

Project: **Watertown**  
 Description: Watertown - WAPA Anemometer Loan Program

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**Meteo data report - Main results**

**Mast:** Watertown; Watertown; Watertown 040107A **Period:** Full period: 10/24/2002 - 01/07/2004 (14.4 months)

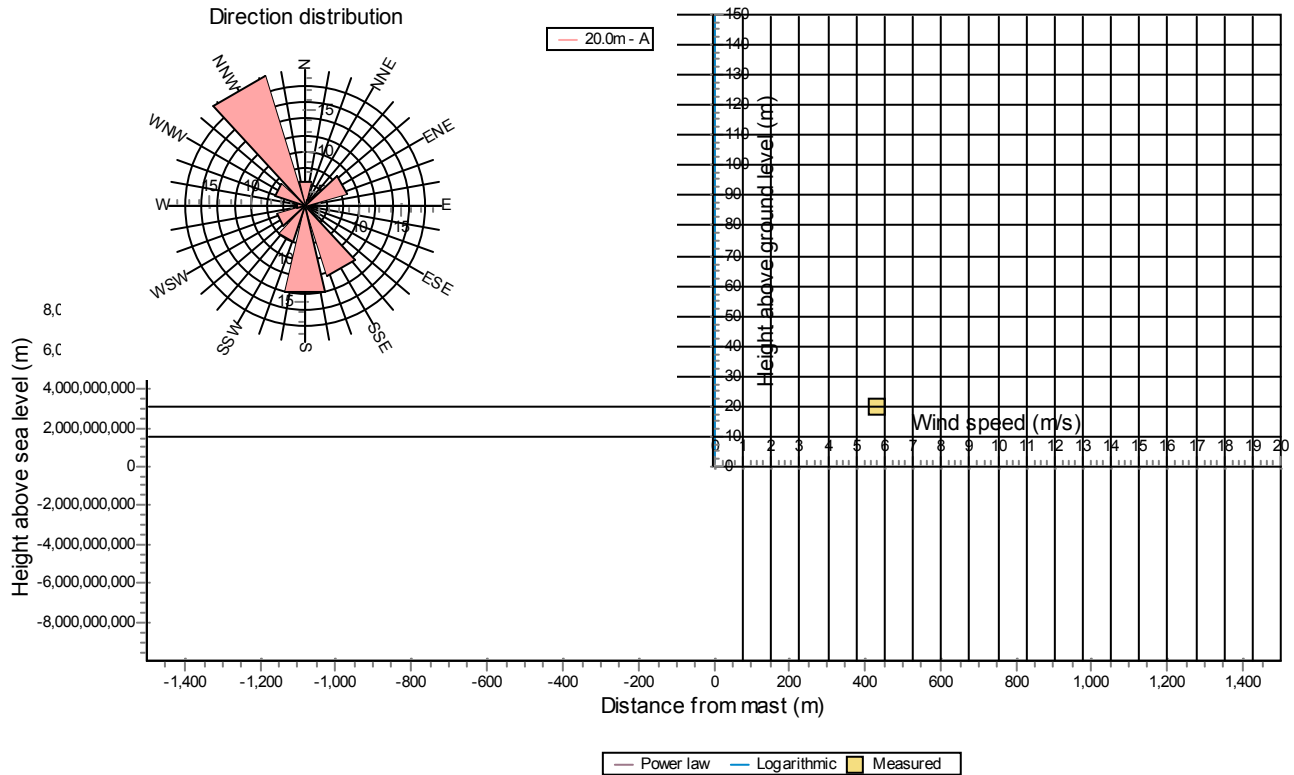
Mast position: Geo WGS 84 East: -97°05'00.00" North: 44°52'00.00"

Measurement heights and wind speeds (in this report)  
 Disabled data not included in overview table below

| ID        | Height [m] | Data recovery [%] | Records | U_max [m/s] | U_mean* [m/s] |
|-----------|------------|-------------------|---------|-------------|---------------|
| 20.0m - A | 20.0       | 100.0             | 63317   | 21.5        | 5.8           |

\*) U\_mean is simple arithmetic average

Mean wind profile for all concurrent data and terrain profile for the most frequent sector of height: 20.0m - A: NNW (left side)



No profiles when only one height is selected.

