



UNIVERSIDAD NACIONAL DE COLOMBIA SEDE MANIZALES

OBSERVATORIOS AMBIENTALES PARA EL DESARROLLO URBANO SOTENIBLE EN MANIZALES

RED DE ESTACIONES HIDROMETEOROLÓGICAS PARA PREVENCIÓN DE DESASTRES DE MANIZALES



ESTACIÓN METEOROLÓGICA BOSQUES DEL NORTE

CÓDIGO: EMM-08

OCTUBRE DE 2011

RESUMEN DIARIO Y MENSUAL DE VARIABLES METEOROLÓGICAS

| Variables Día | Temperatura del Aire (°C) | | | V.V. (m/s) | | P.B. (HPa) | Humedad Relativa (%) | | | LI. (mm) | Radiación Solar (W/m ²) | | ET. (mm) |
|------------------|---------------------------|-------------|-------------|------------|------------|--------------|----------------------|-------------|-------------|--------------|-------------------------------------|--------------|-------------|
| | Máxima | Media | Mínima | Máxima | Media | Media | Máxima | Media | Mínima | Suma | Máxima | Media | Suma |
| 1 | 20.2 | 16.8 | 13.9 | 4.5 | 0.4 | 792.2 | 98.0 | 94.5 | 83.0 | 19.4 | 654.0 | 132.4 | 1.0 |
| 2 | 21.8 | 17.1 | 13.9 | 4.9 | 0.5 | 793.0 | 98.0 | 92.0 | 78.0 | 3.0 | 1104.0 | 268.1 | 2.0 |
| 3 | 23.2 | 17.6 | 14.7 | 4.9 | 0.6 | 792.7 | 98.0 | 91.0 | 64.0 | 4.6 | 1194.0 | 268.1 | 2.0 |
| 4 | 18.6 | 16.0 | 13.6 | 4.9 | 0.4 | 793.9 | 98.0 | 95.5 | 84.0 | 9.8 | 338.0 | 155.4 | 1.1 |
| 5 | 23.1 | 17.9 | 13.9 | 5.4 | 0.6 | 792.1 | 98.0 | 87.8 | 58.0 | 0.0 | 1232.0 | 364.3 | 2.7 |
| 6 | 23.2 | 18.3 | 14.8 | 4.9 | 1.0 | 790.8 | 98.0 | 87.5 | 61.0 | 16.0 | 1113.0 | 480.7 | 3.5 |
| 7 | 24.1 | 18.7 | 14.6 | 4.9 | 0.7 | 790.4 | 97.0 | 88.7 | 62.0 | 0.8 | 1227.0 | 343.4 | 2.7 |
| 8 | 20.2 | 16.8 | 14.9 | 4.5 | 0.6 | 791.6 | 98.0 | 94.3 | 81.0 | 10.0 | 701.0 | 183.3 | 1.4 |
| 9 | 21.1 | 17.0 | 15.2 | 3.1 | 0.3 | 792.2 | 98.0 | 93.3 | 79.0 | 1.6 | 823.0 | 173.5 | 1.3 |
| 10 | 20.6 | 16.9 | 14.7 | 5.4 | 0.6 | 793.4 | 98.0 | 93.1 | 72.0 | 30.0 | 1120.0 | 244.6 | 1.7 |
| 11 | 20.1 | 16.8 | 14.7 | 3.1 | 0.5 | 793.4 | 98.0 | 95.2 | 85.0 | 14.4 | 742.0 | 188.5 | 1.3 |
| 12 | 20.2 | 16.2 | 14.2 | 5.8 | 0.6 | 794.7 | 98.0 | 94.7 | 79.0 | 25.8 | 738.0 | 206.5 | 1.5 |
| 13 | 22.7 | 17.4 | 13.8 | 6.7 | 0.6 | 792.6 | 98.0 | 86.7 | 63.0 | 1.2 | 1229.0 | 448.4 | 3.3 |
