

## Wind Patterns In Denton County

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### A. Introduction:

Understanding how wind patterns change on Lake Lewisville during the day and throughout the year can be useful to racers and the race committee. The following tables and charts summarize wind strength and direction over the past 10 years at the Denton County Municipal Airport. The airport is 12 miles WNW of DCYC. The data is a summary of observations sourced from the National Climate Data Center's quality controlled local climatological data.

### B. Wind Speed:

Wind speed is strongly seasonal and diurnal (Table 1). Wind speed is almost twice as strong during the day than at night. September has the lightest wind and April the strongest.

**Table 1: Wind speed by time of day by month of year**

Time of Day (Military)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg For Year
1	7.5	8.3	8.8	8.9	8.4	6.8	5.2	5.3	5.1	6.1	6.7	7.3	7.1
2	7.4	8.5	8.8	8.6	8.3	6.9	5.2	5.4	5.2	5.8	6.8	6.9	7.1
3	7.3	8.1	8.4	8.5	7.8	6.6	5.0	5.0	4.7	5.8	6.6	7.2	6.8
4	7.4	8.4	8.4	8.7	7.6	6.6	5.0	4.9	5.1	6.2	6.7	7.4	6.9
5	6.9	7.9	8.6	8.8	7.3	6.0	4.4	4.8	4.9	6.0	6.5	6.8	6.6
6	6.9	7.8	8.4	8.4	7.2	6.1	4.7	4.4	4.8	5.9	6.1	7.0	6.5
7	6.7	8.0	8.5	8.1	8.2	7.6	5.6	4.7	4.9	5.6	6.5	7.3	6.9
8	6.7	8.2	9.3	10.3	9.8	8.9	7.7	7.2	6.3	6.2	7.1	7.4	8.0
9	7.5	9.2	11.6	12.0	10.9	10.0	8.7	8.1	7.9	9.0	8.8	8.4	9.4
10	9.6	11.0	12.5	12.7	11.1	10.1	8.6	8.1	8.2	9.5	10.1	10.2	10.2
11	10.6	11.7	12.5	13.0	11.1	10.0	8.8	8.5	8.8	9.8	10.7	11.2	10.6
12	10.8	11.5	12.9	12.9	11.0	10.3	8.9	8.7	8.6	9.9	10.9	11.2	10.7
13	10.9	11.8	12.6	12.5	11.1	10.3	9.1	8.6	8.6	9.9	11.0	11.7	10.7
14	11.2	11.9	12.8	12.7	10.9	10.6	9.3	9.4	9.2	9.8	11.1	11.5	10.9
15	11.1	12.1	12.7	12.8	10.9	10.5	9.3	9.6	9.2	9.8	10.8	11.3	10.9
16	10.9	11.0	12.3	12.7	11.1	10.8	9.4	9.6	9.2	10.0	10.5	10.8	10.7
17	10.2	11.0	12.1	12.1	11.0	10.6	9.9	10.0	9.5	9.2	9.1	9.7	10.4
18	8.3	9.5	10.8	11.2	10.1	10.9	9.5	9.7	7.8	7.2	7.4	8.1	9.3
19	8.0	8.5	9.0	9.9	8.7	9.0	8.2	7.7	6.4	6.6	7.3	7.9	8.1
20	7.9	8.8	8.8	9.3	8.0	7.4	7.4	6.7	5.9	6.3	7.4	7.5	7.7
21	7.6	8.6	9.0	8.9	7.7	7.4	6.8	6.6	6.0	6.3	7.3	7.7	7.5
22	7.4	8.2	8.5	8.7	7.6	7.6	6.5	6.2	5.6	6.3	7.2	7.5	7.3
23	7.4	8.1	9.0	8.7	7.6	7.1	6.0	5.7	5.5	6.1	7.0	7.3	7.2
24	7.7	8.4	8.6	9.1	8.1	6.9	5.8	5.6	5.2	5.9	6.7	6.9	7.1
<b>Avg for</b>	<b>8.5</b>	<b>9.4</b>	<b>10.2</b>	<b>10.4</b>	<b>9.2</b>	<b>8.5</b>	<b>7.3</b>	<b>7.1</b>	<b>6.8</b>	<b>7.5</b>	<b>8.1</b>	<b>8.6</b>	<b>8.5</b>

Wind Speed in mph, Jan 2000 to July 2010.

During the afternoon (prime time for racing) there is a low chance of calm winds (Table2). The likelihood of calm winds greatly increases at night and is greatest during late summer and fall. You can see why the Plano balloon festival is held in September!

