

# Note on *Agonis flexuosa* foliage death at Yalgorup National Park June 2006



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### **Time of appearance of symptoms**

Symptoms of foliage death were first noticed on the Old Coast Road in Yalgorup National Park on the morning of Monday 25<sup>th</sup> June on a southbound journey but not on afternoon of Friday 22<sup>nd</sup> June on a northbound journey. Symptoms were very pronounced when observed, but it is not clear whether symptoms were present on the Friday and were missed. Some time would have needed to elapse between foliage death and foliage dehydration, however the characteristic odour and dry greenness of the foliage indicated that the foliage death was very recent.

### **Symptoms**

Symptoms first observed 25<sup>th</sup> June (passing at 110 kmh): Pale green and dry appearance to *Agonis flexuosa* foliage, aromatic smell of dead foliage. Symptoms not confined to road verges. Symptoms were photographed 2<sup>nd</sup> July and the extent of affected trees along Old Coast Rd noted. By this time the dead foliage was starting to turn light brown (See plates 1, 2 and 3). In some instances new shoots were present on branches with affected mature leaves, indicating that the buds producing these shoots had not been affected. Affected paddock trees were noted up to about 2 km north of the Preston Beach turnoff and isolated roadside instances up to about 5 km south of Ludlow Rd turnoff from Old Coast Road. Most severe symptoms were noted in Yalgorup National Park in an area affected by wildfire about a ?decade previously. Tuart did not appear to be affected.

### **Possible cause of symptoms**

Symptoms were first seen about a week after record low temperature for Perth of -0.7 °C on 17 June 2006. Frosts and near-frost conditions were extensive on the coastal plain on that date (Bureau of Meteorology June weather observations for Bunbury, Busselton and Perth appended). No damage to *A. flexuosa* foliage was observed along the Old Coast Road between 5 km south of Ludlow Rd and Raymond Road. Foliage death of *A. flexuosa* at Yalgorup is possibly attributable to frost conditions, although spatial variability in frost severity and/or susceptibility of *A. flexuosa* to frost need to be invoked to account for the localized foliage death. *A. flexuosa* is known to be frost intolerant and nurseries generally do not recommend this species for areas with a risk of frost

(e.g. [http://www.desert-tropicals.com/Plants/Myrtaceae/Agonis\\_flexuosa.html](http://www.desert-tropicals.com/Plants/Myrtaceae/Agonis_flexuosa.html)).

Elsewhere, foliage damage to *A. flexuosa* apparently attributable to frost has been seen in the vicinity of Bridgetown and Manjimup. Trees along Middlesex Road and Smith's Brook near Manjimup were affected in 2005 and 2006. Other species including *Trymalium florabundum* have also been affected (Adrian Wayne pers. com. 20/7/2006). Another factor affecting plant physiological status might be unusually dry early winter conditions in 2006.



Plate 1. View west along Preston Beach Road from intersection with Old Coast Road. 2<sup>nd</sup> July 2006. Note the scorched appearance to *Agonis flexuosa* and apparent absence of damage to Tuart foliage. Emergent dead Tuart stems are from trees killed by a wildfire some years previously. Affected trees were also present in the paddock adjacent to the right.





Plate 2. View south along northbound lanes of Old Coast Road from Preston Beach turnoff. 2<sup>nd</sup> July 2006. Note that only *A. flexuosa* are affected. Branch dieback in Tuart is due to wildfire some years previous and to some extent to Tuart crown decline.



Plate 3. Affected *A. flexuosa* foliage contrasted against healthy foliage. Note that death of leaves has been from tip to pedicel with indications that the base of leaves and axillary buds are still alive.