| 14 | 22.6 | 16.1 | 13.4 | 5.8 | 0.8 | 792.7 | 97.0 | 92.6 | 74.0 | 33.6 | 1204.0 | 257.9 | 1.9 |
| 15 | 20.3 | 16.3 | 13.3 | 3.6 | 0.7 | 793.8 | 98.0 | 92.3 | 76.0 | 33.8 | 749.0 | 264.8 | 2.0 |
| 16 | 19.8 | 15.7 | 13.1 | 6.7 | 0.5 | 794.3 | 98.0 | 94.5 | 80.0 | 42.0 | 1155.0 | 192.8 | 1.3 |
| 17 | 17.7 | 14.9 | 13.8 | 4.5 | 0.6 | 794.6 | 98.0 | 96.5 | 89.0 | 34.4 | 483.0 | 167.6 | 1.1 |
| 18 | 18.1 | 14.9 | 13.3 | 4.9 | 0.6 | 795.9 | 98.0 | 95.1 | 81.0 | 14.0 | 577.0 | 159.1 | 1.1 |
| 19 | 21.4 | 16.1 | 11.7 | 7.2 | 0.6 | 796.7 | 96.0 | 78.8 | 43.0 | 0.8 | 1322.0 | 407.7 | 3.2 |
| 20 | 19.7 | 16.0 | 12.8 | 4.0 | 0.4 | 796.8 | 92.0 | 75.0 | 50.0 | 0.0 | 1002.0 | 264.9 | 2.1 |
| 21 | 22.1 | 16.1 | 13.1 | 4.9 | 0.5 | 795.1 | 96.0 | 84.3 | 46.0 | 0.6 | 1194.0 | 373.7 | 2.8 |
| 22 | 21.3 | 16.4 | 13.1 | 5.4 | 0.6 | 793.2 | 97.0 | 82.1 | 55.0 | 0.0 | 1230.0 | 340.0 | 2.5 |
| 23 | 22.0 | 16.8 | 12.0 | 4.5 | 0.5 | 792.8 | 97.0 | 87.2 | 63.0 | 3.0 | 1079.0 | 253.5 | 2.0 |
| 24 | 22.4 | 17.7 | 15.1 | 5.8 | 0.8 | 792.5 | 97.0 | 87.4 | 64.0 | 0.2 | 1197.0 | 374.3 | 2.8 |
| 25 | 20.5 | 17.1 | 14.1 | 4.5 | 0.6 | 791.8 | 98.0 | 90.2 | 72.0 | 8.4 | 981.0 | 245.9 | 1.9 |
| 26 | 20.8 | 17.0 | 14.9 | 2.7 | 0.3 | 790.0 | 98.0 | 93.1 | 77.0 | 1.2 | 954.0 | 210.2 | 1.5 |
| 27 | 22.2 | 17.6 | 13.6 | 5.8 | 0.6 | 789.1 | 98.0 | 91.6 | 72.0 | 1.2 | 1020.0 | 252.0 | 1.9 |
| 28 | 18.9 | 16.8 | 15.1 | 4.5 | 0.5 | 790.7 | 98.0 | 94.7 | 82.0 | 25.4 | 452.0 | 148.9 | 1.0 |
| 29 | 18.4 | 15.9 | 14.8 | 4.0 | 0.3 | 792.5 | 98.0 | 96.6 | 88.0 | 11.6 | 517.0 | 123.4 | 0.8 |
| 30 | 17.2 | 15.1 | 12.8 | 5.8 | 0.4 | 793.7 | 98.0 | 97.2 | 93.0 | 27.2 | 392.0 | 112.3 | 0.7 |
| 31 | 20.4 | 15.7 | 12.1 | 4.5 | 0.5 | 793.2 | 98.0 | 91.2 | 77.0 | 0.0 | 970.0 | 277.9 | 2.0 |
| Mensual | 24.1 | 16.6 | 11.7 | 7.2 | 0.6 | 793.0 | 98.0 | 90.8 | 43.0 | 374.0 | 1322.0 | 254.3 | 57.9 |

Convenciones: V.V.: Velocidad del Viento P.B.: Presión Barométrica LI.: Lluvia diaria ET.: Evapotranspiración. Nota: Datos resaltados en rojo están incompletos.



