



# 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 INGEOMINAS

CÓDIGO: EMM-03

JULIO 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 <sup>2</sup> )		ET. (mm)
	Máxima	Media	Mínima	Máxima	Media	Media	Máxima	Media	Mínima	Suma	Máxima	Media	Suma
1	23.6	16.5	12.6	5.4	0.2	786.9	91.0	78.2	58.0	4.8	1118.0	362.0	2.3
2	21.1	15.9	13.5	2.7	0.0	787.2	86.0	77.7	61.0	4.6	820.0	182.0	1.5
3	25.3	17.9	12.7	3.1	0.1	786.7	89.0	72.9	47.0	0.0	1144.0	411.4	3.1
4	22.1	16.7	13.4	3.1	0.1	786.9	89.0	77.4	59.0	0.3	951.0	228.5	1.8
5	24.8	17.8	13.2	2.7	0.1	787.2	89.0	73.9	50.0	0.0	1175.0	337.2	2.3
6	22.4	16.0	13.2	4.5	0.2	787.6	91.0	80.3	59.0	11.4	1052.0	235.0	1.8
7	25.3	17.6	12.6	1.3	0.0	787.3	90.0	69.0	48.0	0.3	990.0	345.5	2.8
8	26.5	18.6	13.9	2.2	0.1	786.5	90.0	69.5	43.0	0.0	1077.0	417.3	3.3
9	24.6	18.2	13.8	2.2	0.2	786.6	88.0	72.7	46.0	0.0	1112.0	306.9	2.5
10	24.7	17.8	14.6	2.7	0.2	786.8	89.0	75.5	50.0	0.8	1041.0	348.5	2.6
11	25.1	17.8	14.1	2.7	0.2	787.7	88.0	73.7	50.0	0.0	1022.0	306.4	2.3
12	20.6	16.1	13.4	2.2	0.1	788.2	90.0	80.7	64.0	8.6	1205.0	289.3	1.8
13	18.6	14.2	12.8	3.1	0.1	788.2	92.0	87.1	73.0	11.4	679.0	161.9	1.0
14	19.6	14.8	12.4	4.0	0.2	788.2	92.0	83.5	60.0	9.4	1266.0	198.0	1.3
15	20.1	14.7	11.4	3.1	0.2	788.7	92.0	82.7	58.0	31.5	1099.0	276.1	1.8
16	23.2	16.6	12.7	2.2	0.0	787.8	91.0	78.7	55.0	0.0	1176.0	326.5	2.3
17	22.8	16.7	13.3	1.8	0.0	787.9	91.0	79.6	56.0	3.0	1216.0	287.4	2.0
18	24.8	17.0	13.3	3.1	0.2	787.9	93.0	77.9	50.0	3.1	1156.0	340.1	2.8
19	25.1	17.9	13.1	3.1	0.1	787.6	90.0	73.2	49.0	0.0	1096.0	430.1	3.0
20	24.7	18.0	14.2	2.7	0.1	787.5	85.0	69.2	52.0	0.0	1140.0	288.8	2.5
21	25.6	18.5	14.0	3.1	0.1	786.9	84.0	67.5	45.0	0.0	882.0	389.9	3.3
22	25.2	18.5	14.4	3.6	0.1	786.8	81.0	67.5	43.0	0.0	1070.0	348.1	2.8
23	25.4	18.3	15.1	2.2	0.1	787.5	86.0	69.5	45.0	0.0	1033.0	293.7	2.3
24	26.0	18.4	14.9	2.7	0.2	787.7	81.0	63.0	42.0	0.0	1041.0	324.4	2.5
25	26.6	19.0	14.0	2.7	0.1	786.8	82.0	61.5	41.0	0.5	1097.0	392.3	3.3
26	23.8	17.7	14.3	2.2	0.1	786.4	86.0	72.3	54.0	0.0	1053.0	267.5	2.0
27	24.7	17.6	14.0	2.7	0.1	786.8	85.0	72.0	51.0	0.3	1086.0	290.5	2.3
28	21.9	15.7	13.3	3.1	0.1	787.1	91.0	83.5	54.0	21.1	758.0	198.5	1.3
29	18.3	13.6	12.3	3.6	0.3	787.3	92.0	88.1	72.0	23.1	635.0	162.2	1.0
30	20.3	14.7	11.3	2.7	0.3	787.6	92.0	82.9	60.0	11.2	714.0	256.9	1.8
31	23.6	15.9	12.4	3.1	0.1	787.6	90.0	78.4	56.0	0.5	1237.0	329.7	2.3
<b>Mensual</b>	<b>26.6</b>	<b>16.9</b>	<b>11.3</b>	<b>5.4</b>	<b>0.1</b>	<b>787.3</b>	<b>93.0</b>	<b>75.5</b>	<b>41.0</b>	<b>145.8</b>	<b>1266.0</b>	<b>301.1</b>	<b>69.6</b>

