

# OBSERVATORIOS AMBIENTALES PARA EL DESARROLLO URBANO SOSTENIBLE EN MANIZALES

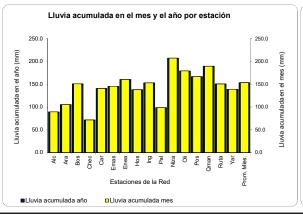
# RED DE ESTACIONES HIDROMETEOROLÓGICAS PARA PREVENCIÓN DE DESASTRES DE MANIZALES

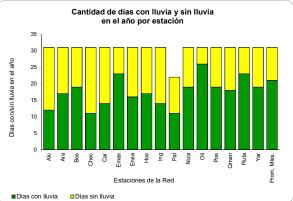
Contrato Municipio de Manizales/UGR - Universidad Nacional de Colombia



# **ENERO DE 2014**

	ciones		zares		njuez	No.	ues del orte		Uribe	El Ca		Em		En		Hosp Cal	das	Ingeo			alma		za	Oliva Po			rados	Queb Maniz Tesc	zales- orito	Quebra Luis-R	uta 30	Yaru		Prom Maniz	
	etarios		/OMPAD		/OMPAD		/OMPAD		.A. E.S.P	Alcaldía		EMAS S.		Alcaldía/		Alcaldía		Alcaldía/			/OMPAD	Alcaldía/	-	CORPO		UN-Ma		CORPO		UN-Ma		Alcaldía/			
	ía	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25
Mi	1	0.0	78.6	0.0	103.8	0.0	69.6	0.0	77.4	0.0	115.8	0.0	90.2	0.0	100.3	0.4	131.6	0.0	118.4	0.4	110.6	0.0	65.6	0.2	99.6	0.0	106.9	0.0	93.6	0.2	106.0	0.0	88.9	0.1	96.1
J	2	0.4	74.8	4.2	105.2	0.0	66.0	0.0	73.6	1.3	114.1	0.0	77.2	12.4	107.3	1.0	114.8	0.0	110.4	0.0	98.2	23.0	84.8	4.2	99.0	7.6	104.9	16.4	105.4	3.4	107.6	5.3	89.7	6.7	96.2
V	3	0.0	74.4	1.0	105.0	0.4	64.4	0.0	73.2	0.0	113.0	3.4	78.6	3.0	107.5	0.0	113.4	1.6	110.6	1.2	98.4	0.6	84.2	0.4	97.8	0.5	104.4	2.0	105.2	8.0	107.6	0.0	88.1	1.2	95.9
S	4	0.0	74.4	0.0	104.8	0.2	64.2	0.0	73.2	0.0	113.0	0.2	78.8	0.0	107.3	0.0	113.4	0.0	110.6	0.0	98.4	0.0	84.2	0.2	98.0	0.3	104.7	0.0	105.2	0.2	107.6	0.0	88.1	0.1	95.9
D	5	0.0	74.4	0.0	104.8	2.0	66.2	0.0	73.2	0.0	113.0	0.8	79.6	2.0	109.3	2.2	115.6	0.0	110.6	2.2	100.6	5.2	89.4	3.6	101.6	5.3	110.0	8.8	114.0	0.2	107.8	4.1	92.2	3.1	99.0
L L	6	7.8	82.2	13.0	117.8	6.0	72.2	6.0	79.2	18.8	131.8	7.6	87.2	15.0	124.3	9.6	125.2	8.8	119.4	6.0	106.6	7.2	96.6	13.8	115.4	12.4	122.4	16.4	130.4	18.6	126.4	7.9	100.1	11.2	110.2
Ma	7	0.0	81.8	0.0	117.8	0.0	70.6	0.0	79.2	0.0	131.1	0.0	87.2	0.0	123.3	0.0	124.4	0.0	118.8	0.0	106.6	0.0	89.4	0.0	107.4	0.3	121.2	0.4	124.8	0.2	125.6	0.0	96.3	0.1	107.6
Mi	8	0.0	81.8	0.6	118.4	0.4	71.0	0.0	79.2	0.0	131.1	8.0	88.0	0.2	123.5	0.6	125.0	0.0	118.8	0.0	106.6	2.2	91.6	3.0	110.4	1.0	122.2	10.0	134.8	8.0	126.4	0.5	96.8	2.2	109.8
J	9	12.4	94.2	14.4	132.8	17.8	88.8	3.8	83.0	36.3	167.4	16.8	104.8	15.2	138.7	22.2	147.2	23.4	142.2	7.8	114.4	12.4	104.0	4.8	115.2	22.9	145.0	7.6	142.4	27.6	154.0	2.8	99.6	14.0	123.9
V	10	15.8	110.0	0.8	133.6	16.4	105.2	0.6	83.6	7.1	174.5	3.6	108.4	0.2	138.4	2.4	149.6	25.0	167.2	22.6	137.0	1.0	105.0	2.4	117.6	1.8	146.8	1.2	143.6	2.6	156.6	2.8	102.4	6.6	130.4
S	11	0.0	105.2	16.8	147.8	2.6	105.6	0.0	78.2	0.0	168.9	6.2	108.4	12.5	149.9	0.4	143.4	0.0	159.4	0.8	117.6	27.4	129.4	10.0	126.8	14.0	159.0	24.4	167.0	12.8	159.2	7.1	108.5	10.4	135.8
D	12	0.4	104.6	0.2	144.2	14.4	118.4	0.0	77.0	0.5	167.6	3.6	108.6	0.0	149.5	7.6	147.6	0.4	158.2	7.8	123.8	1.4	129.4	6.4	130.0	1.5	158.0	0.6	164.6	3.4	160.4	9.2	114.3	3.4	137.0
<u>                                   </u>	13	0.0	96.6	0.0	137.4	0.4	116.8	0.0	63.6	0.0	160.5	1.4	103.6	0.0	143.0	0.0	141.2	0.0	152.0	0.0	115.8	0.0	122.8	0.6	126.0	0.0	148.8	0.0	156.8	0.0	151.8	0.5	108.5	0.2	130.3
Ma	14	0.0	86.4	0.4	130.4	0.2	111.8	0.0	57.4	0.3	151.4	0.2	99.8	0.0	128.2	2.0	134.6	0.0	140.4	0.0	110.0	0.0	119.0	0.2	114.8	3.3	145.0	0.0	149.8	2.6	148.0	0.5	98.6	0.4	122.7
Mi	15	0.0	86.0	0.0	128.6	0.0	111.6	0.0	55.6	0.0	150.1	0.0	99.8	0.0	122.7	0.0	134.0	0.0	136.0	0.0	110.0	0.0	118.4	0.0	114.2	0.0	144.0	0.0	144.8	0.2	146.6	0.0	97.5	0.0	120.7
J	16	0.8	46.8	1.8	76.0	8.8	97.6	0.8	23.6	1.0	82.8	1.6	56.6	4.2	76.9	2.8	67.0	0.6	73.6	0.4	60.8	16.8	113.4	17.4	86.0	5.1	96.3	6.6	119.0	3.2	93.8	12.5	69.6	5.9	82.6
V	17	0.0	41.2	0.0	58.4	0.0	91.6	0.0	16.6	0.0	70.9	0.2	51.8	0.0	68.9	0.0	55.4	0.0	66.4	0.0	55.6	0.2	103.2	0.2	75.6	0.0	80.3	0.0	111.4	0.0	82.0	0.0	57.7	0.0	74.0
S	18	0.0	39.2	0.0	57.8	0.0	88.8	0.0	15.6	0.0	68.6	0.0	48.8	0.0	68.9	0.0	54.0	0.0	62.6	0.0	53.2	0.0	102.4	0.0	73.8	0.0	79.0	0.0	110.2	0.0	80.8	0.0	56.4	0.0	72.3
D	19	0.0	38.6	0.0	57.8	0.0	88.6	0.0	14.4	0.0	66.8	0.0	48.2	2.7	71.6	0.0	53.6	0.0	61.4	0.0	50.8	12.6	115.0	7.8	81.6	0.0	78.7	0.2	110.4	0.0	80.2	1.5	57.7	2.0	73.8
L	20	0.0	37.6	0.0	55.6	0.0	70.0	0.4	13.4	0.0	65.3	0.0	46.6	0.0	67.4	0.0	51.4	0.0	59.8	0.0	49.2	0.0	112.6	0.0	77.2	0.0	77.0	0.0	94.6	0.0	78.0	0.0	56.1	0.0	68.4
Ma	21	6.6	44.2	9.2	62.4	4.6	74.2	17.2	28.8	11.4	76.7	11.8	58.2	61.8	129.2	27.0	78.2	10.6	70.4	3.8	53.0	39.8	149.8	28.2	103.6	30.2	106.2	19.0	113.6	26.4	103.6	14.2	68.8	21.6	89.4
Mi	22	31.6	75.8	29.0	91.4	49.0	123.2	34.2	63.0	46.0	122.7	64.0	122.2	11.0	140.2	42.8	121.0	67.0	137.4	45.6	98.6	31.6	181.4	54.2	157.6	36.3	142.5	54.6	168.2	31.4	134.8	54.1	122.9	44.1	133.5
J	23	0.0	75.8	0.0	91.4	0.2	123.4	0.0	63.0	0.3	122.9	0.2	122.4	0.0	140.2	0.0	121.0	0.2	137.6			0.0	181.4	0.2	157.8	0.0	142.5	0.0	168.2	0.4	135.2	0.0	122.9	0.1	133.6
V	24	2.0	77.8	0.0	91.4	0.0	123.4	0.0	63.0	1.8	124.7	0.4	122.8	0.0	140.2	0.0	121.0	3.4	141.0			0.0	181.4	0.4	158.2	0.0	142.5	0.0	168.2	0.0	135.0	0.0	122.9	0.6	134.2
S	25	1.2	79.0	4.4	95.8	0.0	123.4	4.4	67.4	2.5	127.3	1.6	124.4	7.1	147.3	1.4	122.4	0.6	141.6			2.0	183.4	0.2	158.4	0.3	142.8	0.4	168.6	1.0	136.0	0.3	123.2	1.7	136.0
D	26	6.6	85.6	5.0	100.8	23.0	146.4	2.4	69.8	8.4	135.6	18.2	142.6	2.5	149.9	6.2	128.2	8.2	149.8			3.8	187.2	10.6	168.8	5.8	148.6	8.6	177.2	5.0	140.8	6.1	129.3	8.9	144.8
L	27	0.0	85.2	0.0	96.6	0.0	146.4	0.0	69.8	0.0	134.4	0.2	142.8	0.0	137.5	0.0	127.2	0.0	149.8			0.2	164.4	0.4	165.0	0.0	141.0	0.0	160.8	0.0	137.4	0.0	124.0	0.1	138.1
Ma	28	3.6	88.8	3.8	99.4	2.8	148.8	1.4	71.2	5.1	139.4	0.4	139.8	9.7	144.1	9.0	136.2	1.4	149.6			15.0	178.8	7.6	172.2	14.5	155.0	7.4	166.2	8.2	144.8	8.4	132.3	6.2	143.2
Mi	29	0.0	88.8	0.0	99.4	0.2	148.8	0.2	71.4	0.0	139.4	0.2	139.8	0.0	144.1	0.0	136.2	0.0	149.6			0.0	178.8	0.2	172.2	0.0	154.7	0.0	166.2	0.2	144.8	0.3	132.6	0.1	143.2
J	30	0.0	88.8	0.4	99.8	1.4	148.2	0.0	71.4	0.0	139.4	2.0	141.0	8.0	142.9	0.4	134.4	1.6	151.2			4.8	178.4	1.8	170.4	3.6	152.9	4.8	162.2	1.2	145.8	0.8	129.3	2.1	142.2
V	31	0.0	81.0	0.2	87.0	0.0	142.2	0.0	65.4	0.0	120.7	0.0	133.4	0.0	127.9	0.0	124.8	0.0	142.4			0.0	171.2	0.0	156.6	0.0	140.5	0.0	145.8	0.0	127.2	0.0	121.4	0.0	131.0
LI. me	s	89.2		105.2		150.8		71.4		140.7		145.4		160.3		138.0		152.8		98.6		207.2		179.0		166.6		189.4		150.6		138.7		153.4	
Máx. r	nes	31.6	110.0	29.0	147.8	49.0	148.8	34.2	83.6	46.0	174.5	64.0	142.8	61.8	149.9	42.8	149.6	67.0	167.2	45.6	137.0	39.8	187.2	54.2	172.2	36.3	159.0	54.6	177.2	31.4	160.4	54.1	132.6	44.1	144.8
el año		89	9.2	10	5.2	15	50.8	7	1.4	14	0.7	14	5.4	16	0.3	13	8.0	15	2.8	98	3.6	20	7.2	17	9.0	16	6.6	18	9.4	15	0.6	13	8.7	153	3.4
No. dí Iluvia		12	39%	17	55%	19	61%	11	35%	14	45%	23	74%	16	52%	17	55%	14	45%	11	50%	19	61%	26	84%	19	61%	18	58%	23	74%	19	61%	21	68%





	anscurrido o a la fec		31
No. de	días con al	gún N.A. e	n el año
Estación	Α	N	R
Alc	0	0	0
Ara	0	0	0
Bos	0	0	0
Chec	0	0	0
Car	0	0	0
Emas	0	0	0
Enea	0	0	0
Hos	0	0	0
Ing	0	0	0
Pal	0	0	0
Niza	0	0	0
Oli	0	0	0
Pos	0	0	0
Qman	0	0	0
Ruta	0	0	0
Yar	0	0	0
Prom.	0	0	0

#### CONVENCIONES

Ll. d. : Lluvia diaria en mm

A25 : Indicador Iluvia antecedente de 25 días en mm 11 mes: I luvia parcial o total en el mes en mm

Máx. mes: Valores máximos de lluvia diaria y A25 en el mes en mm

Ll. acum. en el año: Lluvia acumulada en el año en mm

No. días lluvia año: Número de días con lluvia en lo corrido del año

Resalta la lluvia diaria máxima del mes

valor Iluvia diaria correspondiente a una estación cercana

\* Indicadores con base a los días de funcinamiento de cada estación

NIVELES DE ALERTA (N.A.)

Amarilla o baja: A 200 mm <= A25 < 300 mm Naranja o media: N 300 mm <= A25 < 400 mm Roia o alta: R A25 >= 400 mm

#### OBSERVACIONES:

1. La lluvia promedio y acumulada en lo corrido del año para

Manizales se calcularon con el Método de los Polígonos de Thiesser













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# RED DE ESTACIONES HIDROMETEOROLÓGICAS PARA PREVENCIÓN DE DESASTRES DE MANIZALES

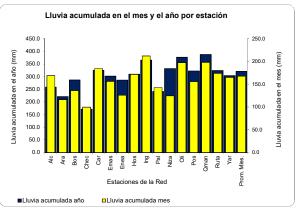
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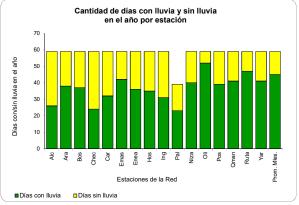


# **FEBRERO DE 2014**



Estaciones	Alcá			njuez	No	ues del orte		Uribe		ırmen		nas	En		Cal			minas		'alma	Ni		Oliva Po	pal		rados	Queb Mania Teso	zales- orito	Quebra Luis-R	uta 30		ımos	Prom	nedio zales
Propietarios	Alcaldía/		Alcaldía/		Alcaldía		CHEC S			/OMPAD	EMAS S		Alcaldía/		Alcaldía			OMPAD		/OMPAD	Alcaldía/		CORPO		UN-Ma		CORPO		UN-Ma			/OMPAD		
Día	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25
S 1	0.0	81.0	7.4	94.4	0.0	142.2	0.0	65.4	0.0	120.7	0.0	133.4	2.5	130.4	0.0	124.8	0.0	142.4			0.0	171.2	0.0	156.6	5.8	146.1	1.0	146.4	6.6	133.6	0.0	121.4	1.0	131.9
D 2	22.4	103.4	5.0	98.8	14.8	156.6	6.6	72.0	18.0	138.7	26.8	159.4	5.6	135.8	15.6	139.8	37.6	180.0			2.2	171.2	1.8	155.4	5.9	150.9	0.0	136.4	8.0	140.8	4.6	125.5	12.4	142.1
L 3	0.2	91.2	0.0	84.4	0.0	138.8	0.0	68.2	0.0	102.4	0.0	142.6	0.0	120.6	0.0	117.6	0.2	156.8			0.0	158.8	0.4	151.0	0.0	128.0	0.0	128.8	0.0	113.2	0.0	122.7	0.1	128.1
Ma 4	0.0	75.4	0.0	83.6	0.0	122.4	0.6	68.2	0.5	95.8	0.0	139.0	0.0	120.4	0.0	115.2	0.0	131.8			0.0	157.8	0.6	149.2	0.0	126.3	0.2	127.8	0.0	110.6	0.0	119.9	0.1	121.6
Mi 5	24.2	99.6	16.0	82.8	14.8	134.6	20.4	88.6	38.6	134.4	28.6	161.4	7.9	115.8	32.6	147.4	36.0	167.8			21.4	151.8	24.2	163.4	26.7	139.0	7.0	110.4	37.4	135.2	18.5	131.3	22.2	133.4
J 6	0.0	99.2	0.0	82.6	0.0	120.2	0.0	88.6	0.0	133.9	0.2	158.0	0.0	115.8	0.0	139.8	0.0	167.4			0.0	150.4	0.2	157.2	0.0	137.4	0.0	109.8	0.2	132.0	0.0	122.2	0.0	130.1
V 7	0.0	99.2	2.6	85.2	0.0	119.8	0.0	88.6	0.3	134.1	0.0	156.6	0.3	116.0	0.4	140.2	0.0	167.4			0.6	151.0	0.6	157.2	2.5	140.0	11.2	121.0	0.8	132.8	1.3	122.9	2.1	132.0
S 8	0.0	99.2	1.4	86.2	0.8	120.4	0.0	88.6	0.0	133.9	0.0	156.4	20.8	136.9	0.0	138.2	0.0	167.4			4.0	155.0	3.0	160.0	0.5	137.2	12.2	133.2	0.2	130.4	1.0	123.5	4.5	136.1
D 9	0.0	99.2	1.6	87.8	2.4	122.8	0.4	89.0	0.5	134.4	1.2	157.6	5.3	142.2	2.4	140.6	0.4	167.8			11.8	166.8	11.6	171.6	3.3	140.5	23.8	157.0	4.8	135.0	5.8	129.3	7.1	143.2
L 10	0.0	98.4	0.0	86.0	0.8	114.8	0.0	88.2	0.0	133.4	0.4	156.4	0.0	138.0	0.0	137.8	0.0	167.2			0.0	150.0	0.4	154.6	0.0	135.4	2.8	153.2	0.2	132.0	0.3	117.1	0.6	137.9
Ma 11	0.0	98.4	0.0	86.0	0.0	114.8	0.0	88.2	0.0	133.4	0.0	156.2	0.0	138.0	0.0	137.8	0.0	167.2			0.0	149.8	0.0	154.4	0.0	135.4	0.0	153.2	0.0	132.0	0.0	117.1	0.0	137.9
Mi 12	6.2	104.6	1.6	87.6	13.2	128.0	1.0	89.2	6.9	140.2	9.0	165.2	6.4	144.3	10.4	148.2	8.0	175.2	8.4	57.8	14.0	163.8	23.4	177.8	5.6	141.0	15.6	168.8	4.8	136.8	21.6	138.7	10.9	148.8
J 13	0.8	105.4	4.2	91.8	3.6	131.6	2.8	92.0	2.0	142.2	3.8	169.0	13.2	154.8	4.0	152.2	4.2	179.4	4.0	61.8	9.4	160.6	6.2	176.2	10.2	151.1	5.8	174.4	4.2	141.0	3.1	140.2	5.6	152.4
V 14	1.8	107.2	1.6	93.4	3.2	134.8	0.0	91.6	0.8	143.0	2.4	171.4	2.5	157.4	2.8	155.0	3.8	183.2	3.2	65.0	4.0	164.6	4.8	181.0	3.3	154.4	6.6	181.0	2.2	143.2	4.3	144.5	3.5	155.8
S 15	0.0	100.6	0.8	85.0	0.2	130.4	0.0	74.4	0.0	131.6	0.2	159.8	1.5	97.1	0.0	128.0	0.0	172.6	0.2	61.4	0.8	125.6	1.0	153.8	0.0	124.2	0.8	162.8	0.4	117.2	0.5	130.8	0.5	134.7
D 16	0.0	69.0	0.0	56.0	0.0	81.4	0.0	40.2	0.0	85.6	0.0	95.8	0.0	86.1	0.0	85.2	0.0	105.6	0.0	15.8	0.0	94.0	0.2	99.8	0.0	87.9	0.0	108.2	0.0	85.8	0.0	76.7	0.0	90.6
L 17	0.0	69.0	0.0	56.0	0.0	81.2	0.0	40.2	0.0	85.4	0.0	95.6	0.8	86.9	4.0	89.2	0.0	105.4	0.0	15.8	0.4	94.4	10.8	110.4	0.5	88.4	2.4	110.6	0.2	85.6	22.6	99.3	2.2	92.7
Ma 18	0.0	67.0	23.0	79.0	14.2	95.4	0.0	40.2	4.6	88.1	2.0	97.2	4.3	91.2	16.6	105.8	1.2	103.2	1.6	17.4	17.4	111.8	24.2	134.2	24.1	112.5	2.8	113.4	18.8	104.4	18.8	118.1	9.1	101.1
Mi 19	0.0	65.8	0.6	75.2	0.0	95.4	0.0	35.8	0.5	86.1	0.8	96.4	1.0	85.1	0.0	104.4	0.8	103.4	0.0	17.4	2.0	111.8	2.0	136.0	0.5	112.8	0.6	113.6	0.4	103.8	1.0	118.9	0.7	100.1
J 20	0.0	59.2	0.8	71.0	0.0	72.4	0.0	33.4	0.3	78.0	0.0	78.2	0.0	82.6	1.0	99.2	0.0	95.2	0.0	17.4	2.0	110.0	5.4	130.8	2.3	109.2	0.2	105.2	0.2	99.0	5.3	118.1	1.0	92.2
V 21	17.8	77.0	12.0	83.0	11.0	83.4	22.6	56.0	23.1	101.1	5.6	83.6	16.0	98.6	20.2	119.4	5.4	100.6	7.0	24.4	3.8	113.6	10.8	141.2	15.0	124.2	11.6	116.8	29.8	128.8	8.1	126.2	12.3	104.4
S 22	14.6	88.0	3.4	82.6	1.4	82.0	11.8	66.4	9.4	105.4	9.8	93.0	8.6	97.5	5.0	115.4	22.6	121.8	20.2	44.6	2.6	101.2	5.6	139.2	4.8	114.6	23.0	132.4	4.0	124.6	3.1	120.9	11.4	109.6
D 23	0.2	88.2	0.2	82.8	6.0	87.8	0.0	66.2	0.0	105.4	5.0	97.8	0.5	98.1	0.2	115.6	0.6	122.4	0.0	44.6	0.8	102.0	8.4	147.4	0.0	114.6	9.0	141.4	0.2	124.6	3.6	124.2	3.1	112.6
L 24	1.2	89.4	1.6	84.0	1.2	87.6	0.4	66.6	0.8	106.2	4.0	99.8	4.8	102.1	3.2	118.4	1.6	122.4	1.0	45.6	7.4	104.6	6.6	152.2	3.1	114.1	20.4	157.0	3.2	126.6	1.3	124.7	5.9	116.4
Ma 25	32.0	121.4	11.2	95.0	1.0	88.6	7.0	73.6	33.5	139.7	9.8	109.6	0.5	102.6	11.2	129.6	35.8	158.2	14.0	59.6	0.6	105.2	0.8	153.0	2.8	116.8	0.4	157.4	11.6	138.2	0.8	125.5	9.0	125.4
Mi 26	5.4	126.8	0.6	88.2	0.6	89.2	4.0	77.6	4.1	143.8	1.0	110.6	0.0	100.1	0.4	130.0	6.8	165.0	15.6	75.2	0.2	105.4	0.2	153.2	0.5	111.5	0.2	156.6	0.6	132.2	0.3	125.7	2.7	127.0
J 27	29.2	133.6	12.0	95.2	40.0	114.4	16.8	87.8	26.4	152.1	39.0	122.8	16.8	111.3	33.6	148.0	33.8	161.2	56.0	131.2	13.6	116.8	34.4	185.8	25.9	131.6	25.8	182.4	22.4	146.6	30.5	151.6	29.5	144.2
V 28	12.8	146.2	8.4	103.6	6.6	121.0	5.2	93.0	14.0	166.1	6.6	129.4	6.4	117.6	7.8	155.8	13.2	174.2	11.4	142.6	5.4	122.2	9.6	195.0	12.4	144.0	14.4	196.8	12.4	159.0	8.6	160.3	9.9	154.0
S 1																																		
D 2																																	!	
L 3																																		
LI. mes	168.8		116.0		135.8		99.6		184.2		156.2		125.7		171.4		212.0		142.6		124.4		197.2		155.7		197.8		173.6		164.9		167.5	
Máx. mes	32.0	146.2	23.0	103.6	40.0	156.6	22.6	93.0	38.6	166.1	39.0	171.4	20.8	157.4	33.6	155.8	37.6	183.2	56.0	142.6	21.4	171.2	34.4	195.0	26.7	154.4	25.8	196.8	37.4	159.0	30.5	160.3	29.5	155.8
Ll. acum. en el año	25	8.0	22	1.2	28	86.6	17	1.0	32	4.9	30	1.6	28	6.0	30	9.4	36	4.8	24	1.2	33	1.6	37	6.2	32	2.3	38	7.2	32	4.2	30	3.5	32	0.9
No. días Iluvia año	26	44%	38	64%	37	63%	24	41%	32	54%	42	71%	36	61%	35	59%	31	53%	23	59%	40	68%	52	88%	39	66%	41	69%	47	80%	41	69%	45	76%