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ESTACIÓN METEOROLÓGICA BOSQUES DEL NORTE

CÓDIGO: EMM-08



OCTUBRE DE 2011

JORNADA DIURNA - DIRECCIÓN DEL VIENTO SEGÚN LA ROSA DE LOS VIENTOS (Frecuencia relativa)

| Día | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSO | SO | OSO | O | ONO | NO | NNO |
|---------|-----|-----|-----|-----|----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1 | 7% | 6% | 10% | 1% | 2% | 6% | 8% | 9% | 3% | 6% | 13% | 7% | 1% | 3% | 12% | 9% |
| 2 | 4% | 7% | 18% | 0% | 0% | 2% | 1% | 14% | 8% | 13% | 8% | 7% | 6% | 2% | 6% | 5% |
| 3 | 3% | 13% | 2% | 6% | 1% | 0% | 1% | 5% | 6% | 13% | 9% | 8% | 12% | 6% | 10% | 6% |
| 4 | 6% | 5% | 25% | 1% | 1% | 3% | 2% | 5% | 4% | 12% | 8% | 7% | 2% | 2% | 13% | 5% |
| 5 | 26% | 10% | 8% | 1% | 1% | 1% | 1% | 2% | 1% | 3% | 0% | 5% | 7% | 6% | 14% | 14% |
| 6 | 10% | 8% | 7% | 1% | 1% | 2% | 1% | 4% | 5% | 2% | 2% | 3% | 2% | 14% | 20% | 18% |
| 7 | 8% | 24% | 1% | 1% | 1% | 0% | 1% | 1% | 3% | 5% | 7% | 11% | 10% | 7% | 11% | 8% |
| 8 | 4% | 3% | 6% | 1% | 0% | 2% | 0% | 1% | 13% | 18% | 13% | 8% | 3% | 4% | 14% | 10% |
| 9 | 16% | 33% | 4% | 6% | 1% | 1% | 1% | 2% | 4% | 6% | 3% | 1% | 2% | 12% | 3% | 6% |
| 10 | 6% | 16% | 13% | 3% | 6% | 6% | 2% | 0% | 3% | 0% | 0% | 0% | 1% | 3% | 30% | 10% |
| 11 | 3% | 33% | 10% | 1% | 4% | 1% | 1% | 3% | 5% | 7% | 13% | 2% | 1% | 1% | 6% | 9% |
| 12 | 15% | 10% | 1% | 1% | 0% | 0% | 0% | 1% | 6% | 12% | 13% | 12% | 4% | 5% | 10% | 12% |
| 13 | 4% | 7% | 3% | 0% | 1% | 0% | 1% | 3% | 5% | 5% | 15% | 10% | 8% | 6% | 17% | 15% |
| 14 | 8% | 8% | 8% | 1% | 0% | 0% | 2% | 7% | 8% | 6% | 5% | 3% | 2% | 6% | 25% | 12% |
| 15 | 17% | 13% | 4% | 0% | 0% | 0% | 0% | 0% | 1% | 2% | 1% | 2% | 2% | 7% | 32% | 19% |
| 16 | 3% | 0% | 31% | 3% | 0% | 0% | 0% | 1% | 12% | 1% | 4% | 1% | 3% | 5% | 16% | 19% |
| 17 | 8% | 3% | 1% | 0% | 1% | 1% | 1% | 6% | 13% | 29% | 10% | 5% | 12% | 4% | 3% | 3% |
| 18 | 3% | 3% | 0% | 0% | 0% | 0% | 1% | 5% | 11% | 13% | 26% | 10% | 8% | 7% | 9% | 6% |
| 19 | 20% | 8% | 1% | 1% | 0% | 1% | 1% | 2% | 12% | 10% | 6% | 6% | 6% | 6% | 15% | 7% |
| 20 | 25% | 5% | 4% | 1% | 0% | 0% | 1% | 1% | 3% | 8% | 11% | 8% | 8% | 8% | 8% | 10% |
| 21 | 3% | 3% | 2% | 3% | 5% | 8% | 8% | 1% | 2% | 8% | 10% | 5% | 3% | 3% | 26% | 7% |
| 22 | 8% | 7% | 5% | 1% | 8% | 1% | 6% | 6% | 3% | 2% | 3% | 2% | 5% | 26% | 13% | 3% |
| 23 | 4% | 9% | 34% | 0% | 1% | 0% | 1% | 3% | 6% | 8% | 3% | 5% | 3% | 8% | 6% | 9% |
| 24 | 10% | 22% | 3% | 1% | 1% | 0% | 1% | 6% | 9% | 15% | 6% | 4% | 2% | 5% | 4% | 13% |
| 25 | 6% | 29% | 8% | 2% | 0% | 0% | 1% | 2% | 11% | 10% | 6% | 1% | 6% | 6% | 6% | 6% |
| 26 | 3% | 10% | 6% | 3% | 6% | 4% | 3% | 1% | 1% | 3% | 12% | 8% | 4% | 6% | 17% | 14% |
| 27 | 6% | 9% | 22% | 0% | 2% | 0% | 0% | 0% | 2% | 6% | 4% | 0% | 4% | 7% | 24% | 15% |
| 28 | 3% | 17% | 4% | 1% | 1% | 1% | 4% | 8% | 16% | 19% | 5% | 0% | 0% | 3% | 10% | 9% |
| 29 | 7% | 33% | 3% | 11% | 0% | 0% | 0% | 0% | 7% | 13% | 2% | 1% | 2% | 3% | 8% | 8% |
| 30 | 17% | 27% | 7% | 0% | 1% | 6% | 0% | 3% | 8% | 2% | 1% | 0% | 1% | 1% | 8% | 17% |
| 31 | 13% | 18% | 6% | 1% | 4% | 2% | 1% | 2% | 7% | 12% | 9% | 6% | 2% | 3% | 7% | 8% |
| Mensual | 9% | 13% | 8% | 2% | 2% | 1% | 2% | 3% | 6% | 9% | 7% | 5% | 4% | 6% | 13% | 10% |