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 INGEOMINAS**

CÓDIGO: EMM-03

**JULIO 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	6%	3%	5%	3%	1%	11%	0%	0%	1%	3%	4%	15%	21%	8%	14%	5%
2	0%	0%	0%	4%	1%	0%	1%	1%	26%	17%	10%	16%	17%	4%	1%	1%
3	4%	3%	1%	1%	10%	3%	1%	1%	2%	3%	13%	15%	17%	15%	6%	3%
4	2%	6%	3%	5%	6%	0%	1%	8%	15%	7%	6%	9%	10%	15%	7%	2%
5	1%	0%	2%	0%	7%	7%	1%	3%	1%	1%	9%	24%	20%	15%	8%	2%
6	1%	1%	1%	1%	5%	8%	10%	3%	7%	8%	10%	11%	19%	10%	3%	3%
7	0%	3%	3%	13%	1%	6%	0%	0%	3%	8%	3%	17%	18%	16%	5%	3%
8	1%	0%	0%	0%	0%	1%	8%	3%	2%	6%	13%	32%	19%	11%	3%	2%
9	3%	0%	0%	13%	0%	3%	0%	1%	0%	5%	5%	14%	26%	17%	11%	3%
10	1%	0%	0%	0%	4%	2%	1%	0%	4%	3%	8%	13%	31%	21%	9%	2%
11	0%	0%	0%	0%	1%	3%	8%	6%	2%	1%	2%	12%	28%	24%	11%	3%
12	0%	0%	0%	0%	0%	1%	2%	4%	7%	24%	12%	26%	12%	10%	1%	0%
13	13%	0%	4%	0%	1%	0%	17%	4%	3%	6%	3%	10%	26%	8%	2%	3%
14	0%	1%	0%	0%	1%	5%	2%	19%	9%	10%	8%	26%	12%	4%	3%	1%
15	9%	4%	2%	1%	1%	0%	1%	1%	3%	1%	1%	17%	20%	26%	7%	6%
16	0%	1%	15%	0%	0%	0%	3%	1%	1%	1%	6%	18%	18%	24%	10%	2%
17	3%	7%	3%	6%	3%	1%	2%	3%	3%	2%	2%	19%	14%	18%	8%	6%
18	0%	0%	0%	0%	0%	1%	0%	15%	3%	7%	17%	28%	15%	8%	5%	1%
19	1%	0%	0%	0%	8%	1%	1%	1%	15%	6%	8%	15%	21%	15%	6%	3%
20	0%	0%	1%	0%	1%	10%	3%	10%	5%	6%	6%	20%	19%	14%	4%	0%
21	8%	6%	3%	2%	0%	0%	3%	0%	3%	5%	14%	15%	18%	16%	3%	4%
22	1%	0%	1%	2%	14%	3%	0%	0%	1%	3%	5%	15%	26%	13%	13%	3%
23	3%	5%	2%	1%	4%	3%	5%	5%	3%	2%	6%	14%	17%	15%	13%	2%
24	2%	5%	6%	4%	6%	13%	3%	1%	1%	3%	1%	7%	15%	14%	12%	8%
25	5%	3%	1%	3%	1%	6%	5%	1%	3%	6%	3%	16%	20%	17%	5%	5%
26	0%	2%	0%	0%	0%	0%	0%	0%	0%	13%	19%	17%	21%	17%	6%	4%
27	3%	11%	2%	10%	3%	0%	2%	8%	3%	10%	3%	6%	14%	13%	8%	4%
28	0%	0%	0%	1%	0%	2%	2%	2%	20%	20%	19%	8%	6%	13%	4%	3%
29	0%	0%	0%	0%	0%	0%	1%	4%	14%	25%	28%	20%	5%	3%	0%	0%
30	1%	4%	3%	8%	19%	9%	0%	3%	3%	5%	7%	19%	5%	10%	1%	2%
31	3%	4%	1%	6%	2%	1%	3%	5%	18%	5%	15%	13%	6%	8%	6%	3%
Mensual	2%	2%	2%	3%	3%	3%	3%	4%	6%	7%	9%	16%	17%	14%	6%	3%

DIRECCIÓN DEL VIENTO EN EL MES ORDENADA DE MAYOR A MENOR PREDOMINANCIA																
R. V.	O	OSO	ONO	SO	SSO	NO	S	SSE	ESE	E	NNO	SE	ENE	N	NNE	NE
F. R.	17%	16%	14%	9%	7%	6%	6%	4%	3%	3%	3%	3%	3%	2%	2%	2%