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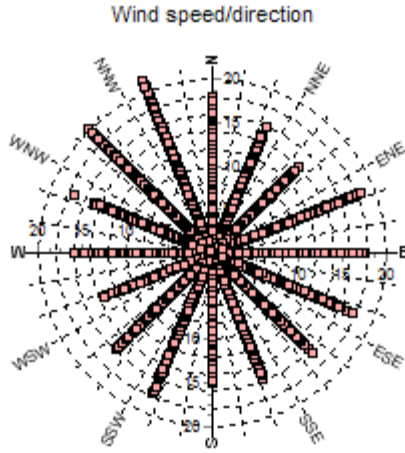
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**Meteo data report - Main results**

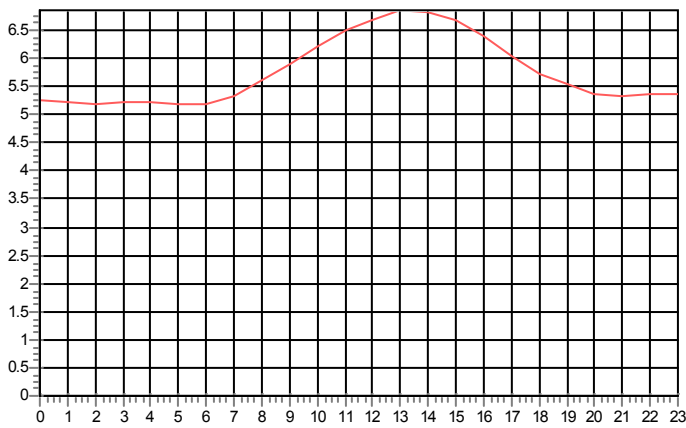
**Mast:** Watertown; Watertown; Watertown 040107A **Period:** Full period: 10/24/2002 - 01/07/2004 (14.4 months)



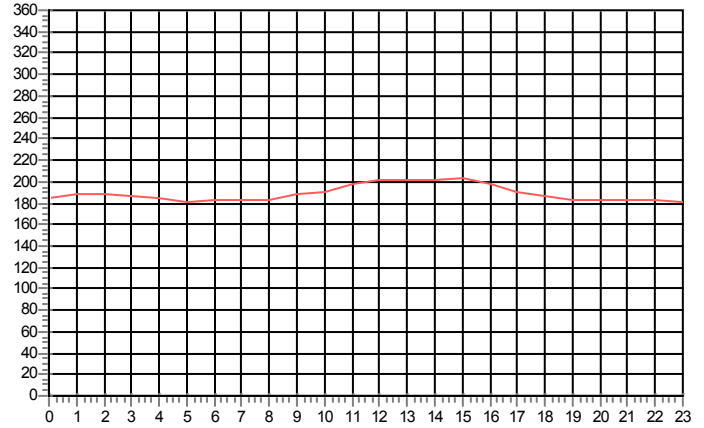
**Statistics**

| Signal                              | Unit    | Count | Of period [%] | Mean   | Weibull mean | Weibull A | Weibull k |
|-------------------------------------|---------|-------|---------------|--------|--------------|-----------|-----------|
| 20.0m - A Mean wind speed, all      | m/s     | 63317 | 100.0         | 5.76   | 5.77         | 6.50      | 1.94      |
| 20.0m - A Wind direction, all       | Degrees | 63317 | 100.0         | 188.81 |              |           |           |
| 20.0m - A Turbulence intensity, all |         | 63317 | 100.0         | 0.14   |              |           |           |

