



# 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

NOVIEMBRE 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	26.4	17.5	12.7	2.7	0.8	786.6	96.0	74.8	48.0	0.0	1199.0	398.6	3.3
2	27.6	18.8	13.5	3.1	0.6	787.0	97.0	78.1	50.0	0.3	1205.0	408.7	3.3
3	23.2	16.8	13.9	5.8	1.2	787.3	99.0	87.1	66.0	1.5	593.0	241.3	2.0
4	26.4	17.4	12.6	6.3	1.1	787.1	100.0	81.4	51.0	66.3	1083.0	363.0	2.8
5	26.8	17.5	12.7	5.8	1.3	786.7	100.0	83.1	53.0	1.3	1166.0	372.8	3.1
6	25.3	17.0	13.5	3.1	0.8	787.0	99.0	84.1	57.0	31.8	1155.0	353.5	2.8
7	23.8	16.4	13.3	4.0	1.0	786.8	98.0	86.0	65.0	16.8	951.0	314.4	2.0
8	17.8	14.3	12.9	3.1	0.5	787.1	100.0	96.1	83.0	30.2	350.0	136.3	0.8
9	22.7	15.8	12.2	2.7	0.6	787.1	100.0	90.4	63.0	2.8	546.0	233.3	1.5
10	21.3	15.5	13.1	4.9	1.0	787.2	100.0	92.6	73.0	34.8	1292.0	256.7	1.8
11	17.4	14.3	12.7	1.8	0.4	787.2	100.0	94.6	87.0	11.7	781.0	137.2	1.3
12	14.6	13.1	11.8	3.6	0.6	787.7	100.0	99.2	95.0	41.7	249.0	103.0	0.8
13	22.9	15.2	11.3	3.1	0.6	787.5	100.0	88.7	65.0	1.3	1135.0	283.8	2.0
14	26.2	17.1	12.2	3.1	0.7	787.1	98.0	82.7	53.0	0.0	1169.0	480.1	3.8
15	26.2	16.4	12.7	4.5	1.1	786.8	99.0	83.8	54.0	1.0	1196.0	364.9	3.1
16	24.1	15.4	12.2	3.6	0.9	786.8	99.0	88.7	58.0	3.1	1175.0	313.8	2.3
17	22.7	15.5	12.0	3.6	0.9	786.8	100.0	89.0	65.0	16.0	1158.0	359.1	2.5
18	22.9	15.1	12.1	4.9	1.1	787.5	100.0	90.6	63.0	44.2	1270.0	368.0	2.8
19	25.6	16.1	11.3	4.0	0.9	787.7	100.0	85.3	50.0	25.7	1129.0	428.1	3.3
20	19.4	14.2	12.3	3.6	0.7	787.5	99.0	94.2	74.0	59.4	639.0	162.9	1.5
21	24.9	16.0	11.3	3.6	0.8	787.5	100.0	86.1	53.0	17.3	1211.0	389.5	3.1
22	21.5	14.8	12.2	4.9	0.8	787.9	100.0	91.2	69.0	49.0	1194.0	259.0	1.5
23	25.2	16.0	12.1	3.1	0.8	788.2	97.0	84.0	52.0	0.3	1094.0	306.1	2.6
24	18.7	14.2	11.8	2.7	0.5	788.6	99.0	93.7	78.0	33.5	737.0	163.0	1.3
25	24.4	15.9	11.6	3.1	0.7	787.5	96.0	83.8	54.0	0.0	948.0	285.1	2.3
26	22.4	16.2	12.7	7.2	1.0	786.8	92.0	79.9	61.0	0.0	922.0	259.2	2.3
27	21.6	15.5	12.6	5.4	1.3	785.9	98.0	85.0	68.0	1.5	1069.0	252.3	2.0
28	22.1	15.6	12.2	5.4	1.2	786.2	100.0	86.5	63.0	32.0	838.0	335.8	2.5
29	20.7	14.0	12.6	4.9	0.7	787.3	100.0	95.5	71.0	8.4	1112.0	197.8	1.3
30	23.8	15.7	12.6	5.4	0.8	787.1	100.0	89.6	60.0	42.7	1274.0	382.9	2.8
31													
<b>Mensual</b>	<b>27.6</b>	<b>15.8</b>	<b>11.3</b>	<b>7.2</b>	<b>0.8</b>	<b>787.2</b>	<b>100.0</b>	<b>87.5</b>	<b>48.0</b>	<b>574.3</b>	<b>1292.0</b>	<b>297.0</b>	<b>68.4</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