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



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**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	0%	17%	1%	0%	1%	10%	20%	14%	10%	4%	11%	4%	6%	0%	0%	0%
2	0%	0%	0%	1%	4%	7%	9%	13%	50%	3%	13%	0%	0%	0%	0%	0%
3	0%	0%	0%	1%	3%	14%	1%	40%	0%	0%	3%	29%	9%	0%	0%	0%
4	3%	1%	0%	0%	0%	22%	15%	22%	3%	5%	5%	6%	2%	13%	1%	2%
5	0%	0%	8%	2%	4%	21%	3%	1%	18%	24%	10%	0%	1%	8%	0%	0%
6	0%	0%	0%	0%	0%	2%	8%	12%	6%	44%	19%	1%	8%	0%	0%	0%
7	0%	0%	0%	0%	0%	2%	9%	20%	25%	22%	6%	0%	15%	0%	0%	0%
8	0%	0%	0%	0%	0%	0%	7%	15%	56%	10%	13%	0%	0%	0%	0%	0%
9	0%	1%	0%	1%	0%	0%	0%	19%	31%	4%	6%	13%	9%	10%	0%	6%
10	0%	0%	0%	0%	0%	0%	3%	12%	26%	10%	27%	10%	8%	3%	0%	1%
11	0%	0%	0%	2%	10%	3%	1%	11%	1%	1%	9%	11%	37%	1%	11%	11%
12	0%	1%	0%	0%	0%	1%	7%	13%	4%	34%	15%	18%	4%	3%	1%	0%
13	0%	21%	14%	1%	0%	0%	1%	1%	0%	19%	26%	17%	0%	0%	0%	0%
14	0%	0%	0%	0%	0%	0%	1%	17%	18%	19%	19%	8%	13%	6%	0%	0%
15	0%	2%	1%	4%	0%	0%	5%	13%	6%	11%	14%	9%	35%	1%	0%	0%
16	0%	1%	6%	0%	1%	16%	12%	7%	5%	4%	28%	19%	0%	0%	0%	0%
17	0%	6%	0%	0%	0%	15%	4%	8%	18%	1%	19%	19%	9%	0%	0%	1%
18	0%	0%	0%	0%	1%	10%	4%	20%	10%	11%	34%	9%	0%	0%	0%	0%
19	0%	0%	0%	0%	7%	12%	11%	9%	8%	5%	7%	20%	0%	15%	6%	0%
20	0%	0%	0%	0%	0%	17%	16%	23%	14%	7%	3%	8%	3%	1%	8%	0%
21	0%	0%	0%	1%	1%	9%	1%	37%	28%	1%	0%	6%	10%	6%	0%	0%
22	0%	0%	0%	0%	5%	3%	39%	19%	8%	0%	0%	0%	3%	22%	1%	1%
23	3%	22%	6%	4%	1%	6%	25%	4%	0%	0%	0%	0%	10%	9%	0%	10%
24	7%	7%	13%	0%	8%	47%	16%	2%	0%	0%	0%	0%	0%	0%	0%	0%
25	0%	0%	8%	0%	4%	8%	30%	8%	8%	15%	1%	0%	19%	0%	0%	0%
26	0%	0%	0%	0%	0%	0%	0%	6%	21%	31%	3%	0%	35%	5%	0%	0%
27	1%	6%	0%	8%	1%	3%	11%	17%	23%	7%	4%	10%	0%	2%	1%	5%
28	0%	0%	0%	0%	0%	2%	1%	14%	14%	17%	20%	33%	0%	0%	0%	0%
29	0%	0%	0%	0%	0%	3%	22%	3%	12%	22%	23%	15%	1%	0%	0%	0%
30	4%	10%	9%	14%	7%	12%	7%	21%	3%	3%	1%	8%	0%	0%	0%	1%
31	0%	0%	0%	1%	3%	0%	1%	1%	55%	3%	19%	8%	8%	1%	0%	0%
Mensual	1%	3%	2%	1%	2%	8%	9%	14%	15%	11%	11%	8%	8%	5%	1%	1%

DIRECCIÓN DEL VIENTO EN EL MES ORDENADA DE MAYOR A MENOR PREDOMINANCIA																
R. V.	S	SSE	SO	SSO	SE	OSO	ESE	O	ONO	NNE	NE	E	ENE	NNO	NO	N
F. R.	15%	14%	11%	11%	9%	8%	8%	8%	5%	3%	2%	2%	1%	1%	1%	1%

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