**Table 2: Wind speed frequency by time of day by month of year**

	Wind Speed (mph)	Month												Avg For Year
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Early Morning (6am-9am)	Calm	13.1%	9.0%	9.5%	7.7%	8.1%	11.3%	12.4%	16.1%	20.3%	15.9%	15.9%	11.4%	12.4%
	3-5mph	24.7%	20.5%	13.9%	13.5%	15.7%	19.0%	25.4%	28.1%	29.9%	24.9%	19.8%	24.1%	21.4%
	6-10mph	44.1%	42.4%	37.6%	36.8%	38.3%	40.1%	46.3%	42.0%	34.4%	41.6%	43.8%	39.4%	40.6%
	11-15mph	14.3%	18.9%	24.3%	27.2%	28.3%	21.3%	13.8%	11.9%	12.9%	13.5%	15.2%	19.0%	18.6%
	16-20mph	3.1%	7.3%	10.9%	11.9%	8.8%	6.8%	2.0%	1.7%	2.0%	3.4%	4.1%	5.2%	5.7%
	21-25mph	0.6%	1.8%	3.7%	2.9%	0.6%	1.4%	0.1%	0.1%	0.5%	0.8%	0.6%	0.9%	1.2%
	26-30mph	0.1%	0.1%	0.2%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.5%	0.1%	0.1%
	31+mph	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Mid Morning (10am - Noon)	Calm	5.9%	2.4%	2.5%	1.2%	3.3%	4.0%	3.0%	5.4%	6.4%	4.5%	4.2%	3.7%	3.9%
	3-5mph	11.4%	9.4%	7.8%	4.2%	9.0%	13.7%	14.8%	17.3%	17.5%	13.2%	9.0%	12.4%	11.5%
	6-10mph	37.6%	37.9%	29.2%	30.6%	34.6%	37.7%	52.7%	49.1%	45.3%	41.0%	42.3%	34.6%	39.2%
	11-15mph	29.4%	27.7%	30.5%	33.0%	34.0%	31.2%	25.4%	23.3%	24.7%	29.7%	27.1%	29.1%	28.9%
	16-20mph	11.9%	15.2%	19.2%	23.7%	16.5%	10.6%	3.6%	4.5%	5.1%	9.5%	14.0%	15.6%	12.7%
	21-25mph	3.1%	6.5%	8.6%	6.3%	2.4%	2.7%	0.4%	0.3%	0.9%	1.9%	2.8%	4.3%	3.4%
	26-30mph	0.5%	0.8%	2.2%	0.7%	0.2%	0.0%	0.0%	0.0%	0.0%	0.2%	0.6%	0.3%	0.5%
	31+mph	0.2%	0.1%	0.0%	0.2%	0.0%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
Afternoon (1pm - 5pm)	Calm	3.6%	3.1%	3.1%	2.6%	2.5%	4.9%	3.4%	2.8%	4.2%	5.2%	3.5%	3.6%	3.5%
	3-5mph	10.9%	8.9%	8.1%	6.7%	10.8%	10.2%	11.9%	11.0%	14.3%	11.6%	12.1%	10.4%	10.5%
	6-10mph	36.7%	34.9%	29.3%	29.8%	35.3%	36.6%	48.2%	51.4%	49.8%	43.1%	37.6%	35.8%	38.8%
	11-15mph	29.1%	29.3%	29.0%	30.7%	31.2%	32.4%	28.7%	27.3%	23.7%	27.7%	30.8%	30.1%	29.2%
	16-20mph	14.7%	16.6%	19.4%	20.8%	16.8%	11.7%	6.7%	6.7%	6.4%	9.9%	11.0%	14.8%	13.1%
	21-25mph	4.4%	6.1%	9.7%	8.5%	3.2%	3.7%	0.7%	0.7%	1.4%	2.3%	4.6%	4.2%	4.2%
	26-30mph	0.4%	0.7%	1.2%	0.8%	0.1%	0.5%	0.3%	0.1%	0.1%	0.2%	0.4%	0.8%	0.5%
	31+mph	0.2%	0.4%	0.2%	0.1%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.1%	0.2%	0.1%
Evening (6pm - 9pm)	Calm	7.6%	5.4%	5.4%	4.0%	6.6%	6.7%	5.3%	4.9%	10.2%	9.9%	11.1%	9.2%	7.1%
	3-5mph	21.3%	17.5%	17.6%	16.2%	17.6%	16.1%	17.1%	21.9%	30.3%	28.6%	24.2%	23.7%	20.8%
	6-10mph	46.5%	45.3%	41.3%	40.1%	45.0%	48.9%	55.6%	54.5%	45.5%	47.6%	45.8%	43.4%	46.6%
	11-15mph	18.1%	21.8%	21.9%	25.8%	22.6%	20.2%	18.2%	15.4%	10.8%	11.7%	12.2%	15.8%	18.0%
	16-20mph	4.4%	7.7%	10.0%	9.9%	6.4%	5.6%	3.2%	3.1%	2.8%	1.8%	5.4%	5.9%	5.6%
	21-25mph	1.9%	1.9%	3.4%	3.5%	1.2%	1.6%	0.5%	0.1%	0.4%	0.2%	1.3%	1.7%	1.5%
	26-30mph	0.1%	0.4%	0.4%	0.5%	0.5%	0.6%	0.1%	0.1%	0.0%	0.0%	0.2%	0.2%	0.3%
	31+mph	0.0%	0.0%	0.0%	0.0%	0.1%	0.3%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Night (10pm-5am)	Calm	11.4%	10.1%	9.5%	9.7%	12.1%	15.6%	17.4%	19.2%	21.4%	16.8%	16.4%	14.5%	14.3%
	3-5mph	26.7%	22.7%	21.5%	20.6%	22.3%	27.3%	35.0%	33.1%	37.7%	30.7%	24.2%	25.2%	26.9%
	6-10mph	39.6%	38.6%	37.3%	36.1%	37.4%	38.0%	40.5%	38.8%	30.4%	39.5%	40.6%	38.6%	38.0%
	11-15mph	15.3%	18.1%	18.7%	20.4%	20.2%	13.4%	5.9%	7.1%	8.3%	10.2%	13.4%	14.9%	14.1%
	16-20mph	5.6%	7.1%	9.5%	9.9%	6.3%	4.2%	1.2%	1.5%	2.0%	2.3%	4.5%	5.4%	5.1%
	21-25mph	1.3%	2.4%	2.8%	3.0%	1.5%	1.2%	0.0%	0.2%	0.2%	0.5%	0.8%	1.2%	1.3%
	26-30mph	0.1%	0.6%	0.6%	0.2%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.2%
	31+mph	0.0%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Jan 2000 to July 2010.