| Date                     | Day | Temps |      | Rain | Evap | Sun  | Max wind gust |     |       | 9 am |    |     |     |     | 3 pm   |      |        |      |     |     |        |    |        |
|--------------------------|-----|-------|------|------|------|------|---------------|-----|-------|------|----|-----|-----|-----|--------|------|--------|------|-----|-----|--------|----|--------|
|                          |     | Min   | Max  |      |      |      | Dir           | Spd | Time  | Temp | RH | Cld | Dir | Spd | MSLP   | Temp | RH     | Cld  | Dir | Spd | MSLP   |    |        |
|                          |     |       |      |      |      |      |               |     |       |      |    |     |     |     |        |      |        |      |     |     |        | °C | °C     |
| 1                        | Th  | 4.5   | 19.0 | 0    | 1.6  | 9.0  | NE            | 28  | 13:11 | 11.4 | 82 | 7   | ESE | 6   | 1027.7 | 18.1 | 46     | 3    | E   | 9   | 1024.0 |    |        |
| 2                        | Fr  | 4.3   | 19.6 | 0    | 0.4  | 9.2  | ENE           | 28  | 12:28 | 12.3 | 79 | 1   | ENE | 9   | 1026.3 | 19.4 | 44     | 1    | ENE | 11  | 1023.0 |    |        |
| 3                        | Sa  | 7.1   | 20.5 | 0    | 3.8  | 9.2  | NE            | 20  | 11:01 | 11.7 | 69 | 1   | E   | 7   | 1026.1 | 19.9 | 40     | 1    | ESE | 6   | 1023.7 |    |        |
| 4                        | Su  | 4.7   | 22.3 | 0    | 3.0  | 9.3  | ENE           | 26  | 10:42 | 11.4 | 63 | 0   | ENE | 7   | 1026.7 | 21.0 | 33     | 0    | E   | 11  | 1023.9 |    |        |
| 5                        | Mo  | 3.6   | 24.1 | 0    | 2.2  | 9.3  | NE            | 22  | 11:43 | 11.8 | 64 | 0   | E   | 6   | 1025.7 | 23.4 | 29     | 0    | ENE | 4   | 1022.0 |    |        |
| 6                        | Tu  | 6.6   | 22.2 | 0    | 2.6  | 9.1  | N             | 22  | 09:54 | 14.9 | 70 | 1   | NNE | 6   | 1023.2 | 21.7 | 51     | 1    | WSW | 7   | 1021.6 |    |        |
| 7                        | We  | 7.6   | 19.1 | 0    | 1.8  | 7.5  | SE            | 30  | 14:23 | 13.5 | 84 | 3   | SE  | 11  | 1028.3 | 18.4 | 52     | 2    | E   | 13  | 1028.1 |    |        |
| 8                        | Th  | 2.8   | 17.3 | 0    | 1.6  | 9.2  | ENE           | 37  | 11:34 | 9.5  | 64 | 1   | E   | 11  | 1034.6 | 17.2 | 38     | 0    | E   | 11  | 1030.4 |    |        |
| 9                        | Fr  | 5.4   | 17.7 | 0    | 2.8  | 8.9  | NNE           | 30  | 12:31 | 9.9  | 80 | 3   | E   | 11  | 1033.9 | 17.7 | 47     | 6    | E   | 13  | 1029.7 |    |        |
| 10                       | Sa  | 5.6   | 18.8 | 0    | 2.6  | 7.9  | NNE           | 33  | 11:24 | 10.0 | 73 | 5   | E   | 6   | 1033.7 | 17.8 | 42     | 7    | NE  | 13  | 1031.6 |    |        |
| 11                       | Su  | 4.3   | 20.1 | 0    | 2.2  | 9.3  | NE            | 31  | 11:29 | 11.4 | 70 | 1   | ENE | 9   | 1033.3 | 19.5 | 34     | 1    | ENE | 11  | 1028.7 |    |        |
| 12                       | Mo  | 4.2   | 21.6 | 0    | 2.2  | 9.0  | N             | 28  | 11:48 | 12.2 | 62 | 2   | NE  | 11  | 1026.6 | 20.6 | 33     | 3    | NW  | 11  | 1022.4 |    |        |
| 13                       | Tu  | 4.2   | 22.8 | 0    | 2.6  | 7.5  | NNE           | 30  | 11:26 | 11.8 | 53 | 3   | NE  | 13  | 1021.2 | 21.5 | 28     | 5    | NNE | 9   | 1017.8 |    |        |
| 14                       | We  | 9.7   | 23.6 | 0    | 3.2  | 7.7  | ENE           | 24  | 14:39 | 12.8 | 46 | 7   | E   | 7   | 1022.8 | 23.0 | 24     | 1    | E   | 11  | 1021.3 |    |        |
| 15                       | Th  | 5.4   | 21.8 | 0    | 5.2  | 9.2  | ESE           | 20  | 15:52 | 10.9 | 50 | 0   | E   | 7   | 1026.7 | 20.9 | 22     | 0    | E   | 9   | 1024.6 |    |        |
| 16                       | Fr  | 2.8   | 20.0 | 0    | 3.6  | 9.2  | NE            | 19  | 02:58 | 9.5  | 46 | 0   | E   | 7   | 1028.0 | 18.8 | 22     | 0    | SSE | 4   | 1024.2 |    |        |