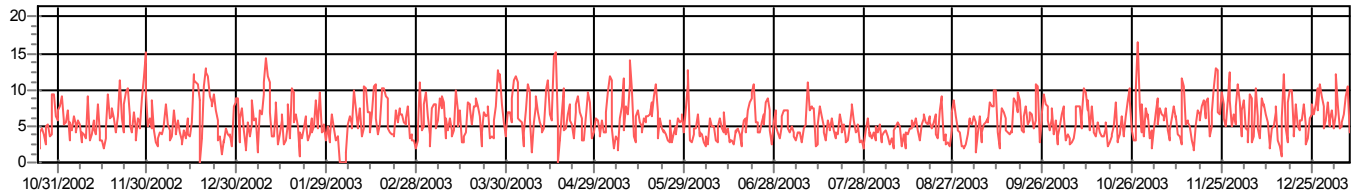
Hourly mean wind speed



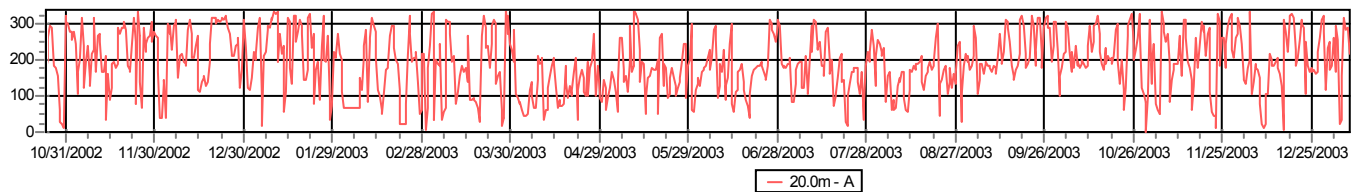
Hourly mean wind direction



Wind speed, Averaging: 12 hours



Wind direction, Averaging: 12 hours



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**Meteo data report - Monthly wind speeds**

**Mast:** Watertown; Watertown; Watertown 040107A **Period:** Full period: 10/24/2002 - 01/07/2004 (14.4 months)

**Monthly wind speeds**

20.0m - A

| Month          | 2002 | 2003 | 2004 | Mean | Mean of month |
|----------------|------|------|------|------|---------------|
| January        |      | 5.60 | 7.33 | 5.90 | 6.47          |
| February       |      | 5.39 |      | 5.39 | 5.39          |
| March          |      | 6.34 |      | 6.34 | 6.34          |
| April          |      | 6.71 |      | 6.71 | 6.71          |
| May            |      | 6.08 |      | 6.08 | 6.08          |
| June           |      | 4.96 |      | 4.96 | 4.96          |
| July           |      | 4.88 |      | 4.88 | 4.88          |
| August         |      | 4.48 |      | 4.48 | 4.48          |
| September      |      | 6.04 |      | 6.04 | 6.04          |
| October        | 5.06 | 5.56 |      | 5.47 | 5.31          |
| November       | 6.00 | 6.48 |      | 6.24 | 6.24          |
| December       | 5.78 | 6.14 |      | 5.96 | 5.96          |
| mean, all data | 5.80 | 5.72 | 7.33 |      |               |
| mean of months | 5.61 | 5.72 | 7.33 |      | 5.74          |

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**Meteo data report - Frequency distribution (TAB file data)**