**C. Wind Direction:**

The wind comes out of the S to ESE 45% of the time, NNW to NNE 18% and is Calm 9% of the time (Table 3). The data is collected in 10 degree increments. Each category does not span equal parts of the compass. In these tables points of the compass are defined as: N = 345-15, NNE = 16-35, NE=36-55, ENE=56-75, E= 76-105,etc.

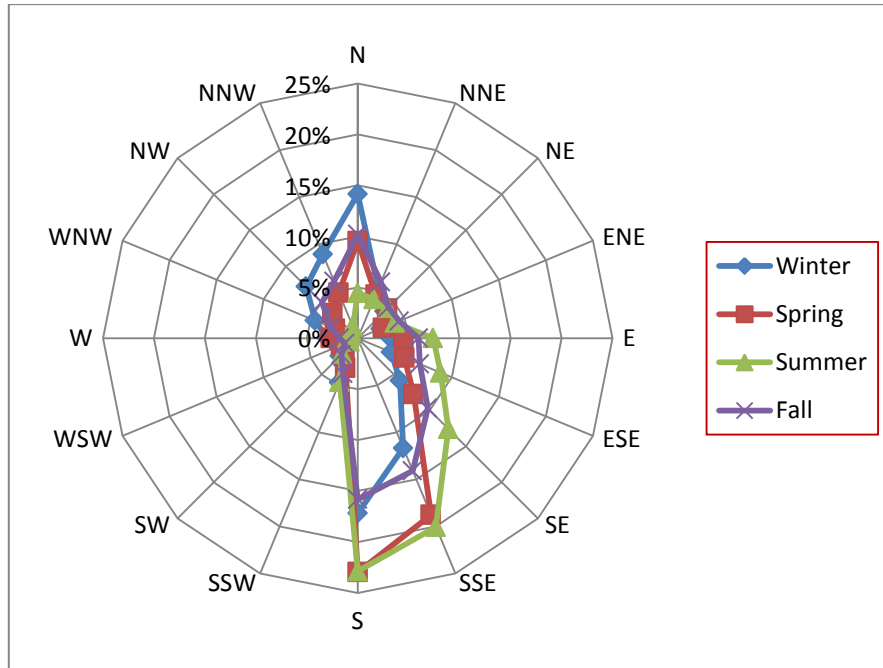
**Table 3: Frequency of wind direction by month of year**