	anscurrido o a la fec		59
No. de	días con al	gún N.A. e	n el año
Estación	Α	N	R
Alc	0	0	0
Ara	0	0	0
Bos	0	0	0
Chec	0	0	0
Car	0	0	0
Emas	0	0	0
Enea	0	0	0
Hos	0	0	0
Ing	0	0	0
Pal	0	0	0
Niza	0	0	0
Oli	0	0	0
Pos	0	0	0
Qman	0	0	0
Ruta	0	0	0
Yar	0	0	0
Prom.	0	0	0

#### CONVENCIONES

Ll. d. : Lluvia diaria en mm

A25 : Indicador Iluvia antecedente de 25 días en mm 11 mes: I luvia parcial o total en el mes en mm

Máx. mes: Valores máximos de lluvia diaria y A25 en el mes en mm

Ll. acum. en el año: Lluvia acumulada en el año en mm

No. días lluvia año: Número de días con lluvia en lo corrido del año

Resalta la lluvia diaria máxima del mes

valor Iluvia diaria correspondiente a una estación cercana

\* Indicadores con base a los días de funcinamiento de cada estación

#### NIVELES DE ALERTA (N.A.) Amarilla o baja:

A 200 mm <= A25 < 300 mm Naranja o media: N 300 mm <= A25 < 400 mm Roia o alta: R A25 >= 400 mm

#### OBSERVACIONES:

1. La lluvia promedio y acumulada en lo corrido del año para

Manizales se calcularon con el Método de los Polígonos de Thiesser

chec propietarias y













# OBSERVATORIOS AMBIENTALES PARA EL DESARROLLO URBANO SOSTENIBLE EN MANIZALES

# RED DE ESTACIONES HIDROMETEOROLÓGICAS PARA PREVENCIÓN DE DESASTRES DE MANIZALES

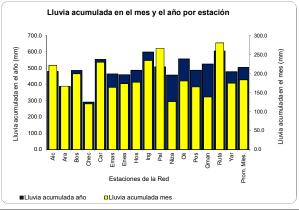
Contrato Municipio de Manizales/UGR - Universidad Nacional de Colombia

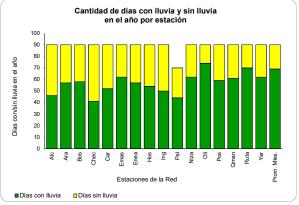


# MARZO DE 2014



Estaciones Propietarios		zares /OMPAD	Aran Alcaldía/	juez	No	ues del orte		Uribe	· ·	rmen /OMPAD	Em	nas A E S D		iea OMPAD		ital de das		minas /OMPAD		alma /OMPAD		za OMPAD	Oliva	pal	Posg:	rados	Mani: Tes	orada zales- orito CALDAS	Quebra Luis-R			IMOS /OMPAD	Prom Mani	
Día	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	LI. d.	A25	Ll. d.	A25	LI. d.	A25	LL d	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25
S 1	7.4	153.6	11.6	115.2	13.6	134.6	4.2	96.6	7.6	173.2	8.2	137.6	4.6	122.2	13.0	168.8	7.6	181.8	8.4	151.0	8.0	130.2	11.6	206.0	8.4	152.4	7.2	203.8	12.2	171.2	8.6	168.9	8.5	162.4
D 2	16.2	145.6	11.8	111.0	4.8	124.6	8.2	84.4	17.3	151.9	3.2	112.2	15.0	129.3	2.2	138.4	16.8	162.6	34.0	185.0	5.6	114.4	10.2	192.0	22.1	147.8	2.6	199.4	9.2	143.0	11.2	161.6	11.4	151.6
L 3	49.4	195.0	33.2	144.2	24.2	148.8	27.2	111.6	50.0	201.9	28.0	140.0	20.3	149.6	33.4	171.8	53.4	216.0	42.8	227.8	12.2	126.6	21.0	212.8	29.0	176.8	6.2	205.6	39.2	182.0	22.1	183.7	27.2	178.7
Ma 4	23.8	218.8	1.4	143.0	7.2	156.0	13.6	125.2	17.8	210.5	6.8	146.8	5.6	154.9	4.0	175.4	30.6	246.6	2.2	230.0	25.0	151.0	31.6	243.8	1.8	176.0	2.2	196.6	3.0	184.2	37.1	210.5	12.3	188.9
Mi 5	10.8	229.6	7.8	149.4	9.6	164.8	8.6	133.8	9.9	229.4	10.0	156.8	7.4	141.5	9.0	184.4	12.0	258.6	23.8	253.8	3.2	150.2	4.2	245.0	10.9	186.4	6.2	190.6	18.4	202.4	3.8	222.3	9.5	194.0
J 6	0.0	229.6	0.0	147.8	0.8	163.2	0.0	133.4	0.0	228.9	0.0	155.6	0.0	136.2	0.4	182.4	0.0	258.2	0.0	253.0	2.6	141.0	0.0	233.4	2.0	185.2	4.0	170.8	0.8	198.4	0.0	216.4	1.0	187.9
V 7	14.0	243.6	5.8	153.6	7.8	170.2	5.6	139.0	22.1	251.0	20.4	175.6	15.8	151.9	13.4	195.8	14.6	272.8	9.0	262.0	4.8	145.8	2.8	235.8	10.2	195.3	8.0	176.0	18.6	216.8	6.4	222.5	10.8	198.1
S 8	0.6	244.2	12.8	166.4	1.0	171.2	2.2	141.2	0.8	251.0	0.2	175.8	11.7	163.6	0.2	196.0	0.0	272.8	0.2	263.0	10.0	155.8	7.6	243.4	0.8	196.1	10.8	186.8	0.8	217.6	0.8	223.3	4.9	203.0
D 9	22.2	260.2	18.4	183.2	14.8	171.2	23.0	163.2	14.7	259.6	18.4	185.2	10.2	167.4	9.8	195.4	28.0	292.8	75.0	329.6	6.2	148.0	7.6	227.6	8.1	198.6	14.2	185.4	14.2	227.0	6.6	208.3	19.7	211.8
L 10	6.0	265.4	2.8	181.8	9.4	178.6	2.0	162.4	5.3	262.9	3.6	185.0	2.0	156.2	3.6	195.4	7.2	295.8	13.8	339.4	4.6	143.2	13.8	235.2	2.8	191.3	5.0	184.6	3.2	226.0	9.4	214.6	6.3	212.4
Ma 11	0.0	263.6	0.0	180.2	0.0	175.4	0.0	162.4	_	202.9	0.0	182.6	2.0	153.7		193.0		202.0	0.0	336.2	0.0	139.2		230.4		188.0		178.0		224.0	0.0	214.0	0.0	209.0
Mi 12	13.6	277.2	5.4	184.8	13.4	188.6		166.8	0.0 17.0	270.1		192.8	5.3	153.7	0.0 23.0	215.2	0.0 12.8	204.0	4.6	340.6	4.4	142.8	0.0 8.2	230.4	0.0 14.2	202.2	10.8	188.0	0.2	264.6	8.9	210.3	10.9	219.4
J 13	15.6	292.8	5.4	190.2	24.6	213.2	2.6	169.4	14.2	202.4	10.4 15.0	207.8	10.4	167.9	13.6	210.2	19.2	304.8	10.8	351.4	10.0	152.8	12.8	250.2	9.7	211.8	25.8	213.8	41.0 15.8	280.4	13.0	231.7	15.0	234.4
		294.8					_			293.4						220.0										214.1						216.9		235.0
V 14 S 15	2.0 0.6	295.4	0.2 1.6	190.4 169.0	9.6	222.8	0.0	169.4 169.4	2.8	296.2	3.8 0.2	211.6	0.0 19.8	167.1 182.6	1.6	226.4 210.6	1.8 0.6	325.8	3.8 0.2	355.2 353.8	2.2	154.6	7.2 1.0	246.6 223.4	2.8	191.3	0.0 3.4	211.4	2.6 0.8	282.8 264.8	7.9	198.9	2.8	228.8
$\overline{}$		295.4	_	168.6	_				0.5		_							324.4		353.8		139.6		225.4		190.8		212.0						
D 16	0.0	296.0	0.2	167.8	2.6	212.4	0.0	169.4 170.2	0.0	291.6	0.0	209.0	3.1	184.7 187.7	0.0	210.6	0.0	325.0	0.0		0.4	138.0 137.4	3.6	222.2	0.0		1.2	215.2	0.0	264.4	2.8	200.7 197.6	1.0	229.1
Ma 18	4.8	283.0	0.0 3.6	159.4	0.0 5.2	206.6	1.4	149.0	0.3 6.1	291.6	0.0	209.0	5.8	177.6	0.0	193.8	0.6 4.2		1.2 3.6	355.0	1.4 2.8	136.4	2.6 5.8	217.2	0.8 4.3	189.2 178.6	2.8	215.2	0.8 6.2	241.4	2.3 4.3	197.6	1.4 5.5	229.5
-	_	268.4		156.0	_	205.2		137.2	_	274.0	4.4	198.2		168.9	4.4	188.8	0.0	323.8		351.6		133.8		211.6		173.7		191.4	_	237.4	_	190.8		222.1
Mi 19	0.0		0.0		0.0		0.0	137.2	0.0	265.2	0.2		0.0		0.0			301.2	0.0	331.4	0.0		0.0		0.0		0.0		0.0		0.0		0.0	211.3
J 20	0.0	268.2	0.0	155.8	0.0	199.2	0.0		0.0	265.2	0.0	193.2	0.0	168.4	0.0	188.6	0.0	300.6	0.0	331.4	0.0	133.0	0.0	203.2	0.0	173.7	0.0	182.4	0.0	237.2	0.0	187.2	0.0	208.2
V 21	18.0	285.0	7.8	162.0	19.8	217.8	4.8	141.6	21.8	286.3	11.4	200.6	1.3	164.9	9.8	195.2	10.0	309.0	11.0	341.4	1.0	126.6	4.8	201.4	7.6	178.3	0.0	162.0	28.0	262.0	7.6	193.6	8.4	210.7
S 22	0.0	253.0	0.0	150.8	0.0	216.8	0.0	134.6	0.0	252.7	0.0	190.8	0.0	164.3	0.0	184.0	0.0	273.2	8.2	335.6	0.2	126.2	0.2	200.8	0.0	175.5	0.0	161.6	0.6	251.0	0.0	192.8	8.0	202.5
D 23 L 24	0.0	247.6	0.0 17.0	150.2	1.6	217.8	0.0	130.6	0.0	248.7	0.0	189.8	5.3	169.7	0.0	183.6	0.0	266.4	0.0 6.2	320.0	0.0	126.0	2.2	202.8 176.2	0.0	175.0	0.8	162.2	0.2	250.6	1.3	193.8	0.9	200.7
	5.6			155.2	13.2	191.0 189.0	2.8	116.6	4.8	227.1	10.4	161.2	9.7	162.6 162.1	4.8 25.4	154.8 172.4	6.6	239.2		270.2	14.2	126.6	7.8		6.4	155.5 162.3	6.4	142.8	14.4	242.6	6.9	170.2 167.6	8.4	179.6 176.4
Ma 25	5.4	216.6	10.8	157.6	4.6		5.6	117.0	9.1	222.3	4.2	158.8	5.8		_		3.0	229.0	0.8	259.6	2.8	124.0	3.2	169.8	19.3		2.0	130.4	38.4	268.6	6.1		6.7	_
Mi 26	5.2	214.4	9.4	155.4	10.8	186.2	3.2	116.0	7.1	221.7	4.4	155.0	11.2	168.7	5.0	164.4	5.0	226.4	2.8	254.0	2.2	118.2	10.6	168.8	2.8	156.7	8.0	131.2	12.4	268.8	6.9	165.9	6.7	174.6
J 27	0.0	198.2	0.0	143.6	0.0	181.4	0.0	107.8	0.3	204.7	0.2	152.0	0.3	153.9	0.0	162.2	0.0	209.6	0.0	220.0	0.0	112.6	0.0	158.6	0.0	134.6	0.0	128.6	0.0	259.6	0.0	154.7	0.1	163.3
V 28	0.0	148.8	0.0	110.4	0.0	157.2	0.0	80.6	0.0	154.7	0.0	124.0	0.0	133.6	0.0	128.8	0.0	156.2	0.0	177.2	0.0	100.4	0.0	137.6	0.0	105.7	0.0	122.4	0.0	220.4	0.0	132.6	0.0	136.1
S 29	0.0	125.0	0.0	109.0	0.0	150.0	0.0	67.0	0.0	136.9	0.0	117.2	0.0	128.0	0.0	124.8	0.0	125.6	0.0	175.0	0.0	75.4	0.0	106.0	0.0	103.9	0.0	120.2	0.0	217.4	0.0	95.5	0.0	123.8
D 30	0.0	114.2	0.0	101.2	0.0	140.4	0.0	58.4	0.0	127.0	0.0	107.2	0.0	120.7	0.0	115.8	0.0	113.6	0.0	151.2	0.0	72.2	0.0	101.8	0.0	93.0	0.0	114.0	0.0	199.0	0.0	91.7	0.0	114.2
L 31	0.2	114.4	0.0	101.2	0.0	139.6	0.0	58.4	0.0	127.0	0.0	107.2	0.0	120.7	0.0	115.4	0.4	114.0	4.2	155.4	0.0	69.6	0.0	101.8	0.0	90.9	0.0	110.0	0.0	198.2	0.0	91.7	0.4	113.6
LI. mes	222.0	000.0	167.0	100.1	199.8	000.0	120.2	470.0	229.6	200.0	163.4	044.0	173.5	407.7	177.4	000.0	234.4	005.0	266.6	055.0	126.2	455.0	180.4	050.0	165.1	0444	138.4	045.0	281.0	200.0	174.5	004.7	183.6	005.0
Máx. mes	49.4	296.0	33.2	190.4	24.6	222.8	27.2	170.2	50.0	296.2	28.0	211.6	20.3	187.7	33.4	228.8	53.4	325.8	75.0	355.2	25.0	155.8	31.6	250.2	29.0	214.1	25.8	215.2	41.0	282.8	37.1	231.7	27.2	235.0
Ll. acum. en el año	48	80.0	38	8.2	48	86.4	29	1.2	55	4.5	46	5.0	45	9.5	48	6.8	59	9.2	50	7.8	45	7.8	55	6.6	48	7.4	52	5.6	60	5.2	47	8.0	50	4.5
No. días Iluvia año	46	51%	57	63%	58	64%	41	46%	52	58%	62	69%	57	63%	54	60%	50	56%	44	63%	62	69%	74	82%	59	66%	61	68%	70	78%	62	69%	69	77%





	nscurrido o a la fec		90
No. de o	lías con al	gún N.A. e	n el año
Estación	Α	N	R
Alc	23	0	0
Ara	0	0	0
Bos	10	0	0
Chec	0	0	0
Car	25	0	0
Emas	7	0	0
Enea	0	0	0
Hos	6	0	0
Ing	15	10	0
Pal	10	15	0
Niza	0	0	0
Oli	22	0	0
Pos	3	0	0
Qman	8	0	0
Ruta	24	0	0
Yar	12	0	0
Prom.	16	0	0

#### CONVENCIONES

Ll. d. : Lluvia diaria en mm

A25 : Indicador Iluvia antecedente de 25 días en mm 11 mes: Lluvia parcial o total en el mes en mm

Máx. mes: Valores máximos de lluvia diaria y A25 en el mes en mm

Ll. acum. en el año: Lluvia acumulada en el año en mm

No. días lluvia año: Número de días con lluvia en lo corrido del año

Resalta la lluvia diaria máxima del mes

valor Iluvia diaria correspondiente a una estación cercana

\* Indicadores con base a los días de funcinamiento de cada estación

# NIVELES DE ALERTA (N.A.)

Amarilla o baja: A 200 mm <= A25 < 300 mm Naranja o media: N 300 mm <= A25 < 400 mm