**Mast:** Watertown; Watertown; Watertown 040107A **Period:** Full period: 10/24/2002 - 01/07/2004 (14.4 months)

**Frequency distribution (TAB file data)**

20.0m - A

| Bin | Start | End   | Sum  | 0-N | 1-NNE | 2-ENE | 3-E | 4-ESE | 5-SSE | 6-S  | 7-SSW | 8-WSW | 9-W | 10-WNW | 11-NNW | Mean |
|-----|-------|-------|------|-----|-------|-------|-----|-------|-------|------|-------|-------|-----|--------|--------|------|
| 0   |       | 0.49  | 1135 | 42  | 32    | 595   | 28  | 12    | 143   | 26   | 43    | 53    | 32  | 50     | 79     | 5.76 |
| 1   | 0.50  | 1.49  | 1855 | 168 | 121   | 283   | 93  | 88    | 184   | 100  | 112   | 181   | 101 | 117    | 307    | 5.97 |
| 2   | 1.50  | 2.49  | 4852 | 311 | 262   | 526   | 257 | 238   | 578   | 459  | 494   | 546   | 239 | 277    | 665    | 5.20 |
| 3   | 2.50  | 3.49  | 8777 | 519 | 430   | 871   | 459 | 480   | 1098  | 1046 | 890   | 889   | 393 | 571    | 1131   | 4.52 |
| 4   | 3.50  | 4.49  | 8433 | 446 | 432   | 752   | 278 | 484   | 1147  | 1343 | 719   | 783   | 375 | 551    | 1123   | 5.67 |
| 5   | 4.50  | 5.49  | 7923 | 452 | 311   | 705   | 159 | 291   | 1152  | 1386 | 701   | 681   | 366 | 513    | 1206   | 5.34 |
| 6   | 5.50  | 6.49  | 7570 | 535 | 275   | 571   | 125 | 225   | 1083  | 1357 | 584   | 529   | 370 | 564    | 1352   | 5.45 |
| 7   | 6.50  | 7.49  | 6153 | 511 | 211   | 349   | 121 | 170   | 762   | 1028 | 462   | 325   | 367 | 522    | 1325   | 5.83 |
| 8   | 7.50  | 8.49  | 4693 | 335 | 178   | 250   | 144 | 144   | 512   | 809  | 391   | 200   | 219 | 415    | 1096   | 5.26 |
| 9   | 8.50  | 9.49  | 3927 | 254 | 154   | 185   | 105 | 120   | 403   | 624  | 337   | 146   | 155 | 366    | 1078   | 4.56 |
| 10  | 9.50  | 10.49 | 2836 | 165 | 91    | 148   | 97  | 113   | 291   | 390  | 234   | 71    | 81  | 283    | 872    | 5.42 |
| 11  | 10.50 | 11.49 | 2028 | 133 | 48    | 95    | 87  | 80    | 184   | 225  | 77    | 49    | 81  | 195    | 774    | 6.06 |
| 12  | 11.50 | 12.49 | 1246 | 99  | 35    | 45    | 68  | 44    | 122   | 101  | 4     | 12    | 35  | 103    | 578    | 7.16 |
| 13  | 12.50 | 13.49 | 785  | 62  | 28    | 28    | 50  | 29    | 74    | 43   | 6     | 6     | 11  | 41     | 407    |      |
| 14  | 13.50 | 14.49 | 541  | 43  | 17    | 35    | 37  | 20    | 29    | 13   | 10    | 2     | 3   | 23     | 309    |      |
| 15  | 14.50 | 15.49 | 271  | 19  | 5     | 20    | 32  | 8     | 8     | 5    | 11    | 5     | 1   | 2      | 155    |      |
| 16  | 15.50 | 16.49 | 139  | 16  | 2     | 18    | 12  | 7     | 3     | 0    | 3     | 2     | 1   | 0      | 75     |      |
| 17  | 16.50 | 17.49 | 91   | 12  | 0     | 17    | 4   | 1     | 0     | 0    | 2     | 0     | 0   | 1      | 54     |      |
| 18  | 17.50 | 18.49 | 37   | 2   | 0     | 5     | 1   | 1     | 0     | 0    | 1     | 0     | 0   | 0      | 27     |      |
| 19  | 18.50 | 19.49 | 14   | 0   | 0     | 1     | 0   | 0     | 0     | 0    | 0     | 0     | 0   | 0      | 13     |      |
| 20  | 19.50 | 20.49 | 7    | 0   | 0     | 0     | 0   | 0     | 0     | 0    | 0     | 0     | 0   | 0      | 7      |      |
| 21  | 20.50 | 21.49 | 3    | 0   | 0     | 0     | 0   | 0     | 0     | 0    | 0     | 0     | 0   | 0      | 3      |      |
| 22  | 21.50 | 22.49 | 1    | 0   | 0     | 0     | 0   | 0     | 0     | 0    | 0     | 0     | 0   | 0      | 1      |      |
| 23  | 22.50 | 23.49 | 0    | 0   | 0     | 0     | 0   | 0     | 0     | 0    | 0     | 0     | 0   | 0      | 0      |      |
| 24  | 23.50 | 24.49 | 0    | 0   | 0     | 0     | 0   | 0     | 0     | 0    | 0     | 0     | 0   | 0      | 0      |      |
| 25  | 24.50 | 25.49 | 0    | 0   | 0     | 0     | 0   | 0     | 0     | 0    | 0     | 0     | 0   | 0      | 0      |      |
| 26  | 25.50 | 26.49 | 0    | 0   | 0     | 0     | 0   | 0     | 0     | 0    | 0     | 0     | 0   | 0      | 0      |      |
| 27  | 26.50 | 27.49 | 0    | 0   | 0     | 0     | 0   | 0     | 0     | 0    | 0     | 0     | 0   | 0      | 0      |      |
| 28  | 27.50 | 28.49 | 0    | 0   | 0     | 0     | 0   | 0     | 0     | 0    | 0     | 0     | 0   | 0      | 0      |      |
| 29  | 28.50 | 29.49 | 0    | 0   | 0     | 0     | 0   | 0     | 0     | 0    | 0     | 0     | 0   | 0      | 0      |      |
| 30  | 29.50 | 30.49 | 0    | 0   | 0     | 0     | 0   | 0     | 0     | 0    | 0     | 0     | 0   | 0      | 0      |      |
| 31  | 30.50 | 31.49 | 0    | 0   | 0     | 0     | 0   | 0     | 0     | 0    | 0     | 0     | 0   | 0      | 0      |      |
| 32  | 31.50 | 32.49 | 0    | 0   | 0     | 0     | 0   | 0     | 0     | 0    | 0     | 0     | 0   | 0      | 0      |      |
| 33  | 32.50 | 33.49 | 0    | 0   | 0     | 0     | 0   | 0     | 0     | 0    | 0     | 0     | 0   | 0      | 0      |      |
| 34  | 33.50 | 34.49 | 0    | 0   | 0     | 0     | 0   | 0     | 0     | 0    | 0     | 0     | 0   | 0      | 0      |      |
| 35  | 34.50 | 35.49 | 0    | 0   | 0     | 0     | 0   | 0     | 0     | 0    | 0     | 0     | 0   | 0      | 0      |      |
| 36  | 35.50 | 36.49 | 0    | 0   | 0     | 0     | 0   | 0     | 0     | 0    | 0     | 0     | 0   | 0      | 0      |      |
| 37  | 36.50 | 37.49 | 0    | 0   | 0     | 0     | 0   | 0     | 0     | 0    | 0     | 0     | 0   | 0      | 0      |      |
| 38  | 37.50 | 38.49 | 0    | 0   | 0     | 0     | 0   | 0     | 0     | 0    | 0     | 0     | 0   | 0      | 0      |      |
| 39  | 38.50 | 39.49 | 0    | 0   | 0     | 0     | 0   | 0     | 0     | 0    | 0     | 0     | 0   | 0      | 0      |      |
| 40  | 39.50 | 40.49 | 0    | 0   | 0     | 0     | 0   | 0     | 0     | 0    | 0     | 0     | 0   | 0      | 0      |      |
| 41  | 40.50 |       | 0    | 0   | 0     | 0     | 0   | 0     | 0     | 0    | 0     | 0     | 0   | 0      | 0      |      |