Wind Speed (mph)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total for Year
N	13.2%	14.9%	10.7%	8.0%	7.2%	4.7%	3.5%	4.1%	10.9%	9.7%	10.9%	11.3%	9.1%
NNE	3.8%	5.6%	4.5%	3.4%	5.0%	4.2%	2.8%	3.4%	5.8%	3.7%	3.6%	3.8%	4.1%
NE	3.1%	3.1%	4.2%	3.2%	4.3%	3.7%	2.6%	4.2%	4.2%	2.9%	2.6%	2.7%	3.4%
ENE	2.2%	2.5%	3.2%	2.1%	3.0%	2.4%	2.4%	3.6%	3.8%	2.3%	2.1%	1.9%	2.6%
E	3.8%	3.3%	4.7%	4.2%	4.5%	4.8%	4.0%	6.6%	6.8%	4.1%	2.7%	3.1%	4.3%
ESE	3.8%	3.8%	4.4%	4.7%	4.4%	6.0%	5.8%	7.5%	7.7%	6.1%	3.5%	2.8%	5.0%
SE	7.6%	7.6%	7.9%	8.4%	9.5%	12.3%	12.1%	11.2%	10.0%	11.5%	9.6%	7.3%	9.5%
SSE	9.7%	11.5%	13.8%	18.4%	20.1%	19.0%	18.5%	15.3%	9.7%	14.6%	12.6%	12.0%	14.7%
S	14.0%	12.5%	15.5%	20.0%	19.0%	20.5%	20.6%	16.5%	8.6%	12.2%	13.1%	12.5%	15.5%
SSW	3.5%	2.5%	2.8%	2.7%	2.5%	3.0%	6.1%	4.2%	1.7%	2.6%	3.0%	2.9%	3.1%
SW	1.6%	1.6%	1.4%	1.5%	1.1%	1.0%	2.6%	1.9%	0.9%	1.3%	1.5%	1.7%	1.5%
WSW	1.8%	1.4%	1.1%	1.4%	1.0%	0.6%	1.4%	0.8%	0.7%	0.8%	1.1%	1.5%	1.1%
W	2.8%	3.0%	2.4%	2.5%	1.5%	0.9%	1.0%	1.0%	1.1%	1.6%	2.9%	3.4%	2.0%
WNW	3.9%	3.8%	3.0%	3.0%	1.5%	0.8%	0.6%	0.8%	1.3%	2.4%	4.5%	5.2%	2.6%
NW	6.1%	5.6%	5.3%	4.0%	2.0%	1.2%	0.9%	1.3%	3.4%	4.5%	6.1%	6.8%	3.9%
NNW	7.9%	8.8%	6.3%	4.5%	3.2%	2.0%	1.5%	2.0%	5.5%	5.4%	6.6%	9.0%	5.2%
Variable	1.0%	1.2%	1.2%	1.3%	1.9%	2.6%	3.5%	3.6%	3.6%	2.0%	1.3%	1.0%	2.0%
Calm	8.7%	6.7%	6.6%	5.9%	7.5%	9.8%	9.8%	11.0%	13.8%	11.6%	11.3%	9.3%	9.2%

Jan 2000 to July 2010.

The strong bi-polar pattern can be seen more clearly on a “wind rose” diagram (Chart 1).

