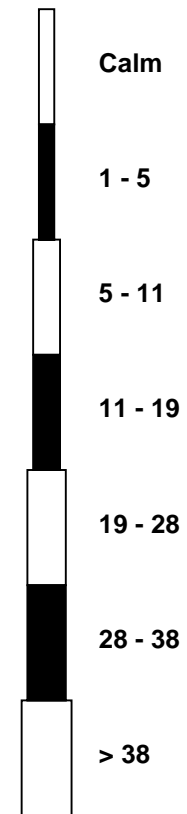
**WCAS - Meadows**  
**Wind Speed Rose**



**Wind Speed (WS) - kph**  
**2013**



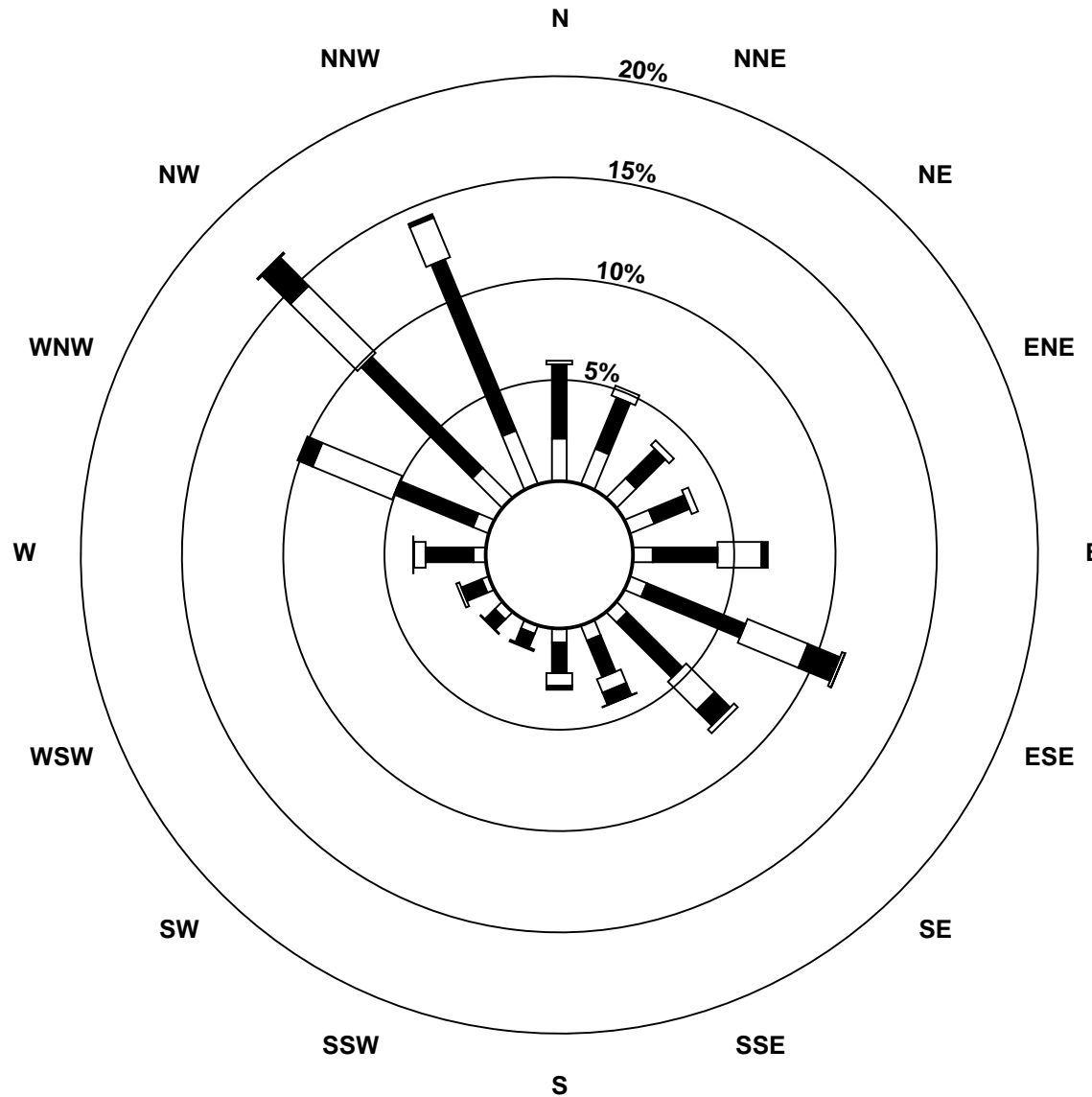
**Wind Frequency (kph)**



WCAS - Wagner2  
Wind Speed Rose



Wind Speed (WS) - kph  
2013



Wind Frequency (kph)