| DIRECCIÓN DEL VIENTO EN EL MES ORDENADA DE MAYOR A MENOR PREDOMINANCIA | | | | | | | | | | | | | | | | |
|--|-----|-----|-----|----|-----|----|----|----|-----|-----|----|-----|-----|----|----|-----|
| R. V. | NO | NNE | NNO | N | SSO | NE | SO | S | ONO | OSO | O | SSE | ENE | SE | E | ESE |
| F. R. | 13% | 13% | 10% | 9% | 9% | 8% | 7% | 6% | 6% | 5% | 4% | 3% | 2% | 2% | 2% | 1% |

Convenciones: R. V.: Rosa de los Vientos F. R.: Frecuencia Relativa. Nota: Datos resaltados en rojo están incompletos.



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OCTUBRE DE 2011

JORNADA NOCTURNA - DIRECCIÓN DEL VIENTO SEGÚN LA ROSA DE LOS VIENTOS (Frecuencia relativa)

| DÍA | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSO | SO | OSO | O | ONO | NO | NNO |
|---------|-----|------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1 | 16% | 0% | 50% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 33% | 0% | 1% | 1% | 0% | 0% |
| 2 | 0% | 0% | 53% | 8% | 0% | 0% | 0% | 13% | 4% | 20% | 2% | 0% | 0% | 0% | 0% | 0% |
| 3 | 7% | 33% | 15% | 10% | 0% | 0% | 0% | 0% | 8% | 6% | 4% | 1% | 3% | 1% | 0% | 13% |
| 4 | 67% | 1% | 0% | 1% | 0% | 1% | 0% | 0% | 0% | 6% | 3% | 1% | 0% | 0% | 19% | 1% |
| 5 | 54% | 14% | 1% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 2% | 1% | 4% | 24% |
| 6 | 4% | 13% | 12% | 19% | 5% | 3% | 3% | 9% | 13% | 3% | 1% | 6% | 1% | 1% | 1% | 7% |
| 7 | 6% | 31% | 11% | 10% | 0% | 6% | 0% | 1% | 2% | 1% | 0% | 3% | 1% | 8% | 8% | 13% |
| 8 | 45% | 8% | 5% | 2% | 2% | 3% | 1% | 1% | 1% | 19% | 8% | 1% | 0% | 0% | 1% | 2% |
| 9 | 24% | 50% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 26% | 0% | 0% |
| 10 | 6% | 69% | 7% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 17% | 1% |
| 11 | 28% | 50% | 0% | 0% | 0% | 0% | 0% | 0% | 6% | 3% | 5% | 1% | 2% | 3% | 2% | 0% |
| 12 | 1% | 14% | 0% | 5% | 3% | 6% | 9% | 6% | 6% | 8% | 39% | 0% | 2% | 0% | 1% | 1% |
| 13 | 4% | 26% | 21% | 8% | 10% | 1% | 3% | 0% | 0% | 2% | 6% | 0% | 5% | 0% | 4% | 10% |
| 14 | 3% | 7% | 26% | 1% | 14% | 5% | 1% | 3% | 0% | 0% | 0% | 1% | 14% | 4% | 19% | 2% |