| 17                       | Sa  | -0.7  | 20.0 | 0    | 2.2  | 7.6  | SSW           | 26  | 14:58 | 8.6  | 56 | 5   | ENE | 4   | 1023.7 | 18.3 | 33     | 6    | SW  | 17  | 1020.9 |    |        |
| 18                       | Su  | 0.9   | 22.4 | 0    | 2.2  | 9.2  | NNW           | 20  | 13:48 | 7.8  | 74 | 1   | NNE | 6   | 1021.6 | 21.2 | 30     | 1    | SW  | 9   | 1016.9 |    |        |
| 19                       | Mo  | 5.5   | 21.4 | 0    | 1.8  | 3.2  | WNW           | 46  | 14:30 | 11.5 | 60 | 7   | NNE | 7   | 1013.1 | 17.9 | 82     | 7    | NW  | 19  | 1009.7 |    |        |
| 20                       | Tu  | 11.5  | 18.6 | 4.4  | 1.2  | 5.0  | WSW           | 44  | 12:55 | 16.2 | 64 | 7   | SW  | 19  | 1017.1 | 17.9 | 51     | 5    | SW  | 19  | 1018.6 |    |        |
| 21                       | We  | 10.7  | 18.8 | 0    | 3.8  | 6.4  | NE            | 17  | 11:21 | 12.3 | 82 | 7   | NE  | 2   | 1023.2 | 17.3 | 54     | 4    | SSW | 6   | 1021.8 |    |        |
| 22                       | Th  | 3.5   | 19.7 | 0    | 0.4  | 9.0  | NE            | 28  | 12:42 | 10.4 | 83 | 2   | NE  | 7   | 1024.7 | 19.1 | 44     | 3    | NE  | 11  | 1021.9 |    |        |
| 23                       | Fr  | 6.8   | 20.4 | 0    | 2.2  | 9.2  | SE            | 20  | 13:18 | 11.4 | 65 | 1   | ENE | 7   | 1022.8 | 19.9 | 33     | 1    | SE  | 9   | 1020.6 |    |        |
| 24                       | Sa  | 5.6   | 22.0 | 0    | 3.0  | 9.2  | NE            | 28  | 14:19 | 11.6 | 59 | 0   | E   | 9   | 1026.8 | 22.0 | 34     | 0    | NE  | 11  | 1023.6 |    |        |
| 25                       | Su  | 4.7   | 22.6 | 0    | 2.2  | 8.7  | NW            | 24  | 15:13 | 12.0 | 71 | 1   | NE  | 7   | 1025.5 | 21.5 | 55     | 5    | NW  | 13  | 1021.6 |    |        |
| 26                       | Mo  | 8.1   | 18.3 | 1.4  | 2.6  | 2.9  | SSE           | 24  | 04:34 | 13.9 | 97 | 3   | NNW | 2   | 1026.0 | 17.3 | 65     | 7    | SSW | 2   | 1024.1 |    |        |
| 27                       | Tu  | 7.8   | 20.3 | 5.4  | 2.2  | 3.0  | WNW           | 65  | 15:54 | 13.3 | 99 | 8   | N   | 9   | 1018.1 | 16.9 | 81     | 7    | WNW | 20  | 1013.4 |    |        |
| 28                       | We  | 10.1  | 15.8 | 12.4 | 1.4  | 5.8  | SSW           | 41  | 00:19 | 12.0 | 62 | 2   | SSE | 11  | 1023.6 | 15.7 | 58     | 7    | SSE | 9   | 1024.2 |    |        |
| 29                       | Th  | 7.0   | 17.3 | 0    | 2.2  | 0.2  | N             | 20  | 13:05 | 10.5 | 80 | 7   | NE  | 7   | 1028.3 | 17.2 | 58     | 7    | ENE | 7   | 1025.9 |    |        |
| 30                       | Fr  | 10.5  | 21.0 | 1.0  | 0.8  | 3.1  | WNW           | 33  | 13:38 | 11.7 | 91 | 7   | N   | 9   | 1024.5 | 20.1 | 61     | 7    | W   | 20  | 1021.7 |    |        |
| Statistics for June 2006 |     |       |      |      |      |      |               |     |       |      |    |     |     |     |        |      |        |      |     |     |        |    |        |
| Mean                     |     | 5.8   | 20.3 |      | 2.3  | 7.4  |               |     |       | 11.6 | 69 | 3   |     |     |        | 8    | 1025.5 | 19.4 | 44  | 3   |        |    |        |
| Lowest                   |     | -0.7  | 15.8 | 0    | 0.4  | 0.2  |               |     |       | 7.8  | 46 | 0   | #   |     |        | 2    | 1013.1 | 15.7 | 22  | 0   | SSW    | 2  | 1009.7 |
| Highest                  |     | 11.5  | 24.1 | 12.4 | 5.2  | 9.3  | WNW           | 65  |       | 16.2 | 99 | 8   | SW  | 19  | 1034.6 | 23.4 | 82     | 7    | #   |     |        | 20 | 1031.6 |
| Total                    |     |       |      |      | 24.6 | 69.6 | 223.0         |     |       |      |    |     |     |     |        |      |        |      |     |     |        |    |        |