Roia o alta: R A25 >= 400 mm

#### OBSERVACIONES:

1. La lluvia promedio y acumulada en lo corrido del año para

Manizales se calcularon con el Método de los Polígonos de Thiesser











# OBSERVATORIOS AMBIENTALES PARA EL DESARROLLO URBANO SOSTENIBLE EN MANIZALES

# RED DE ESTACIONES HIDROMETEOROLÓGICAS PARA PREVENCIÓN DE DESASTRES DE MANIZALES

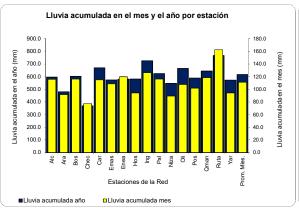
Contrato Municipio de Manizales/UGR - Universidad Nacional de Colombia

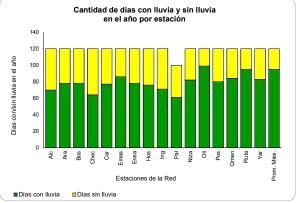


# **ABRIL DE 2014**



Estaciones	Alcáz	zares	Arar	ijuez		ues del orte	Chec	Uribe	El Carn	nen	Em	ıas	En	ea		ital de das	Ingeo	minas	La P	alma	Ni	za	Oliva	orada res-El pal	Posg	rados	Queb Maniz Tesc	zales-	Quebra Luis-R		Yaru	ımos	Prom Mania	nedio zales
Propietarios	Alcaldía/		Alcaldía/		Alcaldía		CHEC S		Alcaldía/Ol		EMAS S.		Alcaldía/		Alcaldía		Alcaldía/			OMPAD	Alcaldía/		CORPO		UN-Ma		CORPO		UN-Ma		Alcaldía/	/OMPAD		
Día	LI. d.	A25	LI. d.	A25	LI. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25
Ma 1	0.0	100.4	0.0	95.4	0.0	131.8	0.0	52.8		104.9	0.0	86.8	0.0	104.9	0.0	102.0	0.0	99.4	0.0	146.4	0.0	64.8	0.0	99.0	0.0	80.8	0.0	102.0	0.0	179.6	0.0	85.4	0.0	102.8
Mi 2	0.4	100.2	0.0	82.6	0.4	131.2	0.0	50.6		104.1	8.8	95.4	0.3	93.5	2.2	104.0	0.8	100.2	0.4	146.6	0.0	54.8	0.0	91.4	0.3	80.3	0.0	91.2	3.0	181.8	0.0	84.6	1.0	99.0
J 3	3.0	81.0	4.2	68.4	4.8	121.2	2.8	30.4		92.2	16.6	93.6	1.5	84.8	7.4	101.6	3.4	75.6	22.4	94.0	9.6	58.2	12.8	96.6	6.6	78.7	3.8	80.8	13.2	180.8	15.5	93.5	8.4	87.7
V 4	0.0	75.0	0.0	65.6	0.2	112.0	0.0	28.4		86.9	0.0	90.0	0.0	82.8	0.0	98.0	0.0	68.4	0.0	80.2	0.0	53.6	0.0	82.8	0.0	75.9	2.8	78.6	0.0	177.6	0.0	84.1	0.5	81.9
S 5	0.0	75.0	0.8	66.4	0.0	112.0	0.0	28.4		86.9	0.0	90.0	1.0	83.8	0.0	98.0	0.0	68.4	0.0	80.2	0.8	54.4	0.6	83.4	0.0	75.9	0.8	79.4	0.0	177.4	0.3	84.3	0.4	82.2
D 6	0.6	62.0	4.4	65.4	0.0	98.6	0.8	24.8		70.9	1.0	80.6	4.8	83.3	1.6	76.6	0.4	56.0	0.0	75.6	4.0	54.0	2.4	77.6	3.1	64.8	0.0	68.6	5.2	141.6	1.5	77.0	1.7	73.0
L 7	6.8	53.2	1.2	61.2	2.0	76.0	2.8	25.0		64.0	4.2	69.8	0.0	72.9	5.8	68.8	7.2	44.0	0.6	65.4	0.6	44.6	5.0	69.8	4.1	59.2	0.0	42.8	15.4	141.2	3.6	67.6	3.2	61.2
Ma 8	0.2	51.4	0.0	61.0	0.0	66.4	0.0	25.0		61.5	0.2	66.2	0.0	72.9	0.0	67.2	0.2	42.4	0.0	61.6	0.0	42.4	0.2	62.8	0.0	56.4	0.0	42.8	0.4	139.0	0.0	59.7	0.1	58.5
Mi 9	4.4	55.2	17.6	77.0	7.6	72.8	3.2	28.2		66.3	3.2	69.2	24.6	77.7	6.8	73.2	3.8	45.6	1.2	62.6	17.2	57.2	13.6	75.4	8.4	63.5	2.0	41.4	13.0	151.2	9.7	68.6	8.4	64.0
J 10	1.8	57.0	1.2	78.0	9.6	79.8	0.2	28.4		67.3	5.8	75.0	1.3	76.0	5.0	78.2	2.8	48.4	0.2	62.8	6.4	63.2	14.4	86.2	5.3	68.8	1.4	41.6	7.2	158.4	8.9	74.7	4.3	67.3
V 11	0.4	56.8	6.8	84.8	11.0	90.8	0.6	28.2		68.1	1.2	76.2	5.3	78.2	1.4	79.6	0.0	47.8	0.0	61.6	2.4	64.2	3.2	86.8	2.3	70.4	3.0	41.8	4.2	161.8	4.1	76.5	2.8	68.7
S 12	0.6	52.6	0.4	81.6	0.0	85.6	0.2	27.0		62.5	0.2	72.0	0.0	72.4	2.0	77.2	1.0	44.6	0.0	58.0	0.0	61.4	0.4	81.4	2.3	68.3	5.0	36.0	2.2	157.8	0.0	72.1	1.2	64.5
D 13	0.0	52.6	0.0	81.6	0.0	85.6	0.0	27.0		62.7	0.0	71.8	0.0	72.4	0.0	77.2	0.0	44.6	0.0	58.0	0.0	61.4	0.0	81.4	0.0	68.3	0.0	36.0	0.2	158.0	0.0	72.1	0.0	64.5
L 14	0.0	52.6	0.0	81.6	0.0	85.6	0.0	27.0		62.7	0.0	71.8	0.0	72.4	0.0	77.2	0.0	44.6	0.0	58.0	0.0	61.4	0.0	81.4	0.0	68.3	0.0	36.0	0.0	158.0	0.0	72.1	0.0	64.5
Ma 15	5.6	40.2	3.2	77.0	9.6	75.4	9.2	31.4		48.3	3.8	64.2	9.7	80.8	6.2	73.6	3.4	38.0	2.8	49.8	5.4	65.8	4.4	81.0	5.6	66.3	6.0	42.0	13.8	143.8	3.6	68.1	6.1	62.2
Mi 16	1.0	41.2	1.0	78.0	1.0	76.4	0.8	32.2		49.5	0.6	64.8	4.3	85.1	2.8	76.4	0.8	38.8	0.0	41.6	3.2	68.8	4.2	85.0	5.3	71.6	11.8	53.8	2.2	145.4	3.1	71.1	3.6	65.0
J 17	0.2	41.4	0.8	78.8	0.2	75.0	0.2	32.4		50.0	0.0	64.8	2.8	82.6	0.6	77.0	0.0	38.8	0.0	41.6	0.4	69.2	0.2	83.0	0.0	71.6	2.6	55.6	0.8	146.0	0.3	70.1	0.8	64.9
V 18	0.2	36.0	1.6	63.4	0.0	61.8	0.4	30.0		46.0	0.4	54.8	1.3	74.2	1.8	74.0	0.0	32.2	0.0	35.4	2.6	57.6	0.8	76.0	11.7	77.0	0.2	49.4	5.4	137.0	8.0	64.0	1.3	57.8
S 19	0.0	30.6	0.0	52.6	1.0	58.2	1.4	25.8		37.1	0.6	51.2	2.0	70.4	0.2	48.8	0.0	29.2	0.0	34.6	0.4	55.2	0.8	73.6	0.3	57.9	1.2	48.6	0.4	99.0	0.5	58.4	0.7	51.8
D 20	5.6	31.0	7.8	51.0	3.2	50.6	0.6	23.2		36.6	2.6	49.4	6.6	65.8	3.4	47.2	5.8	30.0	7.4	39.2	2.4	55.4	4.0	67.0	3.8	58.9	3.4	44.0	6.2	92.8	4.1	55.6	4.5	49.5
L 21	4.0	35.0	0.0	51.0	9.4	60.0	3.0	26.2		41.2	5.8	55.0	0.0	65.5	0.0	47.2	3.6	33.6	12.8	52.0	0.0	55.4	2.2	69.2	0.0	58.9	8.0	44.8	0.0	92.8	2.5	58.2	3.3	52.7
Ma 22	0.4	35.4	0.0	51.0	0.0	60.0	0.2	26.4	1.0	42.2	0.2	55.2	0.0	65.5	0.0	47.2	0.2	33.8	0.2	52.2	0.0	55.4	0.2	69.4	0.0	58.9	0.2	45.0	0.2	93.0	0.0	58.2	0.2	52.9
Mi 23	2.8	38.2	2.4	53.4	8.8	68.8	1.0	27.4		45.2	5.4	60.6	6.9	72.4	3.2	50.4	3.2	37.0	6.0	58.2	5.2	60.6	7.6	77.0	4.3	63.3	17.6	62.6	5.6	98.6	6.4	64.5	7.1	60.1
J 24	23.6	61.8	11.2	64.6	7.4	76.2	11.8	39.2		68.6	6.4	67.0	9.1	81.5	9.8	60.2	26.2	63.2	8.0	66.2	5.6	66.2	9.6	86.6	9.4	72.7	14.8	77.4	16.4	115.0	8.6	73.2	12.1	72.1
V 25	16.2	77.8	5.6	70.2	6.2	82.4	2.0	41.2		81.5	6.8	73.8	7.9	89.4	12.4	72.6	21.4	84.2	11.6	73.6	12.2	78.4	7.6	94.2	13.2	85.9	16.6	94.0	18.0	133.0	9.1	82.3	11.6	83.3
S 26	5.0	82.8	4.2	74.4	4.8	87.2	6.0	47.2		87.4	3.4	77.2	5.6	95.0	2.6	75.2	4.2	88.4	2.8	76.4	4.0	82.4	4.2	98.4	2.8	88.7	7.0	101.0	5.6	138.6	3.8	86.1	4.7	88.0
D 27	0.4	82.8	5.4	79.8	1.4	88.2	0.6	47.8		87.9	0.4	68.8	18.3	113.0	0.8	73.8	0.4	88.0	0.4	76.4	1.4	83.8	1.6	100.0	1.3	89.7	4.8	105.8	2.6	138.2	1.0	87.1	3.2	90.2
L 28	4.2	84.0	0.6	76.2	0.0	83.4	21.2	66.2		86.1	4.2	56.4	0.3	111.8	0.2	66.6	3.4	88.0	1.8	55.8	0.0	74.2	0.2	87.4	0.3	83.3	0.6	102.6	1.0	126.0	0.0	71.6	2.0	83.8
Ma 29	6.0	90.0	6.0	82.2	6.2	89.4	2.6	68.8		93.0	5.2	61.6	5.8	117.6	6.0	72.6	6.0	94.0	6.6	62.4	3.8	78.0	6.6	94.0	5.1	88.4	11.0	110.8	8.4	134.4	5.9	77.5	6.6	89.9
Mi 30	22.2	112.2	5.2	86.6	21.4	110.8	5.6	74.4	19.1	112.0	21.6	83.2	0.5	117.1	12.0	84.6	28.0	122.0	31.0	93.4	1.6	78.8	0.8	94.2	6.6	95.0	1.0	111.0	11.8	146.2	1.3	78.5	11.2	100.8
_ , ,	445.0		04.0		440.0		77.0		444.0		400.0		440.0		04.0		400.0		4400		00.0		407.0		404.0		440.4		400.4		04.0			-
Ll. mes Máx. mes	115.6	112.2	91.6 17.6	95.4	116.2 21.4	131.8	77.2 21.2	74.4	114.8 23.4	112.0	108.6 21.6	OF 4	119.9 24.6	117.0	94.2 12.4	104.0	126.2 28.0	122.0	116.2	146.6	89.2 17.2	83.8	107.6	100.0	101.9	95.0	118.4 17.6	111.0	162.4 18.0	181.8	94.2 15.5	93.5	111.1 12.1	102.8
Ll. acum. en					21.4	137.8			23.4	112.0	∠1.0	95.4	24.0	117.0	12.4	104.0	∠0.0	122.0	31.0	140.0	17.2	03.8			13.2	•	17.0	111.0	18.0	101.8				-
el año	59	5.6	47	9.8	60	2.6	36	8.4	669.	3	57	3.6	57	9.4	58	1.0	72	5.4	62	4.0	54	7.0	66	4.2	58	9.3	64	4.0	767	7.6	57	2.3	61	5.6
No. días Iluvia año	70	58%	78	65%	78	65%	64	53%	77	64%	86	72%	78	65%	76	63%	71	59%	61	61%	82	68%	99	83%	80	67%	84	70%	95	79%	83	69%	95	79%





	anscurrido		120
	o a la fec		
		lgún N.A. e	
Estación	Α	N	R
Alc	23	0	0
Ara	0	0	0
Bos	10	0	0
Chec	0	0	0
Car	25	0	0
Emas	7	0	0
Enea	0	0	0
Hos	6	0	0
Ing	15	10	0
Pal	10	15	0
Niza	0	0	0
Oli	22	0	0
Pos	3	0	0
Qman	8	0	0
Ruta	24	0	0
Yar	12	0	0
Prom.	16	0	0

#### CONVENCIONES

Ll. d. : Lluvia diaria en mm

A25 : Indicador Iluvia antecedente de 25 días en mm

11 mes: I luvia parcial o total en el mes en mm

Máx. mes: Valores máximos de lluvia diaria y A25 en el mes en mm

Ll. acum. en el año: Lluvia acumulada en el año en mm No. días lluvia año: Número de días con lluvia en lo corrido del año

Resalta la lluvia diaria máxima del mes

valor Iluvia diaria correspondiente a una estación cercana

\* Indicadores con base a los días de funcinamiento de cada estación

#### NIVELES DE ALERTA (N.A.)

Amarilla o baja: A 200 mm <= A25 < 300 mm Naranja o media: N 300 mm <= A25 < 400 mm Roia o alta:

# R A25 >= 400 mm

OBSERVACIONES: 1. La lluvia promedio y acumulada en lo corrido del año para

Manizales se calcularon con el Método de los Polígonos de Thiesser











# OBSERVATORIOS AMBIENTALES PARA EL DESARROLLO URBANO SOSTENIBLE EN MANIZALES

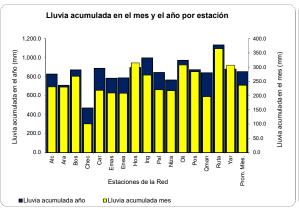
# RED DE ESTACIONES HIDROMETEOROLÓGICAS PARA PREVENCIÓN DE DESASTRES DE MANIZALES

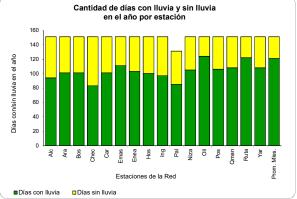
Contrato Municipio de Manizales/UGR - Universidad Nacional de Colombia