| 15 | 1% | 3% | 5% | 2% | 5% | 1% | 0% | 1% | 3% | 21% | 2% | 0% | 3% | 30% | 20% | 3% |
| 16 | 4% | 11% | 29% | 13% | 1% | 0% | 0% | 3% | 6% | 6% | 8% | 1% | 0% | 4% | 9% | 3% |
| 17 | 6% | 9% | 0% | 0% | 0% | 0% | 8% | 5% | 21% | 7% | 3% | 1% | 35% | 0% | 1% | 4% |
| 18 | 0% | 0% | 1% | 1% | 10% | 4% | 1% | 3% | 11% | 11% | 15% | 2% | 2% | 6% | 1% | 31% |
| 19 | 1% | 41% | 4% | 10% | 18% | 2% | 0% | 0% | 0% | 0% | 3% | 3% | 0% | 0% | 4% | 14% |
| 20 | 18% | 30% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 2% | 6% | 0% | 0% | 0% | 44% | 0% |
| 21 | 0% | 0% | 0% | 49% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 51% | 0% |
| 22 | 0% | 0% | 44% | 0% | 6% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 19% | 31% | 0% |
| 23 | 0% | 0% | 69% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 22% | 6% | 3% |
| 24 | 6% | 14% | 0% | 15% | 0% | 0% | 0% | 0% | 0% | 0% | 10% | 1% | 1% | 37% | 2% | 15% |
| 25 | 51% | 8% | 3% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 1% | 2% | 3% | 6% | 24% | 3% |
| 26 | 1% | 59% | 0% | 0% | 0% | 0% | 0% | 0% | 1% | 3% | 1% | 5% | 1% | 1% | 25% | 3% |
| 27 | 0% | 17% | 50% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 26% | 8% |
| 28 | 1% | 3% | 18% | 0% | 0% | 0% | 0% | 6% | 16% | 42% | 13% | 1% | 0% | 0% | 1% | 0% |
| 29 | 0% | 50% | 0% | 0% | 1% | 0% | 0% | 2% | 15% | 29% | 1% | 2% | 0% | 0% | 0% | 0% |
| 30 | 0% | 100% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| 31 | 50% | 50% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Mensual | 13% | 23% | 14% | 5% | 2% | 1% | 1% | 2% | 4% | 6% | 5% | 1% | 2% | 5% | 10% | 5% |

| DIRECCIÓN DEL VIENTO EN EL MES ORDENADA DE MAYOR A MENOR PREDOMINANCIA | | | | | | | | | | | | | | | | |
|--|-----|-----|-----|-----|-----|-----|----|-----|-----|----|----|----|-----|-----|-----|----|
| R. V. | NNE | NE | N | NO | SSO | ONO | SO | NNO | ENE | S | O | E | SSE | ESE | OSO | SE |
| F. R. | 23% | 14% | 13% | 10% | 6% | 5% | 5% | 5% | 5% | 4% | 2% | 2% | 2% | 1% | 1% | 1% |

Convenciones: R. V.: Rosa de los Vientos F. R.: Frecuencia Relativa. Nota: Datos resaltados en rojo están incompletos.