NOVIEMBRE 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	9%	1%	2%	0%	1%	3%	2%	7%	6%	1%	6%	10%	10%	17%	18%	6%
2	6%	2%	1%	1%	3%	1%	1%	7%	3%	3%	4%	14%	15%	19%	12%	9%
3	5%	1%	0%	1%	6%	5%	3%	2%	3%	6%	14%	9%	13%	14%	13%	5%
4	3%	3%	1%	1%	2%	8%	2%	1%	3%	5%	9%	9%	10%	19%	17%	6%
5	3%	1%	1%	2%	3%	6%	9%	2%	1%	2%	4%	12%	15%	18%	12%	9%
6	8%	3%	0%	1%	2%	1%	8%	0%	6%	10%	6%	11%	10%	19%	10%	3%
7	1%	1%	1%	1%	2%	6%	5%	8%	8%	9%	4%	7%	9%	15%	18%	6%
8	0%	0%	0%	0%	0%	0%	6%	5%	8%	15%	10%	36%	11%	6%	1%	1%
9	2%	1%	0%	0%	1%	7%	8%	0%	0%	1%	2%	8%	26%	25%	15%	3%
10	1%	1%	1%	1%	1%	0%	0%	0%	1%	4%	23%	19%	17%	22%	6%	4%
11	0%	0%	0%	0%	1%	8%	1%	11%	8%	10%	6%	12%	13%	19%	6%	5%
12	1%	0%	0%	2%	0%	1%	0%	1%	5%	13%	15%	27%	17%	16%	2%	0%
13	1%	0%	0%	1%	3%	14%	1%	0%	8%	3%	6%	17%	10%	25%	10%	1%
14	6%	3%	1%	4%	1%	0%	1%	10%	3%	6%	14%	6%	3%	15%	19%	6%
15	1%	0%	0%	3%	15%	15%	8%	6%	3%	6%	4%	8%	10%	10%	7%	4%
16	2%	0%	0%	1%	6%	8%	8%	6%	7%	5%	6%	22%	6%	15%	4%	3%
17	1%	1%	0%	0%	0%	2%	8%	3%	5%	4%	2%	13%	10%	34%	11%	6%
18	1%	0%	0%	0%	1%	1%	5%	7%	12%	5%	11%	12%	10%	17%	11%	8%
19	2%	0%	0%	1%	0%	3%	3%	6%	1%	3%	5%	13%	12%	22%	21%	8%
20	1%	0%	1%	3%	3%	8%	3%	2%	3%	16%	5%	7%	14%	24%	6%	3%
21	8%	2%	1%	1%	0%	1%	0%	6%	15%	1%	3%	3%	5%	20%	22%	13%
22	2%	1%	1%	1%	0%	6%	6%	3%	2%	4%	10%	20%	12%	15%	10%	7%
23	0%	1%	0%	2%	3%	2%	3%	6%	4%	1%	11%	8%	21%	17%	18%	3%
24	1%	0%	1%	0%	1%	3%	0%	1%	9%	8%	15%	26%	13%	13%	8%	1%
25	1%	3%	1%	1%	1%	3%	7%	0%	0%	3%	8%	22%	15%	18%	16%	2%
26	1%	0%	2%	0%	3%	5%	13%	9%	3%	6%	5%	7%	24%	13%	8%	1%
27	6%	0%	0%	1%	7%	17%	6%	6%	1%	4%	4%	7%	11%	18%	7%	6%
28	0%	0%	0%	0%	1%	0%	6%	3%	2%	15%	20%	21%	18%	11%	3%	0%
29	1%	0%	1%	1%	0%	1%	0%	1%	6%	28%	27%	10%	9%	6%	6%	3%
30	1%	0%	0%	0%	0%	1%	1%	3%	4%	11%	15%	22%	17%	15%	6%	3%
31																
Mensual	3%	1%	1%	1%	2%	4%	4%	4%	5%	7%	9%	14%	13%	17%	11%	5%

DIRECCIÓN DEL VIENTO EN EL MES ORDENADA DE MAYOR A MENOR PREDOMINANCIA																
R. V.	ONO	OSO	O	NO	SO	SSO	S	NNO	ESE	SE	SSE	N	E	ENE	NNE	NE
F. R.	17%	14%	13%	11%	9%	7%	5%	5%	4%	4%	4%	3%	2%	1%	1%	1%