| Date | Day | Temps |      | Rain | Evap | Sun | Max wind gust |     |       | 9 am |    |     |      |     | 3 pm   |      |    |     |     |     |        |
|------|-----|-------|------|------|------|-----|---------------|-----|-------|------|----|-----|------|-----|--------|------|----|-----|-----|-----|--------|
|      |     | Min   | Max  |      |      |     | Dir           | Spd | Time  | Temp | RH | Cld | Dir  | Spd | MSLP   | Temp | RH | Cld | Dir | Spd | MSLP   |
|      |     |       |      |      |      |     |               |     |       |      |    |     |      |     |        |      |    |     |     |     |        |
| 1    | Th  | 5.5   | 18.5 | 0    |      |     | E             | 24  | 07:24 | 10.8 | 94 |     | E    | 7   | 1028.2 | 18.0 | 52 |     | W   | 11  | 1025.2 |
| 2    | Fr  | 2.7   | 19.9 | 0.2  |      |     | ESE           | 26  | 11:40 | 10.2 | 98 |     | E    | 7   | 1027.5 | 18.3 | 59 |     | SW  | 13  | 1024.3 |
| 3    | Sa  | 7.2   | 20.0 | 0    |      |     | ENE           | 33  | 10:48 | 13.6 | 67 |     | E    | 13  | 1027.1 | 18.7 | 40 |     | ENE | 13  | 1024.6 |
| 4    | Su  | 2.2   | 19.9 | 0    |      |     | E             | 19  | 09:22 | 11.6 | 65 |     | E    | 11  | 1027.5 | 19.6 | 35 |     | WNW | 6   | 1024.8 |
| 5    | Mo  | 1.1   | 20.2 | 0    |      |     | N             | 19  | 11:56 | 9.9  | 93 |     | ESE  | 6   | 1026.3 | 19.7 | 37 |     | W   | 7   | 1023.4 |
| 6    | Tu  | 2.0   | 22.0 | 0    |      |     | N             | 24  | 11:58 | 11.6 | 85 |     | ENE  | 7   | 1022.8 | 20.9 | 56 |     | WNW | 15  | 1021.3 |
| 7    | We  | 9.5   | 18.7 | 0    |      |     | SE            | 43  | 13:43 | 11.4 | 85 |     | SE   | 7   | 1030.2 | 16.9 | 42 |     | ESE | 20  | 1029.9 |
| 8    | Th  | 3.7   | 17.2 | 0    |      |     | E             | 35  | 11:29 | 7.9  | 71 |     | ESE  | 7   | 1036.4 | 16.9 | 40 |     | ESE | 17  | 1032.1 |
| 9    | Fr  | 1.9   | 16.7 | 0    |      |     | ESE           | 31  | 13:00 | 7.4  | 96 |     | Calm |     | 1035.1 | 15.0 | 55 |     | E   | 17  | 1031.6 |
| 10   | Sa  | 7.3   | 15.3 | 0    |      |     | NE            | 26  | 11:27 | 11.6 | 74 |     | NE   | 9   | 1035.0 | 15.2 | 56 |     | SSE | 2   | 1032.9 |