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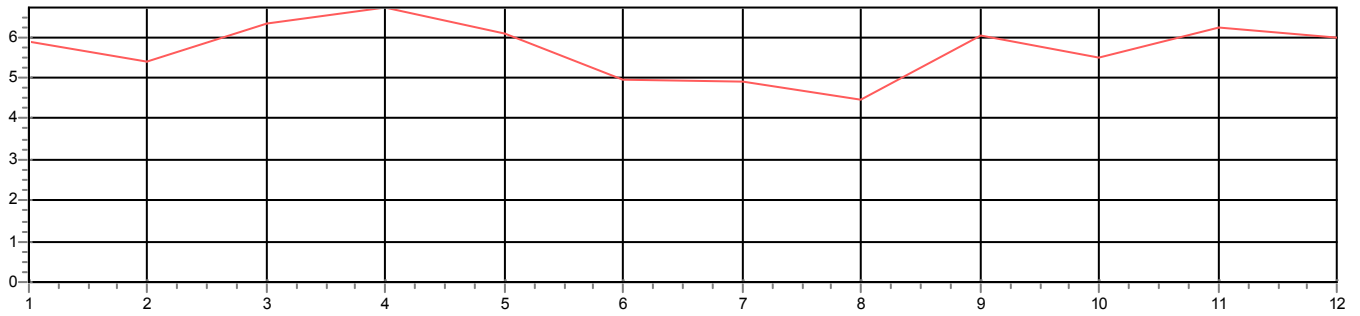
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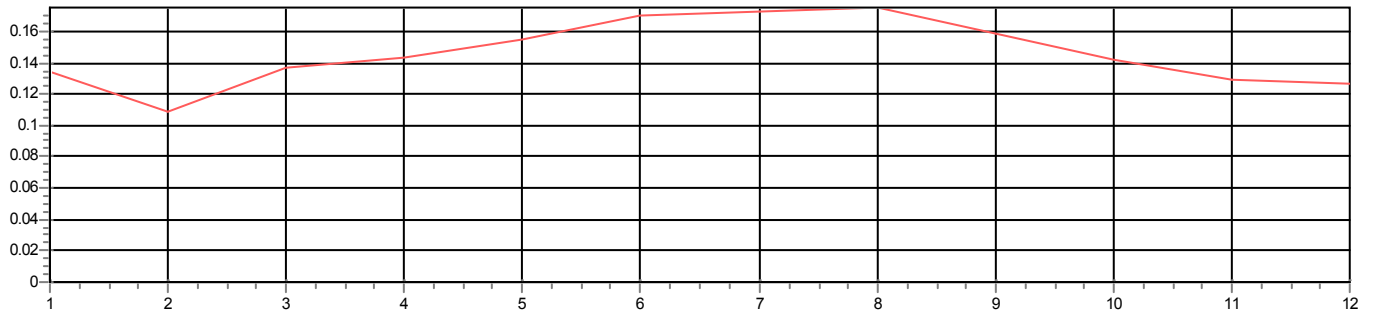
### Meteo data report - Monthly graphs aggregated