# **MAYO DE 2014**

Estaciones	Alcázare		Aranjuez		Bosqu No	rte	Chec		El Ca		Em		En		Hospi Cale	das		minas		alma		za	Po	res-El pal	Posg		Mani: Tes		Luis-R	ida San tuta 30		ımos	Prom-	
Propietarios	Alcaldía/OMF	$\overline{}$	Alcaldía/OMPAD	_	Alcaldía/	_		A. E.S.P	Alcaldía/		EMAS S		Alcaldía		Alcaldía/		Alcaldía/			OMPAD	Alcaldía/		CORPO		UN-Ma		CORPO		UN-Ma		Alcaldía			
Día		25	Ll. d. A25		⊥l. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25
J 1		24.4	4.2 86.4	_	1.6	112.4	10.0	83.6	10.2	121.2	7.6	89.8	1.3	113.5	10.8	93.8	15.4	137.0	5.2	98.6	1.0	75.8	0.8	92.6	5.3	97.3	1.0	112.0	15.6	156.6	1.3	78.2		104.4
V 2		27.8	4.4 89.6		6.0	116.4	2.0	82.8	10.4	124.2	10.2	95.8	8.1	121.7	14.6	102.6	11.6	141.4	9.0	107.0	10.2	85.4	15.4	103.0	11.7	104.9	7.0	119.0	12.8	154.0	12.4	87.1		110.8
S 3		28.4	0.6 90.2		0.4	116.8	0.0	82.8	1.5	125.5	0.6	96.2	2.0	123.7	0.4	103.0	0.4	141.6	1.2	108.2	0.6	86.0	0.4	103.2	8.0	105.7	0.0	119.0	1.4	155.0	0.5	87.6		111.4
D 4		24.0	0.0 72.6		0.0	109.2	0.0	79.6	0.0	120.1	0.0	93.0	3.6	102.6	0.0	96.2	0.0	137.8	0.0	107.0	0.8	69.6	0.6	90.2	0.3	97.5	1.0	118.0	0.2	142.2	0.8	78.7		103.6
L 5		24.4	4.0 75.4	$\overline{}$	9.8	109.4	1.0	80.4	4.6	123.7	1.0	88.2	3.1	104.4	8.6	99.8	0.8	135.8	2.4	109.2	13.2	76.4	10.2	86.0	11.7	103.9	26.8	143.4	18.0	153.0	18.0	87.9	9.8	109.0
Ma 6		24.2	1.0 69.6		0.6	99.0	0.8	80.6	0.3	122.9	0.2	87.2	0.8	99.8	0.2	98.6	0.2	136.0	0.4	109.6	0.4	74.4	0.8	83.6	0.3	101.9	9.0	149.4	0.4	149.2	0.5	84.3	1.8	108.0
Mi 7		30.6	0.0 69.2		0.0	99.0	0.0	80.4	0.3	122.7	1.6	88.6	0.3	100.1	0.0	96.6	14.0	149.0	5.0	114.6	0.0	74.4	0.0	83.2	0.0	99.6	0.8	145.2	0.0	147.0	0.0	84.3	1.8	108.7
J 8		73.2	61.8 131.0		81.6	180.6	25.8	106.2	44.5	166.9	47.6	136.2	66.0	166.1	77.0	173.6	44.6	193.6	34.4	149.0	69.2	143.6	108.6	191.8	94.2	193.8	36.4	181.6	100.4	247.2	108.7	193.1	60.4	169.1
V 9		17.4	36.8 167.8		42.8	223.4	23.4	129.6	36.8	203.7	37.4	173.6	32.5	198.6	51.6	225.2	54.4	248.0	40.2	189.2	26.4	170.0	42.6	234.4	32.0	225.8	27.4	209.0	48.8	296.0	42.2	235.2	37.0	206.1
S 10		15.0	13.6 178.2		7.4	221.2	4.6	125.0	5.6	201.9	1.2	171.0	17.5	206.5	16.2	235.2	1.2	245.8	3.4	189.8	11.6	176.2	19.2	249.2	13.7	233.9	26.6	229.6	15.2	297.4	16.8	248.4		212.4
D 11		15.4	0.4 177.6		1.8	222.0	0.4	124.6	1.3	201.9	1.4	171.8	2.5	204.7	8.0	233.2	1.8	246.8	2.4	192.2	1.0	174.0	1.2	246.2	0.5	229.1	1.2	219.0	0.4	295.6	0.5	245.9		210.1
L 12		23.4	0.6 177.4 0.0 175.8		5.2	227.0	0.0	124.4 124.0	2.3	203.7	1.8 10.0	173.6	0.0	201.9	0.8 16.4	233.4	14.6 2.4	261.4	21.8	214.0 216.8	3.0	176.6 174.0	2.0	248.0 247.2	3.6	232.7	0.8	217.2	3.6 14.2	298.4	2.8	248.4	4.7 2.8	214.0 215.5
Ma 13		25.2		-	0.8	_	0.0		3.3	206.3		183.2	0.0	200.7		248.0		263.8			0.0		0.0		1.8	_	0.0	217.0		307.2	0.3	247.9		
Mi 14 J 15		27.2 26.0	1.6 177.4 4.0 173.6		2.8 3.4	229.6 229.8	1.4	124.0 124.4	2.3 4.6	206.3	2.2 4.2	184.8 186.4	0.3 6.1	198.9 198.4	1.6 3.0	249.4	1.8 5.2	265.6 265.0	2.6 5.0	219.4 217.0	0.8 5.8	174.4 177.8	1.2 4.4	247.6 248.0	0.8 3.6	223.3	0.8 3.2	216.6 216.4	1.8 4.8	308.6	1.5 3.3	248.9		216.3
V 16		23.4	0.4 174.0		2.8	223.2	0.6	122.0	_	201.9	2.4	183.0	0.1	198.6	1.8	249.0	2.2	263.6	2.6	206.8	0.8	177.6	2.8	248.6	1.0	224.0	2.0	217.6	1.2	307.2	2.3	247.9		214.5
S 17		51.4	26.6 200.6		2.0 18.6	241.8	11.8	133.6	0.5 24.4	225.3	17.8	200.6	12.2	210.8	29.6	280.4	35.0	298.4	26.4	233.0	8.4	187.0	11.2	259.6	16.5	240.5	1.2	218.6	24.6	300.4	11.7	259.6		230.7
D 18		50.6	0.4 198.6		7.6	241.6	0.0	132.6	0.8	223.0	7.0	200.0	0.0	204.0	1.0	270.4	3.4	298.6	4.0	231.0	1.6	183.4	0.8	252.8	1.8	238.0	0.0	201.0	1.8	332.0	1.3	254.5		225.7
L 19		27.0	1.0 188.4		2.2	235.4	0.4	121.2	0.0	199.6	0.6	196.4	6.1	200.9	0.2	268.6	0.0	272.4	0.0	223.0	1.2	179.0	2.2	245.4	0.3	228.9	1.6	187.8	0.6	313.0	1.5	247.4		215.0
Ma 20		16.8	1.8 184.6		2.8	232.0	1.6	120.8	5.8	192.5	2.6	192.2	1.3	194.3	7.4	263.6	7.2	258.2	1.4	212.8	7.8	174.6	13.6	251.4	7.6	223.3	1.6	172.8	8.2	303.4	11.9	250.2		208.3
Mi 21		11.8	0.0 180.4		0.0	227.2	0.0	114.8	0.0	186.7	0.2	189.0	0.0	188.7	0.0	261.0	0.2	254.2	0.0	210.0	0.0	170.6	0.0	247.2	0.3	220.7	0.0	165.8	0.0	297.8	0.0	246.4		203.6
J 22		34.4	45.6 220.6		31.0	256.8	6.8	121.0	27.2	2134	26.6	215.2	19.8	190.3	42.4	302.6	22.8	276.6	24.6	234.2	24.8	194.0	32.8	278.4	47.0	266.5	23.2	184.2	52.6	347.8	33.0	278.4		228.1
V 23		32.0	3.4 223.4		8.6	265.4	0.2	100.0	2.8	215.1	3.8	214.8	6.9	196.9	4.4	306.8	1.4	274.6	2.4	234.8	14.4	208.4	13.6	291.8	7.9	274.1	8.4	192.0	6.4	353.2	13.0	291.3	6.7	232.8
S 24		26.0	0.0 217.4	_	0.0	259.2	0.0	97.4	0.0	208.3	0.0	209.6	0.3	191.3	0.0	300.8	0.0	268.6	0.0	228.2	0.0	204.6	0.0	285.2	0.0	269.0	0.0	181.0	0.2	345.0	0.0	285.5		226.3
D 25		03.8	0.0 212.2		0.0	237.8	0.0	91.8	0.0	189.2	0.0	188.0	0.3	191.0	0.0	288.8	0.0	240.6	0.0	197.2	0.0	203.0	0.0	284.4	0.0	262.4	0.0	180.0	0.0	333.2	0.0	284.2		215.0
L 26		91.0	0.0 208.0		0.0	236.2	0.0	81.8	0.0	179.1	0.0	180.4	0.0	189.7	0.0	278.0	0.0	225.2	0.0	192.0	0.0	202.0	0.2	283.8	0.0	257.1	0.0	179.0	0.2	317.8	0.0	283.0	0.0	209.8
Ma 27		31.2	0.8 204.4		0.8	231.0	0.4	80.2	0.8	169.4	0.6	170.8	0.8	182.4	0.6	264.0	0.4	214.0	0.4	183.4	1.0	192.8	1.0	269.4	0.8	246.1	1.2	173.2	0.8	305.8	0.8	271.3		201.0
Mi 28	3.6 18	34.0	3.6 207.4	1 1	11.8	242.4	3.8	84.0	5.3	173.2	3.6	173.8	3.8	184.2	2.8	266.4	2.2	215.8	4.4	186.6	2.8	195.0	2.8	271.8	3.1	248.4	3.0	176.2	6.0	310.4	2.8	273.6	4.0	204.2
J 29	19.2 20	03.2	13.0 220.4	1 1	17.2	259.6	4.6	88.6	22.4	195.6	17.0	190.8	11.9	192.5	22.4	288.8	19.6	235.4	18.2	204.8	10.2	204.4	19.0	290.2	17.5	265.7	11.6	186.8	24.6	334.8	18.8	291.6	15.8	219.4
V 30		04.6	0.2 216.6		0.0	249.8	0.0	87.6	0.5	191.5	0.0	189.8	0.3	189.7	0.2	280.4	8.8	243.4	0.2	202.6	0.0	191.2	0.2	280.2	0.3	254.3	0.4	160.4	0.4	317.2	0.3	273.8		210.5
S 31	0.0 20	04.4	0.0 215.6	3	0.0	249.2	0.0	86.8	0.0	191.3	0.0	189.6	0.0	189.0	0.0	280.2	0.2	243.4	0.0	202.2	0.0	190.8	0.0	279.4	0.0	254.0	0.4	151.8	0.0	316.8	0.0	273.3	0.1	208.8
LI. mes	230.6		229.8	2	67.6		100.6		218.2		209.2		207.8		314.8		271.8		220.4		217.0		307.6		284.0		196.6		365.2		306.8		236.6	
Máx. mes	44.2 25	51.4	61.8 223.4	1 8	81.6	265.4	25.8	133.6	44.5	225.3	47.6	215.2	66.0	210.8	77.0	306.8	54.4	298.6	40.2	234.8	69.2	208.4	108.6	291.8	94.2	274.1	36.4	229.6	100.4	353.2	108.7	291.6	60.4	232.8
Ll. acum. en el año	826.2		709.6		870	0.2	46	9.0	88	7.5	78	2.8	78	7.1	89	5.8	99	7.2	84	4.4	76	4.0	97	1.8	87	3.3	84	0.6	113	32.8	87	9.1	852	2.1
No. días Iluvia año	94 6	2%	101 67%		101	67%	83	55%	101	67%	111	74%	103	68%	100	66%	97	64%	85	65%	105	70%	124	82%	106	70%	108	72%	122	81%	108	72%	121	80%





	anscurrido o a la fec		151
		lgún N.A. e	n el año
Estación	Α	N	R
Alc	43	0	0
Ara	11	0	0
Bos	33	0	0
Chec	0	0	0
Car	38	0	0
Emas	12	0	0
Enea	7	0	0
Hos	26	3	0
Ing	38	10	0
Pal	26	15	0
Niza	5	0	0
Oli	45	0	0
Pos	26	0	0
Qman	18	0	0
Ruta	30	18	0
Yar	35	0	0
Prom.	39	0	0

#### CONVENCIONES

Ll. d. : Lluvia diaria en mm

A25 : Indicador Iluvia antecedente de 25 días en mm 11 mes: I luvia parcial o total en el mes en mm

Máx. mes: Valores máximos de lluvia diaria y A25 en el mes en mm

Ll. acum. en el año: Lluvia acumulada en el año en mm

No. días lluvia año: Número de días con lluvia en lo corrido del año

Resalta la lluvia diaria máxima del mes

valor Iluvia diaria correspondiente a una estación cercana

\* Indicadores con base a los días de funcinamiento de cada estación

NIVELES DE ALERTA (N.A.) Amarilla o baja:

A 200 mm <= A25 < 300 mm Naranja o media: N 300 mm <= A25 < 400 mm

Roia o alta: R A25 >= 400 mm

#### OBSERVACIONES:

1. La lluvia promedio y acumulada en lo corrido del año para

Manizales se calcularon con el Método de los Polígonos de Thiesser













# OBSERVATORIOS AMBIENTALES PARA EL DESARROLLO URBANO SOSTENIBLE EN MANIZALES

# RED DE ESTACIONES HIDROMETEOROLÓGICAS PARA PREVENCIÓN DE DESASTRES DE MANIZALES

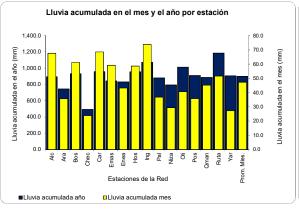
Contrato Municipio de Manizales/UGR - Universidad Nacional de Colombia

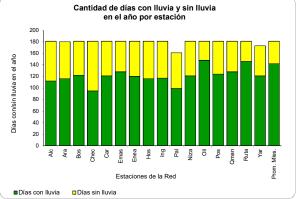


#### **JUNIO DE 2014**



	Alcaldía/	OMPAD	Arar Alcaldía/	OMPAD	No	orte OMPAD	Chec S		El Cai		Emas s.		En Alcaldía/			das	Ingeo Alcaldía	minas	La P	alma /OMPAD		iza /OMPAD	Oliva Po	brada res-El pal CALDAS	Posg:	rados	Mani: Tes	orada zales- orito CALDAS	Quebra Luis-R			I <b>mos</b>	Prom Maniz	
Propietarios Día	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	LI. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25
D 1	0.0	197.4	0.0	215.6	0.0	249.2	0.0	86.8	0.0	191.0	0.0	188.0	0.0	188.7	0.0	280.2	0.0	229.4	0.0	197.2	0.0	190.8	0.0	279.4	0.0	254.0	0.0	151.0	0.0	316.8	0.0	273.3	0.0	206.9
L 2	0.4	155.2	0.8	154.6	1.2	168.8	0.4	61.4	0.5	147.1	0.8	141.2	2.3	125.0	0.6	203.8	0.6	185.4	0.6	163.4	0.6	122.2	0.8	171.6	0.5	160.3	2.0	116.6	1.2	217.6	0.5	165.1	1.0	147.5
Ma 3	1.2	112.2	1.0	118.8	1.2	127.2	0.6	38.6	1.8	112.0	1.2	105.0	0.5	93.0	1.2	153.4	1.4	132.4	1.2	124.4	2.0	97.8	1.0	130.0	1.5	129.8	3.2	92.4	2.0	170.8	1.0	124.0	1.6	112.0
Mi 4	0.6	109.6	0.4	105.6	0.4	120.2	0.4	34.4	0.5	106.9	0.2	104.0	1.0	76.5	0.4	137.6	0.8	132.0	0.6	121.6	0.4	86.6	0.4	111.2	0.5	116.6	2.0	67.8	1.2	156.8	0.3	107.5	0.8	100.5
J 5	0.2	108.4	0.0	105.2	0.8	119.2	0.0	34.0	0.3	105.9	0.0	102.6	0.0	73.9	0.0	136.8	0.4	130.6	1.0	120.2	0.4	86.0	0.2	110.2	0.3	116.3	0.8	67.4	0.4	156.8	0.3	107.2	0.4	99.5
V 6	0.2	100.4	0.6	105.2	0.2	114.2	0.0	34.0	0.3	103.9	0.0	100.8	0.3	74.2	0.0	136.0	0.4	116.4	0.0	98.4	0.0	83.0	0.8	109.0	0.3	113.0	1.0	67.6	0.6	153.8	0.5	104.9	0.4	95.2
S 7	21.8	120.2	0.4	105.6	16.6	130.0	1.0	35.0	22.1	122.7	16.4	107.2	1.0	75.2	19.8	139.4	26.0	140.0	8.0	103.6	1.0	84.0	5.8	114.8	4.6	115.8	1.6	69.2	2.6	142.2	13.0	117.6	8.8	101.2
D 8	8.4	126.6	10.0	114.0	4.6	131.8	3.6	37.2	9.2	129.5	4.2	107.2	11.2	86.1	5.0	142.8	8.8	147.0	4.0	105.0	5.6	88.8	5.8	119.4	4.8	119.9	8.6	77.0	7.0	147.4	5.1	121.2	6.7	106.5
L 9	0.0	122.2	0.2	110.2	0.2	128.6	0.0	36.2	0.0	125.0	0.0	105.0	0.0	80.0	0.0	139.8	0.0	142.0	0.0	100.0	0.0	83.0	0.2	115.4	0.0	116.3	0.0	73.8	0.2	142.8	0.0	117.9	0.1	100.3
Ma 10	0.0	120.8	0.2	109.8	0.2	125.8	0.0	35.6	0.0	124.7	0.0	102.6	0.5	80.3	0.0	138.0	0.2	139.8	0.0	97.4	0.0	82.2	0.2	112.8	0.3	115.6	1.6	73.4	0.2	141.8	0.5	116.1	0.1	101.0
Mi 11	0.0	92.4	0.0	83.2	0.0	107.2	0.0	23.8	0.0	100.3	0.0	84.8	0.0	68.1	0.0	108.4	0.0	104.8	0.0	71.0	0.0	73.8	0.4	101.8	0.0	99.1	0.0	72.2	0.2	117.4	0.0	104.4	0.0	84.6
J 12	0.0	90.4	0.0	82.8	0.0	99.6	0.0	23.8	0.0	99.6	0.0	77.8	0.0	68.1	0.0	107.4	0.0	101.4	0.0	67.0	0.0	72.2	0.0	101.0	0.0	97.3	0.0	72.2	0.2	115.8	0.0	103.1	0.0	82.5
V 13	3.8	94.2	0.0	81.8	7.0	104.4	0.0	23.4	0.5	100.1	17.8	95.0	0.3	62.2	4.2	111.4	7.8	109.2	3.4	70.4	0.0	71.0	0.2	99.0	0.0	97.0	0.0	70.6	0.0	115.2	1.3	102.9	3.0	84.1
S 14	1.0	89.2	1.8	81.8	1.2	102.8	6.0	27.8	1.3	95.5	0.8	93.2	0.8	61.7	1.2	105.2	1.2	103.2	1.6	70.6	1.4	64.6	1.0	86.4	0.8	90.2	1.4	70.4	1.2	108.2	1.3	92.2	1.4	80.6
D 15	0.0	89.2	0.2	82.0	0.0	102.8	0.0	27.8	0.3	95.8	0.0	93.2	0.0	61.7	0.0	105.2	0.2	103.2	0.0	70.6	0.0	64.6	0.2	86.6	0.0	89.9	0.0	70.4	0.2	108.4	0.0	92.2	0.1	80.6
L 16	1.0	67.2	2.0	38.4	0.0	71.8	0.0	21.0	2.3	70.9	0.4	67.0	0.0	41.9	0.0	62.8	1.0	81.4	0.0	46.0	0.0	39.8	0.0	53.8	0.0	42.9	0.0	47.2	0.6	56.4	0.0	59.2	0.3	53.2
Ma 17	0.0	65.4	0.0	35.0	0.0	63.2	0.0	20.8	0.0	68.1	0.0	63.2	0.3	35.3	0.0	58.4	0.0	80.0	0.0	43.6	0.0	25.4	0.0	40.2	0.0	35.1	0.8	39.6	0.2	50.2	0.0	46.2	0.2	46.6
Mi 18	4.4	69.8	0.0	00.0	0.4	63.6	3.0	23.8	6.1	74.2	0.0	63.2	4.1	39.1	4.0	62.4	2.4	82.4	0.0	43.6	2.8	28.2	0.6	40.8	5.6	40.6	1.2	40.8	4.8	54.8	0.0	40.2	2.3	49.0
J 19	1.8	71.6	3.8	38.8	1.2	64.8	1.8	25.6	2.5	76.7	0.8	64.0	3.3	42.2	2.0	64.4	1.2	83.6	0.4	44.0	1.4	29.6	1.0	41.8	1.5	42.2	1.8	42.6	2.0	56.8			1.5	50.5
V 20	0.2	71.8	0.0	38.8	2.6	67.4	0.0	25.6	0.3	77.0	0.6	64.6	0.0	42.2	0.4	64.8	0.4	84.0	0.6	44.6	0.2	29.8	1.2	42.8	0.3	42.4	0.4	43.0	0.6	57.2			0.6	51.0
S 21	0.0	71.4	0.0	38.0	4.6	71.2	0.0	25.2	0.0	76.2	2.0	66.0	0.0	41.4	0.6	64.8	0.0	83.6	1.6	45.8	0.6	29.4	2.4	44.2	0.3	41.9	1.0	42.8	0.2	56.6			1.1	51.3
D 22	0.0	67.8	0.0	34.4	0.2	59.6	0.0	21.4	0.0	70.9	0.0	62.4	0.0	37.6	0.0	62.0	0.0	81.4	0.0	41.4	0.0	26.6	0.2	41.6	0.0	38.9	0.2	40.0	0.0	50.6			0.1	47.4
L 23	0.0	48.6	0.0	21.4	0.0	42.4	0.0	16.8	0.0	48.5	0.0	45.4	0.0	25.7	0.0	39.6	0.0	61.8	0.0	23.2	0.0	16.4	0.4	23.0	0.0	21.3	0.0	28.4	0.0	26.0			0.0	31.6
Ma 24	2.4	47.4	0.0	21.2	5.4	47.8	1.6	18.4	2.3	50.3	2.6	48.0	0.5	25.9	1.2	40.6	4.0	57.0	3.4	26.4	1.2	17.6	1.8	24.6	1.0	22.1	1.2	29.2	1.6	27.2			2.0	32.8
Mi 25	18.6	66.0	12.0	33.2	9.6	57.4	4.4	22.8	15.8	66.0	10.0	58.0	11.9	37.8	15.4	56.0	15.8	72.6	10.0	36.4	8.6	26.2	12.0	36.6	10.4	32.5	10.0	38.8	19.8	47.0			11.3	44.0
J 26	0.4	66.4	0.2	33.4	1.4	58.8	0.2	23.0	0.5	66.6	0.2	58.2	0.3	38.1	0.4	56.4	0.4	73.0	0.4	36.8	0.8	27.0	0.8	37.4	0.5	33.0	2.0	40.8	1.0	48.0	0.8	24.4	0.8	44.8
V 27	0.0	66.0	0.0	32.6	0.0	57.6	0.0	22.6	0.0	66.0	0.0	57.4	0.0	35.8	0.0	55.8	0.0	72.4	0.0	36.2	0.0	26.4	0.0	36.6	0.0	32.5	0.0	38.8	0.0	46.8	0.0	23.9	0.0	43.8
S 28	0.8	65.6	1.8	33.4	0.8	57.2	0.8	22.8	1.5	65.8	0.6	56.8	3.3	38.6	1.8	56.4	0.4	71.4	0.0	35.0	1.8	26.2	2.4	38.0	2.3	33.3	4.2	39.8	2.6	47.4	2.3	25.2	1.9	44.1
D 29	0.4	65.4	0.4	33.4	0.8	57.6	0.0	22.4	0.5	65.8	0.4	57.0	1.8	39.4	0.4	56.4	0.4	71.0	0.0	34.4	0.6	26.4	0.8	38.4	0.5	33.3	0.2	38.0	1.0	47.2	0.5	25.4	0.5	43.9
L 30	0.0	65.2	0.0	33.4	0.8	57.6	0.0	22.4	0.0	65.5	0.0	57.0	0.0	39.4	0.0	56.4	0.0	70.6	0.0	33.4	0.0	26.0	0.0	38.2	0.0	33.0	0.0	37.2	0.0	46.8	0.0	25.2	0.0	43.6
Ma 1																																	$\rightarrow$	
Ll. mes	67.6		35.6		61.2		23.8		68.6		59.2		43.2		58.6		73.8		36.8		29.4		40.6		35.8		45.2		51.6		27.2		47.3	
Máx. mes	21.8	197.4	12.0	215.6	16.6	249.2	6.0	86.8	22.1	191.0		188.0	11.9	188.7	19.8	280.2	26.0	229.4	10.0	197.2	8.6	190.8		279.4		254.0	10.0	151.0		316.8	13.0	273.3		206.9
Ll. acum. en el año	89	3.8	74	5.2	93	31.4	49	2.8	956	6.1	84	2.0	83	0.3	95	4.4		71.0	88	1.2	79	3.4		12.4	90	9.1	88	5.8	118	34.4	90	6.3	899	
No. días Iluvia año	112	62%	116	64%	122	67%	95	52%	121	67%	128	71%	120	66%	116	64%	117	65%	99	61%	121	67%	148	82%	124	69%	128	71%	146	81%	121	70%	142	78%





	anscurrido o a la fec		181
No. de	días con al	gún N.A. e	n el año
Estación	Α	N	R
Alc	43	0	0
Ara	12	0	0
Bos	34	0	0
Chec	0	0	0
Car	38	0	0
Emas	12	0	0
Enea	7	0	0
Hos	28	3	0
Ing	39	10	0
Pal	26	15	0
Niza	5	0	0
Oli	46	0	0
Pos	27	0	0
Qman	18	0	0
Ruta	31	19	0
Yar	36	0	0
Prom.	40	0	0

#### CONVENCIONES

Ll. d. : Lluvia diaria en mm

A25 : Indicador Iluvia antecedente de 25 días en mm

11 mes: I luvia parcial o total en el mes en mm

Máx. mes: Valores máximos de lluvia diaria y A25 en el mes en mm

Ll. acum. en el año: Lluvia acumulada en el año en mm No. días lluvia año: Número de días con lluvia en lo corrido del año