| 11   | Su  | 3.3   | 19.2 | 0    |      |     | NNW           | 30  | 14:49 | 12.7 | 64 |     | NE   | 15  | 1033.7 | 17.9 | 46 |     | N   | 19  | 1029.1 |
| 12   | Mo  | 3.3   | 19.6 | 0    |      |     | N             | 39  | 15:21 | 14.2 | 55 |     | NNE  | 15  | 1025.8 | 18.7 | 61 |     | N   | 26  | 1021.6 |
| 13   | Tu  | 9.5   | 15.7 | 2.8  |      |     | S             | 24  | 20:27 | 15.6 | 41 |     | NE   | 6   | 1021.1 | 14.2 | 70 |     | SSE | 9   | 1019.2 |
| 14   | We  | 7.6   | 22.9 | 0    |      |     | ESE           | 31  | 12:49 | 13.2 | 47 |     | SE   | 17  | 1023.9 | 22.1 | 22 |     | ESE | 20  | 1023.1 |
| 15   | Th  | 3.8   | 20.8 | 0    |      |     | E             | 30  | 09:47 | 13.0 | 49 |     | ESE  | 9   | 1028.2 | 20.3 | 25 |     | E   | 15  | 1026.0 |
| 16   | Fr  | 0.7   | 19.0 | 0    |      |     | NE            | 24  | 11:21 | 9.8  | 58 |     | E    | 9   | 1029.1 | 18.3 | 25 |     | ENE | 11  | 1025.1 |
| 17   | Sa  | -3.0  | 19.1 | 0    |      |     | W             | 20  | 14:20 | 5.8  | 77 |     | ESE  | 6   | 1024.2 | 17.3 | 45 |     | WNW | 11  | 1021.6 |
| 18   | Su  | 2.6   | 20.1 | 0    |      |     | N             | 33  | 12:51 | 10.6 | 88 |     | NE   | 9   | 1020.4 | 18.8 | 56 |     | N   | 22  | 1017.0 |
| 19   | Mo  | 10.0  | 20.3 | 0    |      |     | WSW           | 65  | 22:34 | 19.1 | 60 |     | NNW  | 28  | 1010.0 | 17.0 | 73 |     | WNW | 31  | 1007.3 |
| 20   | Tu  | 12.2  | 17.5 | 7.6  |      |     | WSW           | 63  | 04:55 | 14.8 | 70 |     | WSW  | 28  | 1016.5 | 15.3 | 56 |     | WSW | 24  | 1018.1 |
| 21   | We  | 8.9   | 17.1 | 0    |      |     | SSW           | 20  | 02:27 | 12.6 | 69 |     | ENE  | 6   | 1022.9 | 16.5 | 68 |     | NW  | 11  | 1021.7 |
| 22   | Th  | 5.2   | 19.1 | 0    |      |     | ENE           | 20  | 12:07 | 10.1 | 96 |     | ESE  | 7   | 1025.2 | 18.3 | 47 |     | ESE | 9   | 1022.6 |
| 23   | Fr  | 3.4   | 20.1 | 0    |      |     | NE            | 20  | 12:32 | 9.5  | 94 |     | ESE  | 7   | 1024.1 | 19.6 | 36 |     | SSE | 7   | 1021.9 |
| 24   | Sa  | 3.1   | 21.5 | 0    |      |     | ENE           | 31  | 12:03 | 11.3 | 76 |     | ESE  | 11  |        |      |    |     |     |     |        |