**Chart 1: Frequency of Wind Direction Rose Diagram by Season**



**Table 4: Average Wind Speed by Direction by month of year**

Wind Speed (mph)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total for Year
NNE	8.1	9.3	10.3	10.3	9.2	8.4	7.9	7.9	9.2	8.6	8.8	9.1	9.0
NE	7.6	7.5	9.3	9.0	8.0	8.0	7.6	7.8	7.6	7.2	7.0	7.3	7.9
ENE	7.0	7.3	8.6	8.6	7.3	7.3	7.4	7.8	7.0	6.8	6.7	7.3	7.5
E	8.0	7.2	8.8	8.4	7.5	7.9	7.7	7.7	7.3	6.3	6.7	7.9	7.7
ESE	6.6	7.1	8.0	8.2	7.7	7.4	7.4	7.4	7.1	6.8	6.3	7.1	7.3
SE	7.4	8.6	9.1	9.2	9.2	8.4	7.5	7.4	7.1	7.7	7.9	7.7	8.1
SSE	10.2	11.3	12.2	12.4	11.6	10.2	8.6	8.5	8.7	9.4	9.9	10.1	10.4
S	11.6	13.3	14.5	13.8	12.6	12.2	9.3	9.5	10.3	10.8	11.1	11.8	11.8
SSW	9.6	11.7	10.9	10.6	10.0	10.8	9.0	9.9	9.6	9.1	9.6	9.1	9.9
SW	8.4	10.4	9.9	10.3	8.2	8.5	8.4	8.3	7.0	8.0	8.2	7.5	8.6
WSW	9.1	10.2	10.7	10.6	8.1	8.7	7.8	7.4	6.8	7.2	8.6	7.0	8.7
W	8.1	10.1	10.7	9.9	8.4	8.4	6.8	7.4	6.7	6.2	8.3	8.4	8.7
WNW	9.4	9.4	10.9	10.2	7.7	9.5	6.8	5.9	6.4	7.4	10.3	9.8	9.4
NW	9.9	10.1	11.4	10.8	7.9	8.0	5.7	6.1	7.5	8.2	10.1	10.3	9.6
NNW	10.1	10.1	10.6	10.9	9.1	7.4	6.6	5.4	7.4	8.7	10.1	10.3	9.5
<b>Grand Total</b>	<b>9.4</b>	<b>10.2</b>	<b>11.0</b>	<b>11.1</b>	<b>10.1</b>	<b>9.6</b>	<b>8.3</b>	<b>8.1</b>	<b>8.0</b>	<b>8.5</b>	<b>9.3</b>	<b>9.6</b>	<b>9.5</b>

Wind Speed in mph, Jan 2000 to July 2010.

**Table 5: Average Wind Speed by Direction by month of year**

	Wind Speed (mph)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total for Year
Early Morning (6am-9am)	N	9.0	10.1	10.0	9.9	9.3	7.5	8.0	6.3	7.8	8.2	8.7	9.3	8.9
	NNE	7.2	9.0	10.7	9.6	9.6	8.8	8.4	6.9	8.8	8.5	7.7	8.3	8.8
	NE	6.5	7.9	9.9	8.4	7.6	7.4	6.6	7.3	8.0	7.0	7.5	6.3	7.8
	ENE	7.6	7.3	8.2	11.1	7.1	7.1	6.7	6.8	6.1	6.5	6.8	9.0	7.5