Resalta la lluvia diaria máxima del mes

valor Iluvia diaria correspondiente a una estación cercana

\* Indicadores con base a los días de funcinamiento de cada estación

#### NIVELES DE ALERTA (N.A.)

Amarilla o baja: A 200 mm <= A25 < 300 mm Naranja o media: N 300 mm <= A25 < 400 mm Roia o alta:

R A25 >= 400 mm

#### OBSERVACIONES:

1. La lluvia promedio y acumulada en lo corrido del año para

Manizales se calcularon con el Método de los Polígonos de Thiesser

propietarias y participantes











# OBSERVATORIOS AMBIENTALES PARA EL DESARROLLO URBANO SOSTENIBLE EN MANIZALES

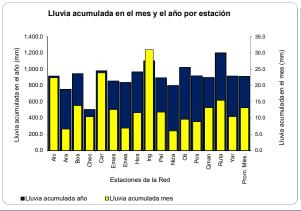
# RED DE ESTACIONES HIDROMETEOROLÓGICAS PARA PREVENCIÓN DE DESASTRES DE MANIZALES

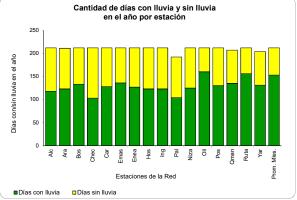
Contrato Municipio de Manizales/UGR - Universidad Nacional de Colombia



# **JULIO DE 2014**

Estaciones		zares		njuez	No.	ues del orte	Chec		El Ca			nas		iea		das	•	minas		alma		za	Quel Oliva Po	res-El pal		rados	Queb Maniz Tesc	zales- orito	Quebra Luis-R	uta 30		ımos	Prom Maniz	
Propietarios	Alcaldía	/OMPAD		/OMPAD	_	/OMPAD	CHEC S		Alcaldía/	_	EMAS S		Alcaldía			/OMPAD	Alcaldía/		Alcaldía	/OMPAD	Alcaldía/		CORPO			anizales	CORPO		UN-Ma			/OMPAD		
Día	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25
Ma 1	16.4	81.4	1.6	34.4	3.0	60.4	3.2	25.6	17.0	82.3	4.4	61.4	0.0	39.1	4.8	61.2	24.0	94.2	5.4	38.8	0.0	26.0	0.2	37.6	3.3	36.1	0.2	36.4	6.0	52.2	0.5	25.1	4.7	47.9
Mi 2	2.2	61.8	0.8	34.8	2.8	46.6	0.6	25.2	1.8	62.0	2.4	47.4	1.0	39.1	2.6	44.0	2.6	70.8	1.8	32.6	1.8	26.8	2.4	34.2	1.8	33.3			2.8	52.4	2.5	14.7	1.9	41.0
J 3	0.0	53.4	0.0	24.8	0.2	42.2	0.0	21.6	0.0	52.8	0.2	43.4	0.0	27.9	0.0	39.0	0.0	62.0	0.0	28.6	0.0	21.2	0.2	28.6	0.0	28.4			0.2	45.6	0.3	9.9	0.1	34.3
V 4	1.0	54.4	1.4	26.0	2.8	44.8	0.8	22.4	1.0	53.8	2.0	45.4	2.3	30.2	0.8	39.8	1.6	63.4	1.8	30.4	0.8	22.0	1.2	29.6	1.0	29.5			1.4	46.8	1.8	11.7	1.5	35.8
S 5	1.0	55.4	0.2	26.2	1.4	46.2	1.0	23.4	1.0	54.6	1.4	46.8	0.3	30.0	0.6	40.4	1.4	64.8	2.2	32.6	0.0	22.0	0.4	29.6	0.3	29.5			0.8	47.4	0.3	11.4	0.8	36.2
D 6	0.0	55.4	0.0	26.2	0.2	46.4	0.0	23.4	0.0	54.6	0.0	46.8	0.0	30.0	0.0	40.4	0.0	64.8	0.0	32.6	0.0	22.0	0.0	29.4	0.0	29.5			0.0	47.2	0.0	11.4	0.0	36.1
L 7	1.2	56.6	1.6	27.8	1.0	47.4	1.2	24.6	2.0	56.6	1.0	47.8	1.3	31.2	2.0	42.4	1.0	65.8	0.6	33.2	2.0	24.0	1.6	31.0	1.8	31.2	4.2	28.8	2.2	49.2	1.8	13.2	1.4	37.6
Ma 8	0.0	52.8	0.0	27.8	0.0	40.4	0.0	24.6	0.0	56.1	0.0	30.0	0.0	31.0	0.0	38.2	0.0	58.0	0.0	29.8	0.0	24.0	0.2	31.0	0.0	31.2	0.0	28.8	0.2	49.4	0.0	11.9	0.0	34.6
Mi 9	0.0	51.8	0.0	26.0	0.0	39.2	0.0	18.6	0.0	54.9	0.0	29.2	0.0	30.2	0.0	37.0	0.0	56.8	0.0	28.2	0.0	22.6	0.2	30.2	0.0	30.5	1.6	29.0	0.0	48.2	0.3	10.9	0.3	33.5
J 10	0.0	51.8	0.0	25.8	0.0	39.2	0.0	18.6	0.0	54.6	0.0	29.0	0.0	30.2	0.0	37.0	0.0	56.6	0.0	28.2	0.0	22.6	0.0	30.0	0.0	30.5	0.0	29.0	0.0	48.0	0.0	10.9	0.0	33.4
V 11	0.0	50.8	0.0	23.8	0.0	39.2	0.0	18.6	0.0	52.3	0.0	28.6	0.0	30.2	0.0	37.0	0.0	55.6	0.0	28.2	0.0	22.6	0.0	30.0	0.0	30.5	0.0	29.0	0.0	47.4	0.0	10.9	0.0	33.1
S 12	0.0	50.8	0.4	24.2	1.4	40.6	0.6	19.2	0.5	52.8	0.8	29.4	0.8	30.7	0.4	37.4	0.4	56.0	0.0	28.2	1.4	24.0	2.2	32.2	0.8	31.2	4.4	32.6	1.0	48.2	2.3	13.2	1.4	34.4
D 13	0.0	46.4	0.0	24.2	0.2	40.4	0.0	16.2	0.0	46.7	0.0	29.4	0.0	26.7	0.0	33.4	0.0	53.6	0.0	28.2	0.0	21.2	0.2	31.8	0.0	25.7	0.0	31.4	0.2	43.6	0.0	13.2	0.0	32.1
L 14	0.0	44.6	0.0	20.4	0.0	39.2	0.0	14.4	0.0	44.2	0.0	28.6	0.5	23.9	0.0	31.4	0.0	52.4	0.0	27.8	0.0	19.8	0.0	30.8	0.0	24.1	0.0	29.6	0.0	41.6	0.0	13.2	0.0	30.6
Ma 15	0.0	44.4	0.0	20.4	0.4	37.0	0.0	14.4	0.0	43.9	0.0	28.0	0.0	23.9	0.0	31.0	0.0	52.0	0.0	27.2	0.0	19.6	0.0	29.6	0.0	23.9	0.0	29.2	0.0	41.0	0.3	13.5	0.0	30.1
Mi 16	0.0	44.4	0.0	20.4	0.0	32.4	0.0	14.4	0.0	43.9	0.0	26.0	0.0	23.9	0.0	30.4	0.0	52.0	0.0	25.6	0.0	19.0	0.2	27.4	0.0	23.6	0.0	28.2	0.0	40.8	0.0	13.5	0.0	29.0
J 17	0.0	44.4	0.0	20.4	0.0	32.2	0.0	14.4	0.0	43.9	0.0	26.0	0.0	23.9	0.0	30.4	0.0	52.0	0.0	25.6	0.0	19.0	0.0	27.2	0.0	23.6	0.0	28.0	0.0	40.8	0.0	13.5	0.0	28.9
V 18	0.0	44.4	0.0	20.4	0.0	32.2	0.0	14.4	0.0	43.9	0.0	26.0	0.0	23.9	0.0	30.4	0.0	52.0	0.0	25.6	0.0	19.0	0.0	26.8	0.0	23.6	0.0	28.0	0.0	40.8	0.0	13.5	0.0	28.9
S 19	0.0	42.0	0.0	20.4	0.0	26.8	0.0	12.8	0.0	41.7	0.0	23.4	0.0	23.4	0.0	29.2	0.0	48.0	0.0	22.2	0.0	17.8	0.0	25.0	0.0	22.6	0.0	26.8	0.0	39.2	0.0	13.5	0.0	26.9
D 20	0.0	23.4	0.0	8.4	0.0	17.2	0.0	8.4	0.0	25.9	0.0	13.4	0.0	11.4	0.0	13.8	0.0	32.2	0.0	12.2	0.0	9.2	0.0	13.0	0.0	12.2	1.8	18.6	0.0	19.4	0.0	13.5	0.3	15.8
L 21	0.0	23.0	0.0	8.2	0.0	15.8	0.0	8.2	0.0	25.4	0.0	13.2	0.0	11.2	0.0	13.4	0.0	31.8	0.0	11.8	0.0	8.4	0.0	12.2	0.0	11.7	0.0	16.6	0.0	18.4	0.0	12.7	0.0	15.1
Ma 22	0.0	23.0	0.0	8.2	0.0	15.8 15.0	0.0	8.2	0.0	25.4	0.0	13.2	0.0	11.2	0.0	13.4	0.0	31.8 31.4	0.0	11.8	0.0	8.4	0.0	12.2	0.0	11.7	0.0	16.6	0.0	18.4 15.8	0.0	12.7	0.0	15.1
Mi 23 J 24	0.0	21.8	0.0	6.4	0.0	14.2	0.0	7.4	0.0	23.9	0.0	12.6 12.2	0.0	7.9	0.0	11.6 11.2	0.0	31.4	0.0	11.8 11.8	0.0	6.6	0.0	9.8	0.0	9.4	0.0	12.4	0.0	14.8	0.0		0.0	13.1 12.6
V 25	0.0	21.8	0.0	6.0	0.0	13.4	0.0	7.4	0.0	23.4	0.0	12.2	0.0	6.1 6.1	0.0	11.2	0.0	31.0	0.0	11.8	0.0	6.0	0.0	9.0	0.0	8.9 8.9	0.0	12.2 12.2	0.0	14.8	0.0	9.9	0.0	12.6
S 26	0.0	5.4	0.0	4.4	0.0	_	2.8	7.0	0.0	6.4		7.8	0.0	6.1	0.0	6.4		7.0	0.0	6.4		6.0	0.0	8.8		5.6			0.0	8.8	0.0	9.9		8.0
D 27	0.6	3.8	0.6	4.4	0.0	7.6	0.2	6.6	0.0	5.1	0.0	5.4	0.0	5.9	0.0	4.2	0.0	4.4	0.0	4.6	0.0	4.2	0.0	6.4	0.0	3.8	0.0	12.0 12.0	0.6	6.6	0.0	6.9	0.1	6.2
L 28	0.0	3.8	0.0	4.2	0.0	7.4	0.2	6.6	0.0	5.1	0.0	5.4	0.0	5.9	0.4	4.2	0.0	4.4	0.0	4.6	0.0	4.2	0.0	6.2	0.0	3.8	0.0	12.0	0.0	6.4	0.0	6.6	0.2	6.2
Ma 29	0.0	2.8	0.0	2.8	0.0	5.0	0.0	5.8	0.0	4.1	0.0	3.6	0.0	3.6	0.0	3.4	0.0	2.8	0.0	2.8	0.0	3.4	0.6	5.6	0.0	2.8	0.8	12.8	0.0	5.0	0.5	5.3	0.0	4.9
Mi 30	0.0	1.8	0.0	2.6	0.4	3.6	0.0	4.8	0.0	3.1	0.4	2.2	0.0	3.3	0.0	2.8	0.0	1.4	0.0	0.6	0.0	3.4	0.0	5.0	0.0	2.5	0.8	13.0	0.0	4.2	0.0	5.1	0.2	4.9
J 31	0.0	1.8	0.0	2.6	0.0	3.4	0.0	4.8	0.0	3.1	0.0	2.2	0.0	3.3	0.0	2.8	0.0	1.4	0.0	0.6	0.0	3.4	0.0	5.2	0.0	2.5	0.2	13.0	0.0	4.2	0.0	5.1	0.0	4.2
LI. mes	22.4	1.0	6.6	2.0	13.8	3.4	10.4	4.0	23.9	3.1	12.6	2.2	6.9	3.3	11.6	2.0	31.0	1.4	11.8	0.0	6.0	3.4	9.6	5.2	8.9	2.5	13.2	13.0	15.4	4.2	10.4	5.1	13.1	4.2
Máx. mes	16.4	81.4	1.6	34.8	3.0	60.4	3.2	25.6	17.0	82.3	4.4	61.4	2.3	39.1	4.8	61.2	24.0	94.2	5.4	38.8	2.0	26.8	2.4	37.6	3.3	36.1	4.4	36.4	6.0	52.4	2.5	25.1	4.7	47.9
Ll. acum. en														•																		_		
el año	91	6.2	75	51.8	94	15.2	50	3.2	979	9.9	85	4.6	83	7.2	96	6.0	110	02.0	89	3.0	79	9.4	102	22.0	91	8.0	89	9.0	119	9.8	91	6.7	912	2.6
No. días Iluvia año	118	56%	123	58%	133	63%	103	49%	128	60%	136	64%	127	60%	123	58%	123	58%	104	54%	125	59%	160	75%	130	61%	135	65%	156	74%	131	64%	153	72%





	anscurrido io a la fec		212
		lgún N.A. e	n el año
Estación	Α	N	R
Alc	43	0	0
Ara	12	0	0
Bos	34	0	0
Chec	0	0	0
Car	38	0	0
Emas	12	0	0
Enea	7	0	0
Hos	28	3	0
Ing	39	10	0
Pal	26	15	0
Niza	5	0	0
Oli	46	0	0
Pos	27	0	0
Qman	18	0	0
Ruta	31	19	0
Yar	36	0	0
Prom.	40	0	0

#### CONVENCIONES

Ll. d. : Lluvia diaria en mm

A25 : Indicador Iluvia antecedente de 25 días en mm 11 mes: Lluvia parcial o total en el mes en mm

Máx. mes: Valores máximos de lluvia diaria y A25 en el mes en mm

Ll. acum. en el año: Lluvia acumulada en el año en mm

No. días lluvia año: Número de días con lluvia en lo corrido del año

Resalta la lluvia diaria máxima del mes

valor Iluvia diaria correspondiente a una estación cercana

\* Indicadores con base a los días de funcinamiento de cada estación

NIVELES DE ALERTA (N.A.)

Amarilla o baja: A 200 mm <= A25 < 300 mm Naranja o media: N 300 mm <= A25 < 400 mm

Roia o alta: R A25 >= 400 mm

OBSERVACIONES:

1. La lluvia promedio y acumulada en lo corrido del año para

Manizales se calcularon con el Método de los Polígonos de Thiesser













# OBSERVATORIOS AMBIENTALES PARA EL DESARROLLO URBANO SOSTENIBLE EN MANIZALES

# RED DE ESTACIONES HIDROMETEOROLÓGICAS PARA PREVENCIÓN DE DESASTRES DE MANIZALES

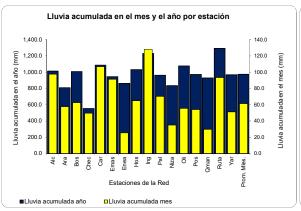
Contrato Municipio de Manizales/UGR - Universidad Nacional de Colombia