Source: Bureau of Meteorology. Busselton Aero {station 009603}.

| Date                     | Day | Temps |      | Rain | Evap | Sun | Max wind gust |     | 9 am |      |    |      |      |        | 3 pm |      |    |     |     |        |      |
|--------------------------|-----|-------|------|------|------|-----|---------------|-----|------|------|----|------|------|--------|------|------|----|-----|-----|--------|------|
|                          |     | Min   | Max  |      |      |     | Dir           | Spd | Time | Temp | RH | Cld  | Dir  | Spd    | MSLP | Temp | RH | Cld | Dir | Spd    | MSLP |
|                          |     |       |      |      |      |     |               |     |      |      |    |      |      |        |      |      |    |     |     |        |      |
| 1                        | Th  | 6     | 18   |      |      |     |               |     | 11.3 | 83   |    | E    | 9    | 1028.0 | 17.4 | 55   |    | WNW | 11  | 1025.1 |      |
| 2                        | Fr  | 4     | 19   |      |      |     |               |     | 10.7 | 85   |    | Calm |      | 1027.4 | 18.5 | 43   |    | SE  | 13  | 1024.2 |      |
| 3                        | Sa  | 8     | 19   |      |      |     |               |     | 13.2 | 77   |    | E    | 15   | 1026.9 | 18.8 | 45   |    | ENE | 11  | 1024.4 |      |
| 4                        | Su  | 5     | 19   |      |      |     |               |     | 11.5 | 68   |    | E    | 9    | 1027.2 | 17.7 | 39   |    | NNW | 11  | 1024.6 |      |
| 5                        | Mo  | 1     | 20   |      |      |     |               |     | 9.7  | 80   |    | SW   | 2    | 1025.8 | 18.8 | 50   |    | NNW | 11  | 1023.1 |      |
| 6                        | Tu  | 1     | 21   |      |      |     |               |     | 9.7  | 78   |    | ESE  | 6    | 1022.0 | 20.5 | 57   |    | NNW | 17  | 1020.7 |      |
| 7                        | We  | 6     | 18   |      |      |     |               |     | 11.6 | 92   |    | SE   | 9    | 1030.3 | 16.5 | 45   |    | SE  | 35  | 1030.0 |      |
| 8                        | Th  | 0     | 17   |      |      |     |               |     | 8.2  | 75   |    | S    | 4    | 1035.9 | 16.4 | 41   |    | ESE | 19  | 1032.1 |      |
| 9                        | Fr  | 3     | 17   |      |      |     |               |     | 9.0  | 91   |    | E    | 17   | 1034.8 | 14.9 | 59   |    | ESE | 24  | 1031.7 |      |
| 10                       | Sa  | 7     | 14   |      |      |     |               |     | 11.5 | 79   |    | ESE  | 9    | 1034.8 | 14.1 | 59   |    | NE  | 4   | 1032.9 |      |
| 11                       | Su  | 5     | 19   |      |      |     |               |     | 10.5 | 73   |    | ENE  | 15   | 1033.2 | 17.8 | 50   |    | N   | 24  | 1028.9 |      |
| 12                       | Mo  | 5     | 19   |      |      |     |               |     | 14.2 | 67   |    | NNE  | 22   | 1024.7 | 17.7 | 71   |    | N   | 31  | 1020.7 |      |
| 13                       | Tu  | 11    | 13   |      |      |     |               |     | 11.0 | 91   |    | E    | 4    | 1020.7 | 12.4 | 91   |    | SE  | 13  | 1019.0 |      |
| 14                       | We  | 9     | 21   |      |      |     |               |     | 13.1 | 53   |    | ESE  | 22   | 1023.9 | 20.3 | 30   |    | SE  | 20  | 1023.5 |      |
| 15                       | Th  | 8     | 20   |      |      |     |               |     | 12.1 | 58   |    | E    | 20   | 1028.0 | 19.0 | 28   |    | SE  | 15  | 1025.9 |      |