	E	7.4	7.5	8.7	7.9	8.2	6.6	6.7	6.4	7.0	6.7	6.7	7.6	7.3
	ESE	6.3	6.7	7.8	7.4	7.7	6.8	6.2	6.4	6.0	6.6	6.0	6.5	6.7
	SE	7.0	8.5	8.8	8.4	9.0	7.8	6.0	6.1	6.5	7.3	7.3	6.3	7.5
	SSE	8.4	9.3	11.4	11.5	10.7	9.2	6.8	7.0	7.2	8.5	8.9	8.9	9.3
	S	9.0	11.0	13.1	12.9	12.0	11.9	8.8	8.9	10.2	9.6	9.5	10.2	10.8
	SSW	5.9	9.7	10.1	10.3	9.5	11.1	8.8	10.2	8.3	8.3	8.7	7.3	9.2
	SW	6.3	8.3	9.1	9.9	7.3	7.4	8.4	7.4	6.8	7.0	6.5	5.5	7.7
	WSW	6.2	6.2	8.3	9.1	7.0	9.2	7.3	8.0	6.8	5.9	6.9	6.5	7.2
	W	6.2	7.9	10.1	8.6	6.2	7.6	6.1	6.5	5.9	5.0	6.6	8.1	7.3
	WNW	8.2	8.2	10.3	8.8	7.2	6.9	6.7	4.1	5.0	7.6	10.2	8.7	8.5
NW	8.8	8.7	10.0	10.0	8.8	6.3	4.6	5.8	7.0	7.9	10.3	8.8	8.8	
NNW	9.0	8.9	10.8	11.3	9.2	7.5	6.0	4.4	6.8	7.8	8.9	9.4	8.8	
Mid Morning (10am - Noon)	N	10.7	12.1	12.1	12.9	10.5	9.5	8.2	10.0	10.8	10.6	10.1	12.0	11.1
	NNE	10.8	10.6	11.3	11.4	11.2	9.4	9.8	8.3	11.8	10.5	9.4	11.5	10.6
	NE	9.9	9.5	11.1	9.8	10.1	9.7	9.5	8.0	9.5	9.0	6.7	9.5	9.5
	ENE	6.9	7.5	10.2	11.8	8.5	7.7	8.1	7.5	7.7	6.8	8.0	7.9	8.4
	E	8.2	7.8	9.7	10.2	8.5	9.9	7.7	7.2	8.4	6.7	8.1	7.8	8.4
	ESE	7.7	8.3	11.2	9.3	8.6	8.5	9.0	7.2	7.8	6.5	7.7	8.9	8.3
	SE	8.8	9.4	12.9	10.8	10.5	9.6	8.9	8.2	8.5	9.1	10.3	9.7	9.7
	SSE	10.5	11.8	13.0	13.9	13.1	11.5	9.5	10.0	10.4	11.1	11.4	10.9	11.7
	S	13.2	14.5	16.4	15.2	14.0	13.0	10.8	11.0	11.2	12.6	13.1	12.8	13.3
	SSW	11.2	15.3	12.9	12.4	11.6	12.8	10.4	10.8	10.7	11.0	11.8	12.1	11.7
	SW	9.8	12.0	11.7	12.0	9.3	9.6	9.7	9.8	8.5	9.3	9.4	9.6	10.1
	WSW	11.2	14.4	12.7	12.5	9.0	7.3	8.8	7.7	6.7	7.9	8.1	8.3	9.9
	W	13.1	12.8	13.7	12.5	9.0	7.2	7.5	7.4	6.5	7.6	10.8	11.6	10.8
	WNW	11.6	10.9	14.7	15.5	7.3	5.7	6.6	8.4	9.5	9.3	10.6	11.8	11.4
NW	12.8	12.8	14.4	14.7	8.9	8.7	7.6	8.4	10.7	13.2	14.0	13.6	12.9	
NNW	13.9	12.5	13.5	14.0	12.3	10.2	6.8	7.5	10.2	12.0	13.1	13.2	12.7	