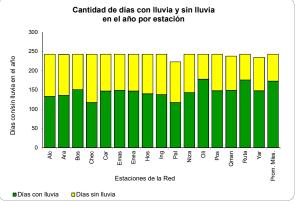


# REGISTROS DE LLUVIA DIARIA E INDICADORES DE LLUVIA ANTECEDENTE DE 25 DÍAS

# **AGOSTO DE 2014**

Estaci	ones		zares		njuez	No.	ues del orte	Chec		El Ca			nas	En		Hospi Cal	das	Ingeo			alma		za	Queb Olivai Po	res-El pal	Posg		Queb Maniz Tesc	zales- orito	Quebra Luis-R	uta 30		ımos	Prom Maniz	
Propie		Alcaldía/	/OMPAD		/OMPAD		/OMPAD	CHEC S		Alcaldía/		EMAS S		Alcaldía/		Alcaldía/	OMPAD	Alcaldía/			OMPAD	Alcaldía/		CORPO		UN-Ma		CORPO	_	UN-Ma			/OMPAD		
Dí	а	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25
V	1	5.4	6.0	0.4	1.4	0.6	3.0	4.6	8.2	8.1	9.2	6.4	7.6	1.5	3.6	0.4	1.2	6.4	6.8	6.6	6.6	1.4	2.8	0.0	3.6	0.3	1.0	0.0	8.8	0.2	2.2	0.0	3.3	2.6	5.4
S	2	16.2	22.2	12.0	13.4	6.8	9.8	8.0	16.2	9.9	19.1	17.4	25.0	3.3	6.9	4.2	5.4	21.6	28.4	11.4	18.0	3.8	6.6	4.0	7.4	4.6	5.6	3.6	12.4	9.4	11.4	3.8	7.1	8.2	13.5
D	3	0.0	22.2	0.0	13.4	0.2	10.0	0.0	16.2	0.0	19.1	0.0	25.0	0.0	6.9	0.0	5.4	0.2	28.6	0.0	18.0	0.2	6.8	0.0	7.2	0.0	5.6	0.0	10.8	0.2	11.6	0.0	6.9	0.0	13.3
L L	4	0.0	22.2	0.0	13.4	0.0	10.0	0.0	16.2	0.0	19.1	0.0	25.0	0.0	6.9	0.0	5.4	0.0	28.6	0.0	18.0	0.0	6.8	0.0	7.2	0.0	5.6	1.0	11.8	0.0	11.6	0.0	6.9	0.2	13.4
Ma	5	0.0	22.2	0.0	13.4	1.0	11.0	0.0	16.2	0.3	19.3	0.0	25.0	0.8	7.6	0.4	5.8	0.0	28.6	0.0	18.0	1.2	8.0	1.2	8.4	0.8	6.4	2.8	14.6	0.8	12.4	1.3	8.1	0.9	14.3
Mi	6	0.0	22.2	0.0	13.0	0.2	9.8	0.0	15.6	0.0	18.8	0.0	24.2	8.0	7.6	0.0	5.4	0.0	28.2	0.0	18.0	0.0	6.6	0.0	6.2	0.0	5.6	0.0	10.2	0.0	11.4	0.0	5.8	0.1	13.0
J	7	24.4	46.6	10.8	23.8	27.0	36.6	2.4	18.0	29.0	47.8	37.4	61.6	2.3	9.9	23.2	28.6	42.6	70.8	26.8	44.8	8.6	15.2	21.0	27.0	13.7	19.3	0.4	10.6	29.2	40.4	20.3	26.2	18.0	31.0
V	8	0.0	46.6	0.0	23.8	0.0	36.6	0.0	18.0	0.3	48.0	0.0	61.6	0.0	9.4	0.0	28.6	0.0	70.8	0.0	44.8	0.0	15.2	0.0	27.0	0.0	19.3	0.0	10.6	0.0	40.4	0.0	26.2	0.0	30.9
S	9	0.4	47.0	1.6	25.4	0.0	36.2	3.6	21.6	1.0	49.0	0.0	61.6	0.3	9.7	0.0	28.6	0.0	70.8	0.0	44.8	0.4	15.6	0.4	27.4	0.3	19.6	0.0	10.6	0.6	41.0	0.3	26.2	0.4	31.3
D	10	0.4	47.4	0.0	25.4	0.8	37.0	0.0	21.6	0.3	49.3	0.0	61.6	0.3	9.9	0.6	29.2	0.4	71.2	0.4	45.2	0.4	16.0	1.0	28.2	0.3	19.8	1.8	12.4	0.2	41.2	0.8	26.9	0.6	31.9
<u>                                   </u>	11	1.2	48.6	0.4	25.8	1.6	38.6	1.0	22.6	1.5	50.8	1.0	62.6	0.5	10.4	1.0	30.2	1.6	72.8	5.0	50.2	0.4	16.4	0.4	28.6	0.8	20.6	1.4	13.8	1.0	42.2	0.5	27.4	1.4	33.2 37.8
Ma Mi	12	4.4	53.0 53.0	3.6 0.0	29.4	0.0	42.8 42.8	8.4	31.0 32.0	6.6	57.4 57.7	3.2	65.8 65.8	3.3 0.0	13.7	4.0 0.0	34.2 34.2	3.0 0.0	75.8 75.8	3.2 0.0	53.4 53.4	3.0	19.4	4.8	33.4 33.4	3.3	23.9	7.2	21.0	0.0	46.6 46.6	4.1	31.5 31.5	4.6	37.8
IVII	13 14	0.0	53.0	0.0	29.4	0.0	42.8	1.0	32.0	0.3	57.7	0.0	65.8		_	0.0	34.2	0.0	75.8	0.0	53.4	0.0	19.4 19.4	0.0	33.4	0.0	23.9	0.0	_	0.0	46.6	0.0	31.5	0.1	37.6
V	15	0.0	53.0	0.0	29.4	0.0	42.8	0.0	32.0	0.0	57.7	0.0	65.8	0.0	13.7	0.0	34.2	0.0	75.8	0.0	53.4	0.0	19.4	0.0	33.4	0.0	23.9	0.0	19.2 19.2	0.0	46.6	0.0	31.5	0.0	37.6
S	16	0.0	53.0	0.0	29.4	0.0	42.8	0.0	32.0	0.0	57.7	0.0	65.8	0.0	13.7	0.0	34.2	0.0	75.8	0.0	53.4	0.0	19.4	0.0	33.4	0.0	23.9	0.0	19.2	0.0	46.6	0.0	31.5	0.0	37.6
D	17	12.0	65.0	1.2	30.6	0.0	42.8	3.8	35.8	11.4	69.1	3.0	68.8	0.8	14.5	4.8	39.0	9.4	85.2	1.8	55.2	0.0	19.4	0.0	33.6	6.9	30.7	0.0	19.2	8.4	55.0	0.0	31.5	3.0	40.6
1	18	7.8	72.8	6.8	37.4	0.0	42.8	6.4	42.2	7.4	76.5	0.0	68.8	0.8	15.2	1.0	40.0	13.2	98.4	0.4	55.6	0.4	19.4	0.2	33.8	0.8	31.5	0.0	19.2	6.4	61.4	0.0	31.8	2.4	43.0
Ma	19	1.0	73.8	1.0	38.4	0.4	43.2	0.0	42.2	1.0	77.5	1.2	70.0	1.8	17.0	0.2	40.2	1.2	99.6	0.4	56.2	0.6	20.4	0.2	34.0	0.5	32.0	0.0	19.2	0.4	62.2	0.3	32.0	0.6	43.6
Mi	20	0.0	73.8	0.0	38.4	0.0	43.2	0.0	39.4	0.0	77.5	0.0	70.0	0.0	17.0	0.0	40.2	0.0	99.6	0.0	56.2	0.0	20.4	0.0	34.0	0.0	32.0	0.0	19.2	0.0	62.2	0.0	32.0	0.0	43.5
	21	0.0	73.2	0.0	37.8	0.0	43.2	0.0	39.2	0.0	77.0	0.0	70.0	0.0	16.3	0.0	39.8	0.0	99.6	0.0	56.2	0.0	20.4	0.0	34.0	0.0	32.0	0.0	19.2	0.0	61.6	0.0	32.0	0.0	43.3
V	22	1.4	74.6	1.0	38.8	2.2	45.4	0.4	39.6	1.3	78.2	1.6	71.6	0.3	16.5	0.8	40.6	1.2	100.8	0.0	56.2	1.0	21.4	2.2	36.2	3.3	35.3	0.8	20.0	0.4	62.0	3.1	35.1	1.1	44.5
Š	23	5.8	80.4	3.0	41.8	8.6	53.6	0.2	39.8	2.0	80.3	13.0	84.2	0.5	17.0	7.4	48.0	12.6	113.4	9.0	65.2	0.4	21.8	2.0	37.6	2.3	37.6	0.0	19.2	7.4	69.4	0.8	35.3	4.4	48.6
D	24	0.0	80.4	0.0	41.8	0.8	54.4	0.0	39.8	0.0	80.3	0.0	84.2	0.5	17.5	0.4	48.4	0.0	113.4	0.0	65.2	1.4	23.2	2.6	40.2	1.8	39.4	0.4	19.4	1.8	71.2	1.5	36.8	0.7	49.3
T.	25	5.6	86.0	12.0	53.8	2.2	56.6	5.6	45.4	8.9	89.2	1.6	85.8	4.1	21.6	4.8	53.2	2.4	115.8	0.6	65.8	5.2	28.4	5.2	45.4	4.8	44.2	4.0	23.4	8.0	79.2	5.1	41.9	4.3	53.6
Ma	26	11.4	92.0	3.8	57.2	5.0	61.0	4.0	44.8	17.0	98.1	4.4	83.8	2.5	22.6	10.8	63.6	11.6	121.0	4.2	63.4	5.6	32.6	8.2	53.6	8.9	52.8	5.0	28.4	12.8	91.8	7.9	49.8	6.9	57.9
Mi	27	0.2	76.0	0.0	45.2	0.2	54.4	0.2	37.0	0.5	88.6	0.8	67.2	0.8	20.1	0.6	60.0	0.6	100.0	0.0	52.0	0.6	29.4	0.8	50.4	0.5	48.8	1.0	25.8	0.6	83.0	0.8	46.7	0.6	50.3
J	28	0.0	76.0	0.0	45.2	0.4	54.6	0.0	37.0	0.0	88.6	0.0	67.2	0.3	20.3	0.0	60.0	0.0	99.8	0.0	52.0	0.0	29.2	0.6	51.0	0.0	48.8	0.2	26.0	0.2	83.0	0.3	47.0	0.1	50.4
V	29	0.0	76.0	0.0	45.2	0.4	55.0	0.0	37.0	0.3	88.9	0.4	67.6	0.3	20.6	0.4	60.4	0.0	99.8	0.4	52.4	0.4	29.6	0.4	51.4	0.5	49.3	0.2	25.2	0.6	83.6	0.5	47.5	0.3	50.5
S	30	0.0	76.0	0.0	45.2	0.0	54.0	0.0	37.0	0.0	88.7	0.0	67.6	0.0	19.8	0.0	60.0	0.0	99.8	0.0	52.4	0.0	28.4	0.0	50.2	0.0	48.5	0.0	22.4	0.0	82.8	0.0	46.2	0.0	49.6
D	31	0.0	76.0	0.0	45.2	0.0	53.8	0.0	37.0	0.0	88.7	0.0	67.6	0.0	19.1	0.0	60.0	0.0	99.8	0.0	52.4	0.0	28.4	0.0	50.2	0.0	48.5	0.0	22.4	0.0	82.8	0.0	46.2	0.0	49.5
LI. mes		97.6		57.6		62.6		49.6		106.9		91.4		25.4		65.0		128.0		70.4		35.0		55.4		54.1		29.8		93.4		51.3		61.5	
Máx. m	es	24.4	92.0	12.0	57.2	27.0	61.0	8.4	45.4	29.0	98.1	37.4	85.8	4.1	22.6	23.2	63.6	42.6	121.0	26.8	65.8	8.6	32.6	21.0	53.6	13.7	52.8	7.2	28.4	29.2	91.8	20.3	49.8	18.0	57.9
Ll. acur el año		101	13.8	80	09.4	10	07.8	55	2.8	108	36.9	94	6.0	86	2.6	103	31.0	123	80.0	96	3.4	83	4.4	107	7.4	97	2.1	92	8.8	129	3.2	96	8.0	974	4.1
No. día Iluvia a		133	55%	136	56%	151	62%	117	48%	147	60%	149	61%	147	60%	140	58%	138	57%	117	52%	143	59%	178	73%	148	61%	149	63%	176	72%	148	63%	173	71%





	anscurrido		243
	io a la fec	ha Igún N.A. e	1 -#-
Estación	Α	N	R
Alc	43	0	0
Ara	12	0	0
Bos	34	0	0
Chec	0	0	0
Car	38	0	0
Emas	12	0	0
Enea	7	0	0
Hos	28	3	0
Ing	39	10	0
Pal	26	15	0
Niza	5	0	0
Oli	46	0	0
Pos	27	0	0
Qman	18	0	0
Ruta	31	19	0
Yar	36	0	0
Prom.	40	0	0

#### CONVENCIONES

Ll. d. : Lluvia diaria en mm

A25 : Indicador Iluvia antecedente de 25 días en mm

11 mes: Lluvia parcial o total en el mes en mm

Máx. mes: Valores máximos de lluvia diaria y A25 en el mes en mm

Ll. acum. en el año: Lluvia acumulada en el año en mm

No. días lluvia año: Número de días con lluvia en lo corrido del año

Resalta la lluvia diaria máxima del mes valor Iluvia diaria correspondiente a una estación cercana

\* Indicadores con base a los días de funcinamiento de cada estación

NIVELES DE ALERTA (N.A.)

Amarilla o baja: A 200 mm <= A25 < 300 mm

Naranja o media: N 300 mm <= A25 < 400 mm Roia o alta:

R A25 >= 400 mm

#### OBSERVACIONES:

1. La lluvia promedio y acumulada en lo corrido del año para

Manizales se calcularon con el Método de los Polígonos de Thiesser











# OBSERVATORIOS AMBIENTALES PARA EL DESARROLLO URBANO SOSTENIBLE EN MANIZALES

# RED DE ESTACIONES HIDROMETEOROLÓGICAS PARA PREVENCIÓN DE DESASTRES DE MANIZALES

Contrato Municipio de Manizales/UGR - Universidad Nacional de Colombia

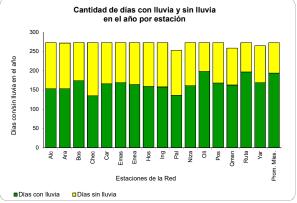


# **SEPTIEMBRE DE 2014**



				juez		orte	Chec		El Ca			as	En		Cal		Ingeor		La Pa		Ni			pal	Posg	rados	Maniz Tesc	rito	Quebra Luis-R		Yaru		Prom Maniz	
Propietarios	Alcaldía	/OMPAD	Alcaldía/	OMPAD	Alcaldía		CHEC S.		Alcaldía/	OMPAD	EMAS S.	A. E.S.P	Alcaldía/		Alcaldía/	OMPAD	Alcaldia/		Alcaldía/	OMPAD	Alcaldía/	OMPAD	CORPO		UN-Ma	nizales	CORPO	CALDAS	UN-Mai		Alcaldía/0	OMPAD		
Día	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25
L 1	0.0	51.6	0.0	34.4	0.0	26.8	0.0	34.6	0.0	59.7	0.0	30.2	0.0	16.8	0.0	36.8	0.0	57.2	0.0	25.6	0.0	19.8	0.0	29.2	0.0	34.8	0.0	22.0	0.0	53.6	0.0	25.9	0.0	31.5
Ma 2	0.4	52.0	1.2	35.6	24.6	51.4	2.2	36.8	0.5	60.0	11.0	41.2	1.8	18.5	2.6	39.4	2.6	59.8	5.4	31.0	0.0	19.8	4.6	33.8	1.5	36.3	0.4	22.4	1.0	54.6	4.1	30.0	4.0	35.5
Mi 3	2.0	53.6	2.6	36.6	2.8	54.2	1.0	34.2	2.8	61.7	2.8	44.0	4.1	22.4	2.8	42.2	2.4	62.2	1.8	32.8	2.8	22.2	3.6	37.0	2.8	38.9	6.4	28.8	3.8	57.8	3.3	33.0	3.4	38.4
J 4	3.8	57.0	2.8	39.4	2.4	55.8	0.8	35.0	3.8	65.3	3.0	47.0	2.0	24.1	3.2	44.8	3.8	65.6	3.4	35.8	2.4	24.2	2.4	38.4	2.8	41.4	0.8	27.8	4.8	62.4	2.5	34.8	2.5	40.4
V 5	0.0	55.8	0.0	39.0	0.0	54.2	0.0	34.0	0.0	63.8	0.0	46.0	0.0	23.6	0.0	43.8	0.0	64.0	0.0	30.8	0.0	23.8	0.0	38.0	0.0	40.6	0.0	26.4	0.0	61.4	0.0	34.3	0.0	39.0
S 6	0.0	51.4	0.0	35.4	0.0	50.0	0.0	25.6	0.0	57.2	0.0	42.8	0.0	20.3	0.0	39.8	0.0	61.0	0.0	27.6	0.0	20.8	0.0	33.2	0.0	37.3	0.0	19.2	0.0	57.0	0.0	30.2	0.0	34.4
D 7	0.0	51.4	0.0	35.4	0.0	50.0	0.0	24.6	0.0	56.9	0.0	42.8	0.0	20.3	0.0	39.8	0.0	61.0	0.0	27.6	0.0	20.8	0.0	33.2	0.0	37.3	0.0	19.2	0.0	57.0	0.0	30.2	0.0	34.4
L 8	0.0	51.4	0.0	35.4	0.0	50.0	0.0	24.6	0.0	56.9	0.0	42.8	0.0	20.3	0.0	39.8	0.0	61.0	0.0	27.6	0.0	20.8	0.0	33.2	0.0	37.3	0.0	19.2	0.0	57.0	0.0	30.2	0.0	34.4
Ma 9	0.0	51.4	0.0	35.4	0.0	50.0	0.0	24.6	0.0	56.9	0.0	42.8	0.0	20.3	0.0	39.8	0.0	61.0	0.0	27.6	0.0	20.8	0.0	33.2	0.0	37.3	0.0	19.2	0.0	57.0	0.0	30.2	0.0	34.4
Mi 10	0.4	51.8	0.0	35.4	0.6	50.6	0.0	24.6	0.8	57.7	0.4	43.2	0.3	20.6	0.4	40.2	0.4	61.4	0.4	28.0	1.2	22.0	1.0	34.2	0.8	38.1	1.6	20.8	0.6	57.6	1.3	31.5	0.7	35.1
J 11	9.6	49.4	13.2	47.4	7.4	58.0	17.2	38.0	13.0	59.2	6.8	47.0	8.4	28.2	6.0	41.4	8.0	60.0	9.0	35.2	4.6	26.6	5.4	39.4	6.4	37.6	8.2	29.0	10.2	59.4	6.1	37.6	8.3	40.4
V 12	1.2	42.8	1.8	42.4	2.4	60.4	0.0	31.6	1.8	53.6	1.8	48.8	3.0	30.5	2.4	42.8	2.0	48.8	1.2	36.0	2.0	28.2	3.2	42.4	2.3	39.1	2.4	31.4	2.8	55.8	2.8	40.1	2.1	40.1
S 13	0.0	41.8	0.0	41.4	0.4	60.4	0.4	32.0	0.0	52.6	0.0	47.6	0.0	28.7	0.0	42.6	0.0	47.6	0.0	35.4	0.0	27.6	0.0	42.2	0.3	38.9	0.0	31.4	0.0	55.0	0.0	39.9	0.0	39.5
D 14	2.0	43.8	2.8	44.2	3.0	63.4	2.2	34.2	2.8	55.4	2.2	49.8	5.6	34.3	3.6	46.2	2.4	50.0	0.8	36.2	4.2	31.8	5.2	47.4	3.8	42.7	4.6	36.0	4.0	59.0	4.8	44.7	3.5	43.0
L 15	3.8	47.6	4.2	48.4	5.4	68.8	2.2	36.4	5.3	60.7	5.0	54.8	4.3	38.6	5.6	51.8	5.4	55.4	5.2	41.4	3.2	35.0	5.2	52.6	4.1	46.7	4.6	40.6	6.2	65.2	4.6	49.3	4.7	47.7
Ma 16	0.4	46.6	2.6	50.0	3.2	69.8	1.0	37.0	0.8	60.2	1.8	55.0	7.9	46.2	1.2	52.2	0.8	55.0	0.6	42.0	3.6	37.6	5.8	56.2	1.5	45.0	4.8	44.6	2.2	67.0	4.6	50.8	3.1	49.7
Mi 17	14.8	55.6	15.0	62.0	9.6	70.8	12.6	49.4	22.4	80.5	16.6	58.6	23.4	69.1	20.8	65.6	15.2	57.6	22.4	55.4	5.4	42.6	6.4	60.6	14.7	57.4	0.2	44.8	24.0	83.6	11.2	61.2	13.1	58.4
J 18	13.0	68.6	11.4	73.4	8.6	78.6	6.6	56.0	13.5	94.0	9.8	68.4	13.2	81.8	6.8	72.0	10.8	68.4	11.6	67.0	5.8	47.0	10.6	68.6	5.3	61.0	34.0	78.4	10.4	92.2	11.2	70.9	13.8	71.5
V 19	13.2	76.2	15.4	76.8	20.0	96.4	9.8	60.2	16.0	101.1	13.8	80.6	9.9	87.6	20.4	87.6	13.0	79.0	18.4	84.8	14.8	56.6	21.4	84.8	18.3	74.4	5.8	80.2	27.6	111.8	20.6	86.4	14.7	81.9
S 20	4.6	69.4	3.6	76.6	7.0	98.4	1.0	57.2	5.8	89.9	6.2	82.4	7.4	92.5	6.2	83.0	5.2	72.6	3.2	83.8	6.8	57.8	10.0	86.6	5.1	70.6	14.2	89.4	7.8	106.8	8.4	86.9	7.3	82.3
D 21	3.2	72.4	4.0	80.6	4.2	102.4	1.6	58.6	3.8	93.2	2.6	84.2	4.1	95.8	3.8	86.2	3.8	75.8	2.4	86.2	2.8	60.0	4.2	90.0	4.3	74.4	3.2	91.6	4.6	110.8	4.3	90.4	3.4	85.2
L 22	33.0	105.4	4.8	85.4	7.8	109.8	21.6	80.2	17.3	110.5	5.2	89.4	0.5	96.0	5.4	91.6	22.6	98.4	21.4	107.6	0.6	60.6	0.6	90.0	1.8	76.2			4.2	114.8	0.5	90.7	8.1	93.2
Ma 23	4.0	109.4	3.2	88.6	5.0	114.4	2.0	82.2	4.8	115.1	5.2	94.2	7.4	103.1	7.2	98.4	4.2	102.6	3.2	110.4	9.4	69.6	8.2	97.8	6.4	82.0			7.8	122.0	6.9	97.0	6.2	99.1
Mi 24	0.4	109.8	0.2	88.8	0.6	115.0	0.4	82.6	0.0	115.1	0.6	94.8	0.0	103.1	0.0	98.4	0.6	103.2	0.0	110.4	0.0	69.6	0.0	97.8	0.0	82.0			0.0	122.0	0.5	97.5	0.2	99.3
J 25	0.4	110.2	0.0	88.8	8.0	123.0	10.8	93.4	0.3	115.3	6.0	100.8	0.0	103.1	1.2	99.6	0.8	104.0	8.0	111.2	0.0	69.6	0.6	98.4	0.8	82.8			0.4	122.4	1.5	99.1	1.8	101.0
V 26	0.6	110.8	2.4	91.2	5.0	128.0	0.4	93.8	0.8	116.1	0.6	101.4	21.1	124.2	3.6	103.2	0.8	104.8	0.6	111.8	20.6	90.2	11.8	110.2	9.4	92.2			4.2	126.6	14.0	113.0	9.0	110.0
S 27	0.0	110.4	0.0	90.0	3.0	106.4	0.0	91.6	0.0	115.6	0.0	90.4	0.0	122.4	0.0	100.6	0.0	102.2	0.0	106.4	0.0	90.2	1.8	107.4	0.0	90.7			0.2	125.8	0.3	109.2	0.4	106.5
D 28	1.8	110.2	0.0	87.4	2.4	106.0	0.0	90.6	2.5	115.3	0.4	88.0	0.0	118.4	4.6	102.4	2.4	102.2	0.6	105.2	0.4	87.8	0.2	104.0	3.3	91.2			2.2	124.2	0.5	106.4	1.0	104.1
L 29	0.0	106.4	0.0	84.6	0.2	103.8	0.0	89.8	0.0	111.5	0.0	85.0	0.0	116.3	0.0	99.2	0.0	98.4	0.0	101.8	0.2	85.6	0.0	101.6	0.0	88.4			0.2	119.6	0.0	103.9	0.0	101.6
Ma 30	0.0	106.4	0.0	84.6	0.0	103.8	0.0	89.8	0.0	111.5	0.0	85.0	0.0	116.3	0.0	99.2	0.0	98.4	0.0	101.8	0.0	85.6	0.0	101.6	0.0	88.4			0.0	119.6	0.0	103.9	0.0	101.6
Mi 1																																		
LI. mes	112.6		91.2		133.6		93.8		118.6		101.8		124.2		107.8		107.2		112.4		90.8		112.2		95.5		91.2		129.2		113.8		111.5	
Máx. mes	33.0	110.8	15.4	91.2	24.6	128.0	21.6	93.8	22.4	116.1	16.6	101.4	23.4	124.2	20.8	103.2	22.6	104.8	22.4	111.8	20.6	90.2	21.4	110.2	18.3	92.2	34.0	91.6	27.6	126.6	20.6	113.0	14.7	110.0
Ll. acum. en el año	11:	26.4	900	0.6	114	41.4	64	6.6	120	5.5	104	7.8	98	5.8	113	8.8	133	7.2	107	75.8	92	5.2	118	39.6	106	67.6	102	0.0	142	2.4	108	1.8	108	5.6
No. días Iluvia año	153	56%	153	56%	174	64%	135	49%	166	61%	169	62%	164	60%	159	58%	158	58%	136	54%	161	59%	198	73%	168	62%	163	63%	197	72%	169	64%	194	71%





	anscurrido o a la fec		273
		na Igún N.A. e	n el año
Estación	A	N N	R
Alc	43	0	0
Ara	12	0	0
Bos	34	0	0
Chec	0	0	0
Car	38	0	0
Emas	12	0	0
Enea	7	0	0
Hos	28	3	0
Ing	39	10	0
Pal	26	15	0
Niza	5	0	0
Oli	46	0	0
Pos	27	0	0
Qman	18	0	0
Ruta	31	19	0
Yar	36	0	0
Prom.	40	0	0

#### CONVENCIONES

Ll. d. : Lluvia diaria en mm

A25 : Indicador Iluvia antecedente de 25 días en mm

11 mes: Lluvia parcial o total en el mes en mm

Máx. mes: Valores máximos de lluvia diaria y A25 en el mes en mm Ll. acum. en el año: Lluvia acumulada en el año en mm

No. días lluvia año: Número de días con lluvia en lo corrido del año

Resalta la lluvia diaria máxima del mes

valor Iluvia diaria correspondiente a una estación cercana

\* Indicadores con base a los días de funcinamiento de cada estación NIVELES DE ALERTA (N.A.)