| 16                       | Fr  | 4     | 18   |      |      |     |               |     | 9.2  | 64   |    | E    | 15   | 1029.0 | 17.4 | 27   |    | ENE | 13  | 1024.9 |      |
| 17                       | Sa  | -1    | 19   |      |      |     |               |     | 4.8  | 78   |    | ESE  | 6    | 1023.8 | 17.1 | 43   |    | NNW | 11  | 1021.3 |      |
| 18                       | Su  | 5     | 19   |      |      |     |               |     | 11.3 | 70   |    | ENE  | 13   | 1019.6 | 17.0 | 70   |    | N   | 26  | 1016.2 |      |
| 19                       | Mo  | 11    | 19   |      |      |     |               |     | 15.9 | 91   |    | NNW  | 28   | 1008.8 | 16.2 | 74   |    | W   | 30  | 1006.6 |      |
| 20                       | Tu  | 11    | 16   |      |      |     |               |     | 13.3 | 74   |    | W    | 15   | 1015.9 | 14.7 | 55   |    | WSW | 19  | 1017.7 |      |
| 21                       | We  | 8     | 18   |      |      |     |               |     | 11.7 | 77   |    | E    | 2    | 1022.3 | 17.2 | 51   |    | W   | 17  | 1021.1 |      |
| 22                       | Th  | 6     | 18   |      |      |     |               |     | 11.4 | 94   |    | E    | 11   | 1024.7 | 16.9 | 50   |    | E   | 7   | 1022.5 |      |
| 23                       | Fr  | 4     | 19   |      |      |     |               |     | 9.5  | 81   |    | SE   | 6    | 1023.9 | 18.3 | 45   |    | SE  | 11  | 1021.8 |      |
| 24                       | Sa  | 6     | 21   |      |      |     |               |     | 11.3 | 71   |    | E    | 15   | 1027.7 | 19.7 | 40   |    | N   | 15  | 1024.1 |      |
| 25                       | Su  | 3     | 20   |      |      |     |               |     | 9.2  | 83   |    | E    | 6    | 1024.5 | 19.4 | 64   |    | WNW | 26  | 1021.4 |      |
| 26                       | Mo  | 5     | 18   |      |      |     |               |     | 9.5  | 96   |    | ESE  | 7    | 1025.5 | 16.1 | 54   |    | SSW | 9   | 1023.6 |      |
| 27                       | Tu  | 6     | 19   |      |      |     |               |     | 16.7 | 71   |    | WNW  | 28   | 1014.6 | 15.6 | 74   |    | W   | 33  | 1010.8 |      |
| 28                       | We  | 7     | 15   |      |      |     |               |     | 10.7 | 81   |    | WSW  | 6    | 1022.6 | 14.9 | 58   |    | SSW | 13  | 1023.7 |      |
| 29                       | Th  | 6     | 17   |      |      |     |               |     | 12.2 | 84   |    | Calm |      | 1027.1 | 17.0 | 59   |    | NW  | 20  | 1024.5 |      |
| 30                       | Fr  | 12    | 19   |      |      |     |               |     | 16.0 | 77   |    | W    | 24   | 1021.4 | 17.6 | 77   |    | NW  | 24  | 1019.0 |      |
| Statistics for June 2006 |     |       |      |      |      |     |               |     |      |      |    |      |      |        |      |      |    |     |     |        |      |
| Mean                     |     | 5.7   | 18.3 |      |      |     |               |     | 11.3 | 78   |    |      | 11   | 1025.2 | 17.2 | 53   |    |     | 17  | 1022.9 |      |
| Lowest                   |     | -1    | 13   |      |      |     |               |     | 4.8  | 53   |    |      | Calm | 1008.8 | 12.4 | 27   |    | NE  | 4   | 1006.6 |      |
| Highest                  |     | 12    | 21   |      |      |     |               |     | 16.7 | 96   |    | #    | 28   | 1035.9 | 20.5 | 91   |    | SE  | 35  | 1032.9 |      |
| Total                    |     |       |      |      |      |     |               |     |      |      |    |      |      |        |      |      |    |     |     |        |      |