**Table 5 Cont'd: Average Wind Speed by Direction by month of year**

	Wind Speed (mph)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total for Year
Afternoon (1pm - 5pm)	N	11.0	11.3	12.0	11.6	10.2	10.6	9.3	10.5	10.4	10.2	10.6	11.5	10.9
	NNE	9.5	10.4	11.2	9.9	10.7	10.9	9.4	10.8	11.1	9.2	9.8	10.2	10.3
	NE	9.2	8.4	10.5	10.9	9.3	10.4	9.9	9.0	8.8	7.8	7.7	8.8	9.2
	ENE	8.4	7.7	10.1	8.5	8.9	8.4	8.5	9.0	7.9	7.7	7.1	7.3	8.3
	E	8.0	7.4	9.8	10.2	8.2	8.9	9.6	9.0	9.1	7.3	7.1	8.9	8.8
	ESE	7.0	7.8	10.1	10.1	8.4	9.1	9.0	8.9	9.0	8.3	7.9	7.9	8.8
	SE	9.3	10.3	10.8	11.7	10.9	10.7	9.6	10.0	8.8	9.9	10.1	10.3	10.2
	SSE	12.3	13.5	15.1	14.8	13.7	12.9	11.3	11.3	11.0	11.7	12.4	11.9	12.8
	S	13.9	15.2	15.6	14.9	13.9	13.9	11.3	11.2	11.6	12.3	13.0	13.1	13.5
	SSW	12.1	13.0	13.2	11.6	11.7	10.4	10.0	10.6	12.3	10.4	10.5	11.0	11.3
	SW	9.5	13.2	11.9	12.0	8.2	8.9	8.7	9.0	6.8	8.8	9.9	9.3	9.8
	WSW	13.2	13.0	12.8	14.2	8.1	7.4	8.5	8.6	9.0	8.7	11.3	8.5	11.0
	W	11.2	12.2	14.4	14.5	9.2	8.8	8.1	9.2	9.2	9.2	10.2	12.2	11.6
	WNW	13.3	12.8	15.4	14.2	10.9	9.8	8.1	8.4	8.8	10.7	14.8	13.2	13.0
NW	13.5	13.3	14.0	14.3	9.2	9.8	8.2	10.2	12.0	13.6	11.8	14.8	13.0	
NNW	12.1	13.1	12.8	14.1	11.1	10.9	8.4	8.9	11.2	13.1	12.1	12.9	12.4	
Evening (6pm - 9pm)	N	8.5	9.5	9.6	9.0	7.4	9.5	7.8	6.7	8.2	8.4	9.9	8.5	8.8
	NNE	7.1	8.5	8.6	8.9	8.1	7.7	8.0	7.4	7.7	8.5	8.1	7.6	8.0
	NE	7.2	6.6	8.2	8.4	7.0	8.3	7.2	7.5	6.5	5.7	6.5	7.2	7.3
	ENE	7.0	7.2	7.7	6.9	6.6	7.1	7.9	7.8	6.5	6.6	5.3	6.4	7.1
	E	9.8	6.7	8.8	8.4	6.7	7.5	8.2	8.2	6.5	5.4	5.9	7.0	7.5
	ESE	6.5	7.1	6.8	7.9	7.1	7.3	7.1	7.7	6.7	6.8	5.9	6.6	7.0
	SE	7.2	8.7	9.1	9.2	9.2	9.1	8.1	7.7	6.9	7.5	7.7	7.2	8.1
	SSE	10.0	11.4	11.7	12.4	11.4	10.3	9.5	9.0	8.3	8.6	9.1	10.1	10.3
	S	11.2	12.6	13.4	12.9	10.7	11.1	9.2	9.0	8.3	7.4	9.2	12.1	10.8
	SSW	6.5	6.5	6.1	7.9	8.5	10.5	9.6	8.3	4.9	5.3	4.9	5.3	7.3
	SW	9.7	8.3	6.7	7.7	7.4	10.3	7.1	6.7	7.2	5.3	4.7	4.6	7.2
	WSW	7.6	9.7	9.4	7.9	10.1	18.5	5.0	7.1	6.0	5.8	9.3	5.8	7.8
	W	8.0	9.4	10.7	9.0	12.6	12.0	4.8	9.1	6.5	4.9	8.5	7.3	8.5
	WNW	9.1	8.4	10.8	10.8	9.4	19.0	6.4	6.9	7.6	6.7	8.9	9.9	9.4
NW	8.4	9.6	11.6	11.0	9.8	12.9	6.3	4.8	8.0	6.6	7.5	8.0	9.0	
NNW	8.6	9.8	9.8	9.6	9.0	9.8	7.2	5.3	8.3	7.1	10.5	9.3	9.2	
Night (10pm-5am)	N	9.1	9.7	8.5	8.7	6.8	6.3	5.3	5.4	7.0	8.3	8.6	9.0	8.2
	NNE	7.2	8.5	10.0	10.8	7.7	5.7	5.4	6.5	7.2	7.1	8.3	8.2	8.0
	NE	6.3	6.2	8.1	8.0	7.2	5.9	5.3	6.7	6.6	7.5	5.7	6.4	6.8
	ENE	6.1	7.0	7.5	7.0	6.5	6.5	5.8	7.1	6.3	6.3	5.8	6.7	6.6
	E	7.0	7.1	8.0	7.1	6.7	7.1	6.0	6.4	6.0	5.9	5.8	7.5	6.8
	ESE	6.2	6.5	7.0	7.3	7.2	5.9	5.7	6.4	5.7	6.3	5.6	6.9	6.4
	SE	6.5	7.7	7.6	7.6	8.3	7.1	5.9	6.0	5.9	6.7	7.0	7.4	7.0
	SSE	9.8	10.7	10.8	11.0	10.5	8.6	6.9	7.0	7.3	8.1	8.9	9.4	9.1
	S	10.6	12.6	13.8	13.0	11.7	11.0	7.6	8.0	9.1	9.6	9.6	10.7	10.7
	SSW	8.2	9.3	9.1	8.7	7.9	7.6	5.6	5.8	5.9	6.0	6.7	6.4	7.4
	SW	6.7	8.1	7.0	9.1	8.2	7.3	4.6	6.0	5.6	6.2	5.3	6.2	6.8
	WSW	6.9	6.7	8.0	8.5	7.4	9.0	7.1	5.0	5.0	6.0	7.2	5.8	7.1
	W	6.2	9.7	8.2	6.5	7.7	8.0	6.3	6.0	5.5	5.9	7.3	6.1	7.2
	WNW	7.4	7.5	8.2	7.4	6.2	9.0	6.4	5.0	5.4	5.4	8.5	7.9	7.4
NW	8.2	7.7	10.3	8.6	6.2	7.2	4.8	4.3	5.7	5.9	8.3	7.7	7.6	
NNW	8.6	8.4	8.4	8.5	7.1	5.9	6.1	5.0	5.7	6.1	8.6	8.5	7.6	