Mast: Watertown; Watertown; Watertown 040107A Period: Full period: 10/24/2002 - 01/07/2004 (14.4 months)

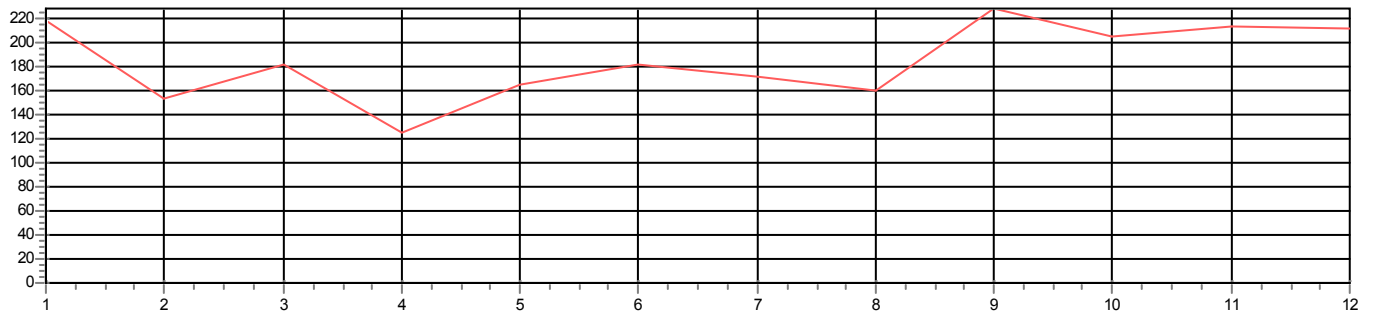
Mean wind speed



Turbulence intensity



Wind direction



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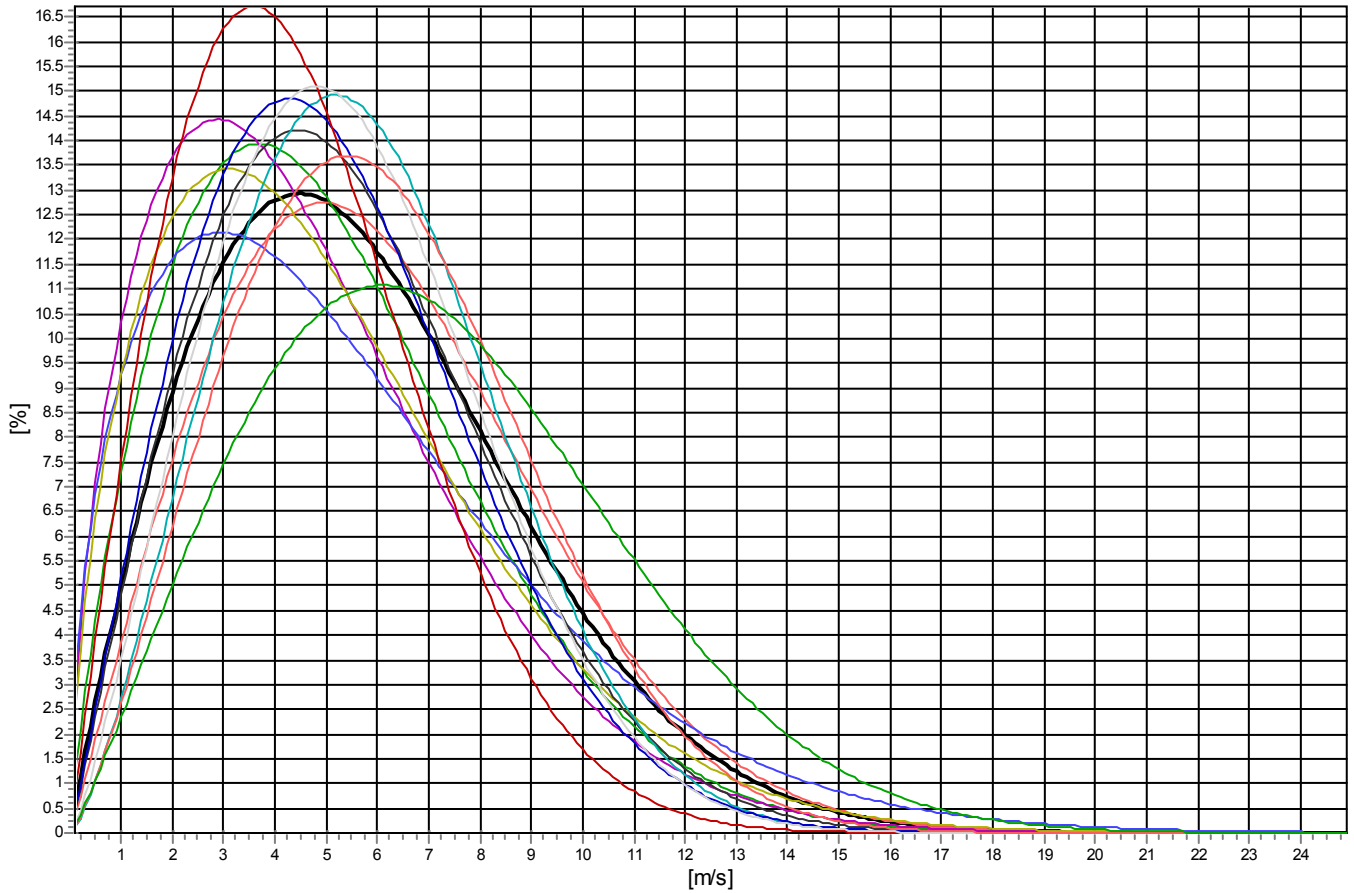
**Meteo data report - Weibull data overview**