Amarilla o baja: A 200 mm <= A25 < 300 mm Naranja o media: N 300 mm <= A25 < 400 mm

Roia o alta: R A25 >= 400 mm

#### OBSERVACIONES:

1. La lluvia promedio y acumulada en lo corrido del año para

Manizales se calcularon con el Método de los Polígonos de Thiesser













# OBSERVATORIOS AMBIENTALES PARA EL DESARROLLO URBANO SOSTENIBLE EN MANIZALES

# RED DE ESTACIONES HIDROMETEOROLÓGICAS PARA PREVENCIÓN DE DESASTRES DE MANIZALES

Contrato Municipio de Manizales/UGR - Universidad Nacional de Colombia

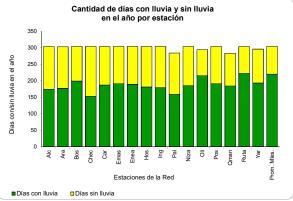


# **OCTUBRE DE 2014**



Estaciones		Alcáz			njuez	No.	ues del orte		Uribe	El Ca		Em		En		Hospi Cal	das		minas		'alma		iza	Oliva Po	brada res-El pal		rados	Queb Maniz Tesc	zales- orito	Luis-F	ada San Ruta 30		umos	Prom Maniz	
Propietarios	s /	Alcaldía/C			/OMPAD		/OMPAD	CHEC S		Alcaldía		EMAS S		Alcaldía/		Alcaldía/		Alcaldía/			/OMPAD		/OMPAD		CALDAS	UN-Ma		CORPO		UN-Ma	_	Alcaldía/			
Día		_l. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25
Mi 1	$\perp$	0.0	106.4	0.0	84.6	0.0	103.8	0.0	89.8	0.0	111.5	0.0	85.0	0.0	116.3	0.0	99.2	0.0	98.4	0.0	101.8	0.0	85.6	0.0	101.6	0.0	88.4			0.0	119.6	0.0	103.9	0.0	101.6
J 2	_	0.0	106.4	0.0	84.6	0.0	103.8	0.0	89.8	0.0	111.5	0.0	85.0	0.0	116.3	0.0	99.2	0.0	98.4	0.0	101.8	0.0	85.6	0.0	101.6	0.0	88.4			0.0	119.6	0.0	103.9	0.0	101.6
V 3	_	0.0	106.4	0.0	84.6	4.6	108.4	0.0	89.8	0.0	111.5	0.0	85.0	0.0	116.3	0.0	99.2	0.0	98.4	0.4	102.2	0.0	85.6	0.0	101.6	0.0	88.4			0.0	119.6	0.0	103.9	0.3	101.9
S 4		8.0	107.2	0.0	84.6	2.0	110.4	0.0	89.8	0.0	111.5	0.0	85.0	8.0	117.1	0.0	99.2	0.0	98.4	0.2	102.4	1.8	87.4	4.4	106.0	0.0	88.4			0.0	119.6	2.8	106.7	1.2	103.1
D 5	_	0.4	107.2	1.2	85.8	1.2	111.0	0.0	89.8	0.3	111.0	0.6	85.2	6.9	123.7	0.4	99.2	0.4	98.4	4.2	106.2	3.0	89.2	4.4	109.4	1.3	88.9			0.6	119.6	2.5	108.0	2.7	105.1
L 6		1.2	98.8	8.0	73.4	2.8	106.4	1.8	74.4	2.5	100.6	1.6	80.0	2.0	117.3	1.4	94.6	1.6	92.0	1.2	98.4	2.6	87.2	0.6	104.6	8.0	83.3			1.6	111.0	2.3	104.1	1.8	98.6
Ma 7		2.8	100.4	1.2	72.8	2.4	106.4	1.4	75.8	3.6	102.4	9.2	87.4	3.6	117.9	15.6	107.8	3.6	93.6	3.8	101.0	4.0	89.2			5.3	86.4			11.6	119.8	5.6	106.9	4.5	101.0
Mi 8		14.4	114.8	12.0	84.8	6.8	112.8	6.2	81.6	11.7	114.1	13.8	101.2	3.3	121.2	16.2	124.0	20.0	113.6	13.6	114.6	3.8	93.0			8.4	94.5	13.8	85.2	17.0	136.8	8.4	115.3	11.0	112.0
J 9	_	7.8	120.6	7.6	89.6	9.0	118.8	0.2	79.6	9.9	121.2	6.6	105.6	9.9	125.5	10.6	131.0	9.6	120.8	8.0	121.8	6.8	95.6			7.6	98.3	17.0	97.6	9.8	142.6	9.9	120.4	9.7	118.2
V 10	_	18.0	134.8	12.6	98.0	6.0	119.4	4.0	81.4	14.2	130.1	9.6	110.2	24.6	145.8	11.4	136.8	20.8	136.2	35.4	152.0	22.6	115.0			28.5	122.7	29.2	122.2	17.6	154.0	27.7	143.5		134.8
S 11	_	0.6	135.0	0.6	96.0	13.4	129.6	0.0	80.4	0.5	129.8	15.4	123.8	5.6	143.5	4.2	139.8	1.2	136.6	1.4	152.8	12.6	124.0			5.3	126.5	3.0	120.4	2.8	154.6	5.3	144.3	5.4	137.2
D 12		7.6	127.8	1.0	82.0	0.6	120.6	3.6	71.4	1.5	109.0	1.4	108.6	1.0	121.2	0.0	119.0	2.2	123.6	4.0	134.4	0.4	119.0			0.3	112.0	8.0	128.2	1.2	131.8	0.3	133.4		126.9
L 13	3	2.8	117.6	1.0	71.6	3.0	115.0	1.4	66.2	3.1	98.6	3.8	102.6	2.8	110.7	6.8	119.0	4.4	117.2	3.4	126.2	6.2	119.4			5.6	112.3	8.6	102.8	4.2	125.6	6.6	128.8	4.9	118.1
Ma 14		0.4	104.8	0.2	56.4	14.6	109.6	0.0	56.4	0.5	83.1	6.2	95.0	3.6	104.4	2.6	101.2	1.4	105.6	1.4	109.2	16.4	121.0			5.6	99.6	6.0	103.0	1.4	99.4	24.6	132.8	6.6	109.9
Mi 15		0.0	100.2	0.0	52.8	0.0	102.6	0.0	55.4	0.0	77.2	0.0	88.8	0.0	97.0	0.0	95.0	0.0	100.4	0.0	106.0	0.0	114.2			0.0	94.5	0.0	88.8	0.0	91.6	0.0	124.5	0.0	102.6
J 16	3	0.0	97.0	0.0	48.8	0.0	98.4	0.0	53.8	0.0	73.4	0.0	86.2	0.3	93.2	0.0	91.2	0.0	96.6	0.0	103.6	0.0	111.4			0.0	90.2	0.8	86.4	0.2	87.2	0.0	120.1	0.2	99.3
V 17		9.2	73.2	1.6	45.6	14.6	105.2	7.4	39.6	12.7	68.8	5.2	86.2	14.2	106.9	14.4	100.2	12.4	86.4	3.2	85.4	9.0	119.8	23.2	55.2	14.5	102.9	0.4	86.8	20.6	103.6	25.7	145.3	10.2	101.4
S 18		12.8	82.0	13.0	55.4	9.8	110.0	13.0	50.6	14.0	78.0	9.6	90.6	8.9	108.5	15.6	108.6	14.0	96.2	8.2	90.4	11.6	122.0	17.2	64.2	13.0	109.5	8.8	95.6	19.2	115.0	12.7	151.1	11.7	106.9
D 19		13.8	95.4	11.8	67.0	6.8	116.2	18.4	68.6	14.5	92.5	9.8	99.8	9.9	118.4	15.2	123.8	15.4	111.0	9.2	99.6	16.2	138.2	18.4	82.6	14.0	123.4	13.0	108.6	16.8	131.8	17.3	167.9	13.3	120.1
L 20		2.2	97.2	5.2	72.2	12.6	120.8	1.2	59.0	3.0	95.3	1.6	95.4	2.3	120.7	1.8	124.4	1.6	111.8	1.2	100.0	5.4	143.6	10.4	92.4	2.8	125.5	5.0	113.6	4.2	135.6	13.7	180.1	4.5	122.8
Ma 21		0.0	96.6	0.2	70.0	0.0	115.8	0.0	58.6	0.0	94.5	0.2	95.0	0.0	99.6	0.0	120.8	0.4	111.4	0.0	99.4	0.0	123.0	0.2	80.8	0.0	116.1	0.0	113.6	0.4	131.8	0.0	166.1		113.9
Mi 22		5.6	102.2	5.2	75.2	9.6	122.4	2.0	60.6	5.9	100.3	9.2	104.2	12.5	112.0	6.8	127.6	5.8	117.2	6.8	106.2	8.0	131.0	9.0	88.0	6.1	122.2	11.0	124.6	7.4	139.0	7.9	173.7	8.2	121.7
J 23		0.6	101.0	0.8	76.0	0.6	120.6	0.2	60.8	1.0	98.8	0.6	104.4	2.0	114.1	0.2	123.2	0.6	115.4	0.4	106.0	1.4	132.0	2.2	90.0	0.8	119.6	3.0	127.6	1.0	137.8	1.8	175.0	1.3	122.0
V 24		0.2	101.2	0.4	76.4	0.2	120.6	0.4	61.2	0.8	99.6	0.0	104.4	2.3	116.3	0.8	124.0	0.2	115.6	2.2	108.2	0.4	132.2	0.4	90.4	0.5	120.1	1.2	128.8	0.6	138.2	0.8	175.8	0.9	122.8
S 25	5	17.6	118.8	4.4	80.8	4.2	124.8	15.8	77.0	5.3	104.9	6.6	111.0	3.6	119.9	10.6	134.6	6.0	121.6	2.4	110.6	5.0	137.2	15.8	106.2	4.6	124.7	22.8	151.6	3.8	142.0	12.2	188.0	9.8	132.6
D 26		22.2	141.0	9.6	90.4	19.6	144.4	16.0	93.0	21.1	126.0	12.4	123.4	13.2	133.1	25.6	160.2	21.4	143.0	13.6	124.2	10.0	147.2	17.2	123.4	16.5	141.2	15.2	166.8	20.4	162.4	14.2	202.2	16.1	148.7
L 27		0.0	141.0	0.0	90.4	0.0	144.4	0.0	93.0	0.0	126.0	0.0	123.4	0.0	133.1	0.0	160.2	0.0	143.0	0.0	124.2	0.0	147.2	0.0	123.4	0.0	141.2	0.0	166.8	0.0	162.4	0.0	202.2	0.0	148.7
Ma 28	3	0.0	141.0	0.8	91.2	19.4	159.2	0.0	93.0	0.0	126.0	2.2	125.6	13.5	146.6	1.4	161.6	0.0	143.0	0.0	123.8	22.8	170.0	29.2	152.6	5.8	147.1	7.6	174.4	1.8	164.2	29.0	231.1	9.2	157.5
Mi 29		0.0	140.2	5.0	96.2	3.0	160.2	0.0	93.0	0.0	126.0	0.2	125.8	14.2	160.0	0.6	162.2	0.0	143.0	0.0	123.6	2.8	171.0	11.6	159.8	0.8	147.8	10.0	184.4	2.0	166.2	1.0	229.4	4.5	160.8
J 30		0.0	139.8	18.4	113.4	12.0	171.0	0.4	93.4	0.5	126.2	0.0	125.2	8.9	162.1	10.4	172.2	0.0	142.6	0.0	119.4	5.0	173.0	8.4	163.8	9.1	155.7	6.4	190.8	14.0	179.6	10.4	237.2	5.7	163.8
V 31		14.4	153.0	6.8	119.4	10.4	178.6	9.0	100.6	12.4	136.1	10.6	134.2	6.1	166.1	10.2	181.0	12.6	153.6	13.2	131.4	6.4	176.8	17.2	180.4	5.9	160.8	7.6	198.4	12.2	190.2	8.6	243.6		172.2
LI. mes	_   1	55.4		121.4		189.2		102.4		138.9		136.4		175.8		182.8		155.6		137.4		184.2		189.8		162.8		198.4		192.4		251.2		178.1	
Máx. mes		22.2	153.0	18.4	119.4	19.6	178.6	18.4	100.6	21.1	136.1	15.4	134.2	24.6	166.1	25.6	181.0	21.4	153.6	35.4	152.8	22.8	176.8	29.2	180.4	28.5	160.8	29.2	198.4	20.6	190.2	29.0	243.6	21.3	172.2
Ll. acum. el el año	n	128	1.8	10	22.0	13	30.6	74	9.0	134	14.4	118	4.2	116	62.6	132	21.6	149	92.8	12	13.2	110	09.4	13	79.4	123	30.4	121	18.4	16 <sup>-</sup>	14.8	133	33.0	126	3.8
No. días Iluvia año		174	57%	177	58%	199	65%	153	50%	187	62%	191	63%	189	62%	181	60%	179	59%	158	56%	185	61%	215	73%	191	63%	184	65%	222	73%	193	65%	220	72%





	anscurrido		304
	io a la fec		
		lgún N.A. e	
Estación	Α	N	R
Alc	43	0	0
Ara	12	0	0
Bos	34	0	0
Chec	0	0	0
Car	38	0	0
Emas	12	0	0
Enea	7	0	0
Hos	28	3	0
Ing	39	10	0
Pal	26	15	0
Niza	5	0	0
Oli	46	0	0
Pos	27	0	0
Qman	18	0	0
Ruta	31	19	0
Yar	42	0	0
Prom.	40	0	0

#### CONVENCIONES

Ll. d. : Lluvia diaria en mm

A25 : Indicador Iluvia antecedente de 25 días en mm

11 mes: I luvia parcial o total en el mes en mm

Máx. mes: Valores máximos de lluvia diaria y A25 en el mes en mm

Ll. acum. en el año: Lluvia acumulada en el año en mm No. días lluvia año: Número de días con lluvia en lo corrido del año

Resalta la lluvia diaria máxima del mes

valor Iluvia diaria correspondiente a una estación cercana

\* Indicadores con base a los días de funcinamiento de cada estación

NIVELES DE ALERTA (N.A.)

Amarilla o baja: A 200 mm <= A25 < 300 mm Naranja o media: N 300 mm <= A25 < 400 mm

Roia o alta: R A25 >= 400 mm

#### OBSERVACIONES:

1. La lluvia promedio y acumulada en lo corrido del año para

Manizales se calcularon con el Método de los Polígonos de Thiesser













# OBSERVATORIOS AMBIENTALES PARA EL DESARROLLO URBANO SOSTENIBLE EN MANIZALES

# RED DE ESTACIONES HIDROMETEOROLÓGICAS PARA PREVENCIÓN DE DESASTRES DE MANIZALES

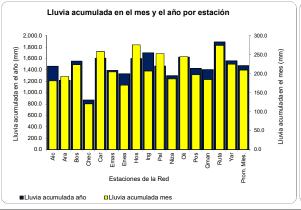
Contrato Municipio de Manizales/UGR - Universidad Nacional de Colombia