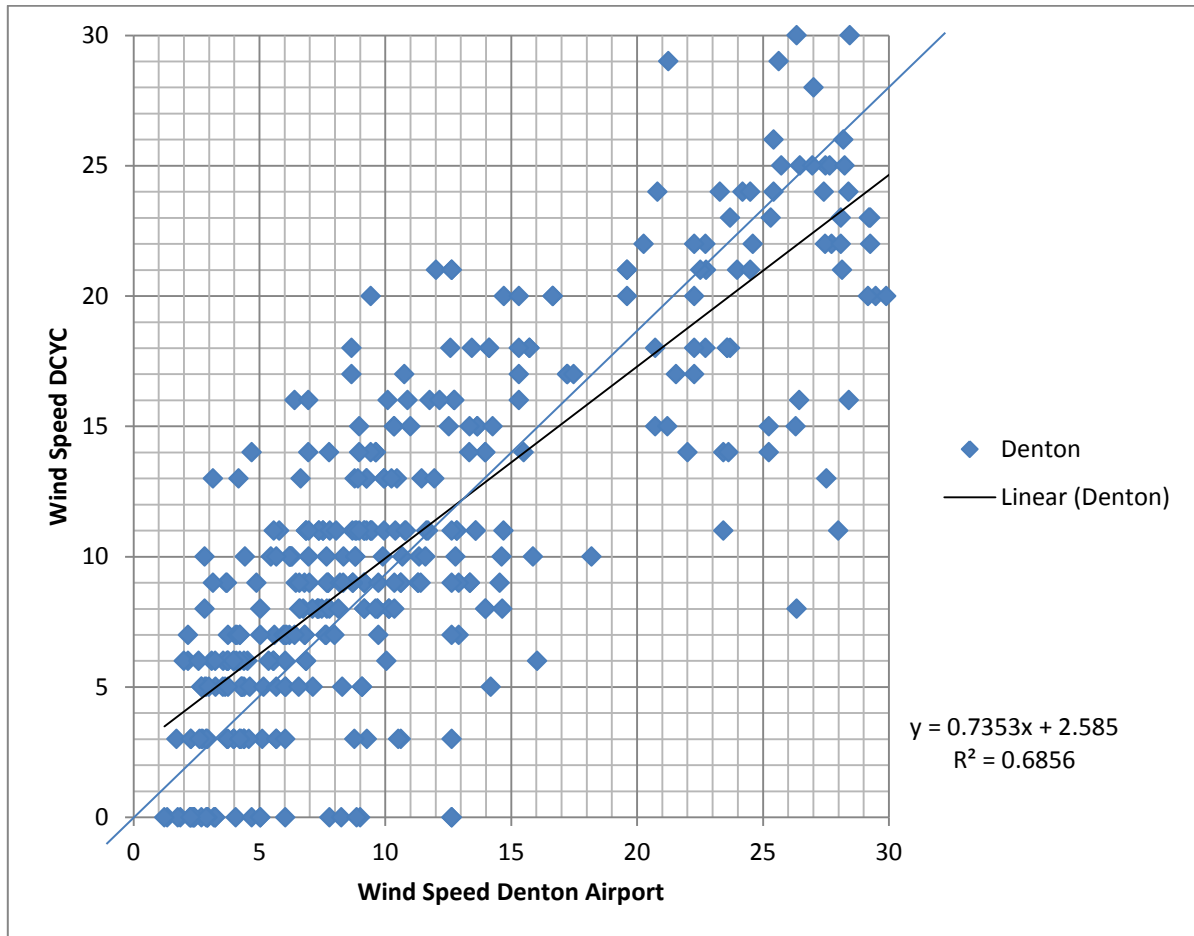
Wind Speed in mph, Jan 2000 to July 2010.

**D. Calibration to DCYC's weather station:**

DCYC has it's own weather station mounted on top of the clubhouse. Unfortunately, the data only goes back 3 years and getting hourly data is painful (manual download of each day). There is fairly good correlation of DCYC wind speed to the Denton County Municipal airport data (Chart 2). What is learned from Denton Airport information should apply at DCYC. Overall the average wind speed for DCYC and Denton Airport are the

same, however, Denton wind speeds are higher for strong winds and lower for light winds relative to DCYC. This may be due to differences in wind patterns between locations or instrument calibration or perhaps the way the data is collected at each site. I will dig into the data further and extend this analysis to wind direction in the future

**Chart 2: Correlation of wind speed between DCYC and DCMA on semi-randomly selected days from the 1<sup>st</sup> half of 2010**



**E. Future Analysis:**

As time permits, I will provide answers to the following questions:

- How often does it rain (with and without lightning)?
- What are patterns of wind shifts, do shifts vary by speed and direction?
- Is it windier on weekdays, Saturdays or Sundays? (Does human activity affect wind speed?)
- A more detailed view of DCYC data and calibration to Denton Municipal airport data.

Email me with suggestions for other questions to answer

Dan Wolf

2010 DCYC Fleet Captain

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