**Mast:** Watertown; Watertown; Watertown 040107A **Period:** Full period: 10/24/2002 - 01/07/2004 (14.4 months)

Height: **20.0m - A**

**Weibull data**

| Sector      | A<br>[m/s]  | k            | f             | Mean wind speed<br>[m/s] |
|-------------|-------------|--------------|---------------|--------------------------|
| 0-N         | 6.85        | 2.055        | 6.51          | 6.07                     |
| 1-NNE       | 5.78        | 1.804        | 4.16          | 5.14                     |
| 2-ENE       | 5.29        | 1.608        | 8.68          | 4.74                     |
| 3-E         | 6.13        | 1.499        | 3.41          | 5.54                     |
| 4-ESE       | 5.68        | 1.607        | 4.04          | 5.09                     |
| 5-SSE       | 6.14        | 2.055        | 12.28         | 5.44                     |
| 6-S         | 6.51        | 2.380        | 14.14         | 5.77                     |
| 7-SSW       | 5.90        | 2.064        | 8.02          | 5.22                     |
| 8-WSW       | 5.10        | 1.983        | 7.08          | 4.52                     |
| 9-W         | 6.22        | 2.273        | 4.47          | 5.51                     |
| 10-WNW      | 6.93        | 2.307        | 7.26          | 6.14                     |
| 11-NNW      | 8.14        | 2.151        | 19.96         | 7.21                     |
| <b>Mean</b> | <b>6.50</b> | <b>1.939</b> | <b>100.00</b> | <b>5.77</b>              |



|                                     |                                     |                                     |                                     |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| — All A: 6.5 m/s k 1.94 Vm: 5.8 m/s | — N A: 6.9 m/s k 2.06 Vm: 6.1 m/s   | — NNE A: 5.8 m/s k 1.80 Vm: 5.1 m/s | — ENE A: 5.3 m/s k 1.61 Vm: 4.7 m/s |
| — E A: 6.1 m/s k 1.50 Vm: 5.5 m/s   | — ESE A: 5.7 m/s k 1.61 Vm: 5.1 m/s | — SSE A: 6.1 m/s k 2.05 Vm: 5.4 m/s | — S A: 6.5 m/s k 2.38 Vm: 5.8 m/s   |
| — SSW A: 5.9 m/s k 2.06 Vm: 5.2 m/s | — WSW A: 5.1 m/s k 1.98 Vm: 4.5 m/s | — W A: 6.2 m/s k 2.27 Vm: 5.5 m/s   | — WNW A: 6.9 m/s k 2.31 Vm: 6.1 m/s |
| — NNW A: 8.1 m/s k 2.15 Vm: 7.2 m/s |                                     |                                     |                                     |