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



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**ESTACIÓN METEOROLÓGICA INGEOMINAS**

CÓDIGO: EMM-03

**NOVIEMBRE 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	7%	1%	12%	0%	1%	13%	28%	13%	1%	0%	0%	15%	0%	5%	3%	0%
2	7%	3%	10%	2%	6%	1%	25%	5%	1%	1%	15%	9%	3%	5%	8%	0%
3	4%	2%	0%	2%	11%	18%	9%	6%	6%	5%	3%	4%	6%	14%	10%	0%
4	1%	0%	1%	1%	11%	8%	15%	6%	4%	19%	4%	0%	4%	23%	1%	1%
5	5%	3%	5%	5%	10%	22%	15%	6%	13%	0%	0%	0%	1%	2%	10%	3%
6	3%	1%	1%	3%	10%	10%	11%	14%	13%	11%	8%	3%	1%	6%	1%	4%
7	2%	4%	1%	8%	13%	8%	13%	6%	6%	6%	17%	1%	1%	7%	1%	6%
8	8%	0%	0%	26%	0%	13%	0%	3%	0%	6%	13%	8%	6%	6%	1%	10%
9	0%	0%	0%	0%	0%	12%	3%	27%	2%	18%	3%	14%	2%	19%	0%	0%
10	0%	2%	1%	12%	26%	9%	1%	3%	3%	1%	11%	6%	17%	5%	2%	0%
11	9%	2%	3%	2%	12%	1%	1%	28%	4%	1%	3%	0%	9%	12%	5%	8%
12	0%	0%	0%	0%	1%	7%	3%	1%	3%	10%	22%	44%	8%	1%	0%	0%
13	9%	0%	1%	5%	0%	0%	0%	33%	1%	1%	19%	28%	1%	2%	0%	0%
14	4%	6%	0%	1%	17%	3%	41%	6%	1%	0%	3%	0%	0%	6%	8%	5%
15	4%	6%	3%	9%	22%	6%	5%	14%	3%	1%	1%	0%	2%	1%	18%	4%
16	3%	3%	10%	10%	12%	8%	3%	3%	1%	4%	2%	6%	3%	19%	10%	4%
17	1%	1%	1%	0%	0%	15%	18%	17%	10%	10%	15%	8%	1%	2%	2%	0%
18	1%	1%	8%	0%	1%	3%	5%	20%	12%	19%	8%	6%	8%	6%	0%	1%
19	4%	0%	2%	1%	9%	1%	9%	17%	6%	13%	19%	8%	5%	6%	1%	1%
20	19%	0%	0%	0%	0%	0%	3%	8%	6%	3%	24%	17%	3%	5%	0%	12%
21	13%	1%	0%	0%	1%	3%	10%	24%	13%	2%	3%	1%	0%	0%	29%	1%
22	10%	0%	15%	1%	8%	3%	20%	3%	3%	0%	3%	3%	12%	19%	0%	0%
23	0%	0%	0%	0%	1%	10%	13%	8%	34%	15%	14%	0%	1%	0%	0%	5%
24	31%	11%	1%	1%	6%	23%	2%	0%	0%	0%	4%	3%	6%	2%	10%	
25	0%	0%	0%	0%	0%	8%	36%	16%	7%	3%	13%	16%	0%	0%	0%	0%
26	0%	1%	0%	0%	6%	0%	24%	29%	26%	8%	0%	0%	3%	0%	2%	0%
27	1%	1%	4%	1%	6%	11%	8%	24%	3%	3%	9%	6%	9%	3%	8%	1%
28	3%	2%	1%	9%	8%	9%	13%	17%	6%	9%	12%	1%	0%	2%	6%	0%
29	0%	0%	0%	3%	0%	0%	0%	3%	3%	29%	26%	26%	1%	1%	6%	1%
30	0%	0%	0%	1%	3%	1%	7%	5%	4%	14%	21%	25%	3%	13%	1%	1%
31																
Mensual	5%	2%	3%	3%	7%	8%	11%	12%	7%	7%	10%	9%	4%	6%	4%	3%

DIRECCIÓN DEL VIENTO EN EL MES ORDENADA DE MAYOR A MENOR PREDOMINANCIA																
R. V.	SSE	SE	SO	OSO	ESE	SSO	E	S	ONO	N	NO	O	ENE	NE	NNO	NNE
F. R.	12%	11%	10%	9%	8%	7%	7%	7%	6%	5%	4%	4%	3%	3%	3%	2%

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