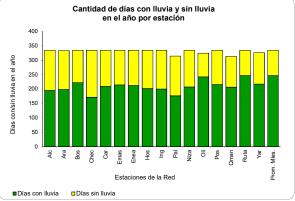


# **NOVIEMBRE DE 2014**



Estaciones		zares /OMPAD	Aran Alcaldía/	juez	No.	ues del orte	Chec CHEC S	Uribe	El Ca		Em	nas A E S D	En Alcaldía/		Hospi Cal		Ingeo		La Pa	alma OMPAD	Ni	za OMPAD	Oliva	res-El pal		rados	Mani: Tes	orada zales- orito CALDAS	Quebra Luis-R			I <b>mos</b>	Prom Mania	
Día	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	LI. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25
S 1	0.2	150.4	5.8	124.0	0.4	176.6	0.0	99.2	0.3	132.8	0.2	125.2	2.8	165.4	0.0	165.4	0.2	150.2	0.2	127.8	5.0	177.8	1.2	181.6	0.5	156.0	1.0	199.4	1.0	179.6	0.5	238.5	1.2	168.8
D 2	0.0	136.0	0.0	112.0	0.0	169.8	0.0	93.0	0.0	121.2	0.0	111.4	0.0	162.1	0.0	149.2	0.0	130.2	0.0	114.2	0.0	174.0	0.2	181.8	0.3	147.8	0.0	185.6	0.0	162.6	0.0	230.1	0.0	157.9
L 3	0.0	128.2	0.4	104.8	0.0	160.8	0.0	92.8	0.0	111.3	0.0	105.0	4.6	156.7	0.0	138.6	0.0	120.6	0.0	106.2	5.2	172.4	4.2	186.0	0.5	140.7	0.0	168.6	0.0	153.0	1.8	222.0	1.3	149.4
Ma 4	3.8	114.0	5.4	97.6	10.4	165.2	1.2	90.0	3.1	100.1	13.8	109.2	21.6	153.7	5.2	132.4	7.2	107.0	14.6	85.4	12.8	162.6	14.6	200.6	4.3	116.6	42.2	181.6	4.6	140.0	11.2	205.5	15.6	143.8
Mi 5	18.0	131.4	16.4	113.4	21.2	173.0	14.2	104.2	17.8	117.4	19.4	113.2	8.6	156.7	14.8	143.0	19.2	125.0	19.0	103.0	11.4	161.4	7.6	208.2	8.4	119.6	2.8	181.4	15.6	152.8	6.1	206.2	12.7	151.0
J 6	8.4	132.2	6.0	118.4	6.0	178.4	5.6	106.2	9.7	125.5	5.0	116.8	5.3	161.0	5.6	148.6	7.8	130.6	4.4	103.4	5.6	166.6	5.8	214.0	5.3	124.7	14.4	187.8	8.8	160.4	4.6	210.6	7.4	155.5
V 7	19.2	148.6	8.2	125.6	2.6	178.0	2.8	107.6	23.1	145.5	8.0	121.0	6.9	165.1	16.4	158.2	10.6	136.8	0.0	100.4	2.2	162.6	2.2	216.2	9.4	128.5	0.4	179.6	8.2	164.4	3.6	207.5	6.1	156.7
S 8	11.6	159.8	3.4	128.8	48.6	212.0	19.6	127.2	29.7	174.8	22.0	136.8	5.6	167.1	35.8	191.4	9.0	144.4	42.2	140.8	4.8	151.0	11.2	227.4	24.6	147.6	4.4	178.0	40.6	203.6	16.8	199.7	18.7	168.8
D 9	0.0	159.8	0.0	128.8	0.0	212.0	0.0	127.2	0.0	174.8	0.0	136.8	0.0	167.1	0.2	191.6	0.0	144.4	0.0	140.8	0.0	151.0	0.2	227.6	0.0	147.6	2.6	180.6	0.2	203.8	0.0	199.7	0.4	169.2
L 10	10.6	170.4	29.2	158.0	17.6	229.6	1.8	129.0	11.7	186.4	30.4	167.2	7.9	174.8	45.0	236.6	28.6	173.0	30.4	171.2	14.6	165.6	32.8	260.4	25.1	172.7	8.6	188.4	42.0	245.6	27.9	227.6	20.8	189.9
Ma 11	13.2	174.4	14.6	171.0	14.0	229.0	3.6	125.2	18.8	192.5	13.4	175.4	37.6	198.1	16.6	238.8	14.6	175.2	15.4	183.4	23.4	180.0	23.4	260.6	13.2	171.5	16.2	204.2	16.6	241.6	17.0	218.9	18.1	197.8
Mi 12	14.4	176.0	9.6	167.6	9.6	228.8	4.2	116.4	17.5	196.1	15.8	181.6	5.1	194.3	15.0	238.2	15.2	176.4	23.2	198.4	4.4	172.8	10.0	253.4	10.7	169.2	9.2	204.6	16.6	239.0	9.7	215.9	11.7	197.7
J 13	1.8	164.0	10.4	166.2	2.6	224.6	1.6	99.6	3.8	185.4	1.0	172.8	15.0	199.4	8.2	231.2	1.8	162.8	5.2	194.4	15.8	172.4	6.0	241.0	3.1	158.3	7.4	199.0	5.6	227.8	5.8	204.5	6.6	191.0
V 14	2.8	164.6	24.8	185.8	21.2	233.2	2.4	100.8	5.1	187.5	7.8	179.0	11.9	209.0	27.4	256.8	4.2	165.4	6.2	199.4	19.2	186.2	20.4	251.0	26.4	181.9	9.0	203.0	26.2	249.8	25.7	216.4	13.3	199.8
S 15	0.6	165.2	0.0	185.6	0.2	233.4	0.0	100.8	0.0	187.5	0.2	179.0	0.0	209.0	0.0	256.8	0.0	165.0	2.8	202.2	0.0	186.2	0.0	250.8	0.3	182.1	0.0	203.0	0.0	249.4	0.0	216.4	0.3	200.0
D 16	0.0	159.6	0.0	180.4	0.0	223.8	0.0	98.8	0.0	181.6	0.0	169.8	0.0	196.6	0.0	250.0	0.0	159.2	0.0	195.4	0.0	178.2	0.4	242.2	0.3	176.3	0.2	192.2	0.2	242.2	0.3	208.8	0.1	191.9
L 17	0.0	159.0	0.6	180.2	1.2	224.4	0.4	99.0	0.0	180.6	0.4	169.6	1.3	195.8	0.0	249.8	0.0	158.6	0.0	195.0	0.0	176.8	0.2	240.2	0.0	175.5	0.0	189.2	0.0	241.2	0.0	207.0	0.3	190.8
Ma 18	1.4	160.2	19.6	199.4	4.8	229.0	4.6	103.2	7.1	187.0	1.6	171.2	5.3	198.9	14.4	263.4	0.8	159.2	1.6	194.4	12.2	188.6	21.6	261.4	8.4	183.4	2.0	190.0	22.2	262.8	13.2	219.5	7.4	197.4
Mi 19	11.6	154.2	9.0	204.0	10.8	235.6	5.0	92.4	17.3	198.9	10.6	175.2	1.8	197.1	9.0	261.8	11.4	164.6	24.0	216.0	4.4	188.0	5.8	251.4	8.4	187.2	3.6	170.8	11.0	270.0	12.2	219.5	9.1	196.7
J 20	6.4	138.4	5.6	200.0	3.8	219.8	0.8	77.2	20.8	198.6	1.8	164.6	9.7	193.6	2.4	238.6	5.0	148.2	1.0	203.4	5.4	183.4	2.0	236.2	6.4	177.0	15.6	171.2	2.6	252.2	3.6	208.8	6.6	187.2
V 21	18.0	156.4	0.8	200.8	9.0	228.8	12.8	90.0	17.8	216.4	6.0	170.6	1.8	195.3	6.2	244.8	23.4	171.6	0.8	204.2	1.6	185.0	4.0	240.2	3.3	180.3	8.4	179.6	3.2	255.4	3.3	212.1	7.1	194.3
S 22	2.6	159.0	1.4	201.4	7.4	216.8	23.6	113.6	12.7	229.1	17.0	185.4	7.6	189.5	11.8	255.2	2.6	174.2	18.4	222.6	8.4	170.6	6.6	217.6	6.6	181.1	15.6	187.6	6.6	260.2	11.4	194.6	11.1	196.3
D 23	0.0	159.0	0.0	196.4	0.0	213.8	0.0	113.6	0.3	229.4	0.0	185.2	0.0	175.3	0.0	254.6	0.2	174.4	0.0	222.6	0.2	168.0	0.0	206.0	0.0	180.3	0.0	177.6	0.0	258.2	0.0	193.5	0.0	191.8
L 24	0.0	159.0	0.0	178.0	0.0	201.8	0.0	113.2	0.0	228.9	0.0	185.2	0.0	166.4	0.0	244.2	0.0	174.4	0.0	222.6	0.0	163.0	0.2	197.8	0.0	171.2	0.0	171.2	0.2	244.4	0.3	183.4	0.0	186.2
Ma 25	1.6	146.2	2.4	173.6	2.4	193.8	0.8	105.0	2.5	219.0	1.4	176.0	3.6	163.8	1.6	235.6	1.2	163.0	1.4	210.8	4.0	160.6	10.8	191.4	2.8	168.1	2.6	166.2	4.0	236.2	3.6	178.3	3.1	179.1
Mi 26	33.8	179.8	18.2	186.0	27.4	220.8	15.4	120.4	38.4	257.1	27.4	203.2	4.6	165.6	35.4	271.0	41.8	204.6	41.8	252.4	22.8	178.4	40.0	230.2	25.4	193.0	3.8	169.0	36.2	271.4	37.9	215.7	25.4	203.3
J 27	0.2	180.0	0.0	186.0	0.2	221.0	0.0	120.4	0.3	257.3	0.2	203.4	0.3	165.9	0.2	271.2	0.2	204.8	0.0	252.4	0.0	178.4	0.6	230.6	0.3	193.0	0.0	169.0	0.4	271.8	0.3	215.9	0.2	203.5
V 28	0.0	180.0	0.0	185.6	0.0	221.0	0.0	120.4	0.0	257.3	0.0	203.2	0.5	161.8	0.0	271.2	0.0	204.8	0.0	252.4	0.0	173.2	0.0	226.4	0.0	192.5	0.4	169.4	0.0	271.6	0.0	214.1	0.1	202.3
S 29	0.0	176.2	0.0	180.2	1.2	211.8	0.0	119.2	0.3	254.5	0.0	189.4	0.0	140.2	0.0	266.0	0.0	197.6	0.0	237.8	0.6	161.0	3.6	215.4	0.0	188.2	14.0	141.2	0.0	267.0	0.5	203.5	2.6	189.3
D 30	0.8	159.0	0.6	164.4	0.8	191.4	0.0	105.0	0.5	237.2	1.0	171.0	0.3	131.8	4.4	255.6	1.8	180.2	0.0	218.8	2.0	151.6	9.0	216.8	3.3	183.1	0.0	138.4	1.4	252.8	7.9	205.2	1.8	178.4
L 1																																		
LI. mes	181.0		192.4		223.4		120.4		258.3		204.6		169.4		275.6		206.8		252.6		186.0		244.6		197.1		184.4		274.2		224.8		209.3	
Máx. mes	33.8	180.0	29.2	204.0	48.6	235.6	23.6	129.0	38.4	257.3	30.4	203.4	37.6	209.0	45.0	271.2	41.8	204.8	42.2	252.4	23.4	188.6	40.0	261.4	26.4	193.0	42.2	204.6	42.0	271.8	37.9	238.5	25.4	203.5
Ll. acum. en el año	146	62.8	121	4.4	15	54.0	86	9.4	160	02.7	138	88.8	133	2.0	159	97.2	169	99.6	146	55.8	129	95.4	162	24.0	142	27.5	140	02.8	188	39.0	155	57.8	147	3.0
No. días Iluvia año	195	58%	198	59%	222	66%	171	51%	209	63%	214	64%	212	63%	201	60%	200	60%	176	56%	207	62%	242	75%	215	64%	206	66%	246	74%	217	67%	246	74%





	anscurrido o a la fec		334
No. de	días con al	gún N.A. e	n el año
Estación	Α	N	R
Alc	43	0	0
Ara	16	0	0
Bos	55	0	0
Chec	0	0	0
Car	48	0	0
Emas	15	0	0
Enea	9	0	0
Hos	49	3	0
Ing	42	10	0
Pal	39	15	0
Niza	5	0	0
Oli	71	0	0
Pos	27	0	0
Qman	22	0	0
Ruta	54	19	0
Yar	66	0	0
Prom.	44	0	0

#### CONVENCIONES

Ll. d. : Lluvia diaria en mm

A25 : Indicador Iluvia antecedente de 25 días en mm 11 mes: Lluvia parcial o total en el mes en mm

Máx. mes: Valores máximos de lluvia diaria y A25 en el mes en mm

Ll. acum. en el año: Lluvia acumulada en el año en mm

No. días lluvia año: Número de días con lluvia en lo corrido del año

Resalta la lluvia diaria máxima del mes

valor Iluvia diaria correspondiente a una estación cercana

\* Indicadores con base a los días de funcinamiento de cada estación

NIVELES DE ALERTA (N.A.)

Amarilla o baja: A 200 mm <= A25 < 300 mm

Naranja o media: N 300 mm <= A25 < 400 mm

Roia o alta: R A25 >= 400 mm

#### OBSERVACIONES:

1. La lluvia promedio y acumulada en lo corrido del año para

Manizales se calcularon con el Método de los Polígonos de Thiesser

Otras entidades propietarias y participantes











# OBSERVATORIOS AMBIENTALES PARA EL DESARROLLO URBANO SOSTENIBLE EN MANIZALES

# RED DE ESTACIONES HIDROMETEOROLÓGICAS PARA PREVENCIÓN DE DESASTRES DE MANIZALES

Contrato Municipio de Manizales/UGR - Universidad Nacional de Colombia

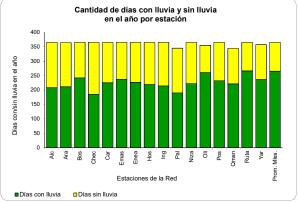


# **DICIEMBRE DE 2014**



Estaciones	Alcá:			njuez 'OMPAD	No.	ues del orte	Chec CHEC S	Uribe		armen /OMPAD	Em		En Alcaldía	iea		ital de das	J	minas /OMPAD		'alma		iza /OMPAD	Oliva	pal	Posg	rados	Mani: Tes	orada zales- orito CALDAS	Quebra Luis-R			IMOS /OMPAD	Prom Mani	nedio zales
Día	Ll. d.	A25	Ll. d.	A25	LI. d.	A25	LI. d.	A25	Ll. d.	A25				A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	Ll. d.	A25	LL d.	A25
L 1	0.0	150.6	0.0	158.4	0.0	185.4	0.0	99.4	0.0	227.6	Ll. d. 0.2	A25 166.2	0.0	126.5	0.0	250.0	0.0	172.4	0.0	214.4	0.0	146.0	0.0	211.0	0.0	177.8	0.0	124.0	0.0	244.0	0.0	200.7	0.0	171.0
Ma 2	0.0	131.4	0.0	150.2	0.0	182.8	0.0	96.6	0.0	204.5	0.2	158.2	0.0	119.6	0.0	230.0	0.0	161.8	0.0	214.4	0.0	143.8	0.0	208.8	0.0	168.4	0.0	123.6	0.0	235.8	0.0	197.1	0.0	165.0
Mi 3	0.0	119.8	0.0	146.8	0.0	134.2	0.0	77.0	0.0	174.8	0.0	136.2	0.0	114.1	0.0	197.8	0.0	152.8	0.0	172.2	0.0	139.0	0.0	197.6	0.0	143.8	0.0	119.2	0.0	195.2	0.0	180.3	0.0	146.3
J 4	0.0	119.8	3.8	150.6	1.6	135.8	0.0	77.4	0.5	175.3	1.4	137.6	4.6	118.6	1.8	199.4	0.0	152.8	0.0	172.2	8.2	147.2	12.0	209.4	3.6	147.3	6.0	122.6	5.2	200.2	3.0	183.4	3.8	140.3
V 5	0.0	109.2	6.6	128.0	0.6	118.8	2.8	78.4	0.8	164.3	0.2	107.4	2.5	113.3	12.0	166.4	0.0	124.6	3.2	145.0	6.4	139.0	5.8	182.4	11.2	133.4	4.4	118.4	10.0	168.2	8.1	163.4	4.1	133.0
S 6	18.4	114.4	16.8	130.2	12.0	116.8	10.6	85.4	31.0	176.5	4.4	98.4	27.9	103.6	20.2	170.0	25.4	135.4	8.4	138.0	20.4	136.0	27.4	186.4	18.0	138.2	30.0	132.2	30.6	182.2	21.6	168.2	20.8	135.7
		124.4		149.0									27.9		20.2	000.0	32.6									171.2	15.6	138.6	52.4	_	_	205.7		
	24.4	124.4	28.4	138.6	45.0	152.2 153.2	3.6	84.8 83.2	25.9	184.9	29.0	111.6	38.6	137.2 122.2	47.0	195.8		152.8 154.0	41.2 10.4	156.0	26.2	157.8 142.6	39.8	216.2	43.7					218.0	47.3		31.8	155.9 152.0
L 8	0.8		0.0		3.6		0.0		3.3	184.4	6.0	116.6	0.0	_	2.0	195.8	3.0			161.2	0.6		4.2	214.4	0.8	168.9	0.0	131.2	1.6	214.0	4.1	204.0	2.7	
Ma 9 Mi 10	23.2 3.8	143.8 147.0	23.0 10.6	136.8 147.4	39.2 12.6	171.2 183.6	9.2 5.4	90.0 95.4	27.4 10.4	200.8	26.6	135.4 142.8	29.7	140.0 163.8	34.2 16.8	202.6	27.6	177.4 181.8	24.4	179.4 179.4	31.0 21.2	154.4 175.6	37.8 25.8	231.8 257.6	27.9 11.4	170.4 181.6	36.0 34.4	158.2 192.6	35.8 17.2	223.0	36.8 21.3	215.1	30.3 16.8	169.0 185.4
							_			217.2	7.6					219.4	4.4		2.8											240.8		236.5		
J 11	0.2	147.2	0.2	147.6	0.4	184.0	0.2	95.6	0.5	217.7	0.4	143.2	0.3	164.1	0.2	219.6	0.4	182.2	0.6	180.0	0.2	175.8	0.4	257.6	0.3	181.6	0.6	193.0	0.6	241.2	0.3	230.5	0.4	185.7
V 12	0.4 23.2	147.6	0.6	147.6	4.6	187.4	0.0	95.2	0.5 27.4	238.5	0.8	143.6	5.3	168.2	2.2	214.8	0.4	182.6	0.0	180.0	5.2	181.0	14.0	271.4	2.3	183.9	11.0	204.0	1.0	242.2	14.5	251.0	4.8	190.3
S 13	_	169.4	2.2	130.2	11.2	193.8	8.8	99.4	_		19.6	161.6	4.3	167.1	7.4		22.0	203.8	17.0	195.4	2.8	171.6	3.6	253.4	2.8	178.3	9.8	211.8	6.6	226.6	3.6		11.0	193.8
D 14	0.8	158.6	0.4	121.6	0.4	183.4	0.6	95.0	0.5	221.7	0.4	151.4	0.3	165.6	0.4	206.2	0.6	193.0	0.8	172.2	0.4	167.6	0.4	248.0	0.5	170.4	1.4	209.6	0.8	216.4	0.5	229.6	0.6	185.4
L 15	0.0	152.2	0.8	116.8	9.6	189.2	0.8	95.0	0.5	201.4	1.2	150.8	0.5	156.5	0.6	204.4	0.0	188.0	0.8	172.0	1.0	163.2	1.6	247.6	0.8	164.9	2.2	196.2	0.8	214.6	1.8	227.8	1.5	180.3
Ma 16	0.0	134.2	0.0	116.0	0.2	180.4	0.0	82.2	0.0	183.6	0.2	145.0	0.0	154.7	0.2	198.4	0.0	164.6	0.0	171.2	0.0	161.6	0.0	243.6	0.0	161.5	0.0	187.8	0.0	211.4	0.0	224.5	0.0	173.2
Mi 17	8.0	139.6	0.0	114.6	0.0	173.0	16.2	74.8	0.5	171.5	0.4	128.4	0.0	147.1	0.8	187.4	0.0	162.0	0.0	152.8	0.0	153.2	1.6	238.6	0.5	155.5	0.0	172.2	0.4	205.2	1.8	214.9	1.3	163.4
J 18	5.2	144.8	0.4	115.0	2.4	175.4	9.2	84.0	4.3	175.5	7.8	136.2	0.3	147.3	2.2	189.6	5.6	167.4	11.0	163.8	0.6	153.6	1.0	239.6	1.0	156.5	0.0	172.2	1.8	207.0	0.5	215.4	3.3	166.7
V 19	0.0	144.8	0.0	115.0	0.0	175.4	0.0	84.0	0.0	175.5	0.2	136.4	1.3	148.6	0.0	189.6	0.0	167.4	0.0	163.8	0.0	153.6	0.0	239.4	0.0	156.5	0.6	172.8	0.2	207.0	0.3	215.4	0.2	166.9
S 20	1.6	144.8	4.0	116.6	0.0	173.0	0.4	83.6	1.5	174.5	3.4	138.4	3.8	148.8	1.4	189.4	5.0	171.2	9.2	171.6	3.4	153.0	3.6	232.2	3.8	157.5	14.2	184.4	4.6	207.6	1.5	213.4	5.2	169.0
D 21	0.0	111.0	0.0	98.4	2.2	147.8	0.2	68.4	0.0	136.1	1.6	112.6	0.0	144.3	2.6	156.6	0.0	129.4	0.0	129.8	4.8	135.0	10.8	203.0	2.5	134.6	0.0	180.6	1.4	172.8	6.6	182.1	2.0	145.6
L 22	0.0	110.8	0.0	98.4	0.2	147.8	0.0	68.4	0.0	135.9	0.2	112.6	0.0	144.0	0.0	156.4	0.0	129.2	0.0	129.8	0.0	135.0	0.0	202.4	0.0	134.4	0.0	180.6	0.2	172.6	0.3	182.1	0.0	145.5
Ma 23	0.0	110.8	0.0	98.4	0.0	147.8	0.0	68.4	0.0	135.9	0.0	112.6	0.0	143.5	0.0	156.4	0.0	129.2	0.0	129.8	0.0	135.0	0.0	202.4	0.0	134.4	0.0	180.2	0.0	172.6	0.0	182.1	0.0	145.4
Mi 24	0.0	110.8	0.0	98.4	0.0	146.6	0.0	68.4	0.0	135.6	0.0	112.6	0.0	143.5	0.0	156.4	0.0	129.2	0.0	129.8	0.0	134.4	0.0	198.8	0.0	134.4	0.0	166.2	0.0	172.6	0.0	181.6	0.0	142.7
J 25	2.4	112.4	0.0	97.8	0.6	146.4	0.0	68.4	1.0	136.2	0.8	112.4	0.0	143.3	1.0	153.0	3.0	130.4	1.2	131.0	0.0	132.4	1.4	191.2	0.3	131.3	0.6	166.8	0.4	171.6	2.0	175.8	0.9	141.8
V 26	0.0	112.4	0.0	97.8	0.2	146.6	0.0	68.4	0.0	136.2	0.2	112.4	0.0	143.3	0.0	153.0	0.0	130.4	0.0	131.0	0.0	132.4	0.0	191.2	0.0	131.3	0.2	167.0	0.2	171.8	0.0	175.8	0.1	141.8
S 27	0.0	112.4	0.0	97.8	0.0	146.6	0.0	68.4	0.0	136.2	0.0	112.4	0.0	143.3	0.0	153.0	0.0	130.4	0.0	131.0	0.0	132.4	0.2	191.4	0.0	131.3	0.0	167.0	0.0	171.8	0.0	175.8	0.0	141.8
D 28	0.0	112.4	0.0	97.8	0.8	147.4	0.0	68.4	0.0	136.2	1.8	114.2	0.0	143.3	0.0	153.0	0.4	130.8	0.6	131.6	0.0	132.4	0.0	191.4	0.0	131.3	0.0	167.0	0.0	171.8	0.0	175.8	0.3	142.1
L 29	0.0	112.4	0.0	94.0	0.2	146.0	0.0	68.0	0.0	135.6	0.0	112.8	0.0	138.7	0.0	151.2	0.0	130.8	0.0	131.6	0.0	124.2	0.0	179.4	0.0	127.8	0.0	161.0	0.0	166.6	0.0	172.7	0.0	138.3
Ma 30	0.0	112.4	0.0	87.4	0.0	145.4	0.0	65.2	0.0	134.9	0.0	112.6	0.0	136.1	0.0	139.2	0.0	130.4	0.0	128.4	0.0	117.8	0.0	173.6	0.0	116.6	0.0	156.6	0.0	156.6	0.0	164.6	0.0	134.1
Mi 31	0.0	94.0	0.0	70.6	0.0	133.4	0.0	54.6	0.0	103.9	0.0	108.2	0.0	108.2	0.0	119.0	0.0	105.0	0.0	120.0	0.0	97.4	0.0	146.2	0.0	98.6	0.0	126.6	0.0	126.0	0.0	143.0	0.0	113.3
LI. mes	112.4		97.8		147.6		68.4		136.2		114.4		143.3		153.0		130.8		131.6		132.4		191.4		131.3		167.0		171.8		175.8		142.1	
Máx. mes	24.4	169.4	28.4	158.4	45.0	193.8	16.2	99.4	31.0	238.5	29.0	166.2	38.6	168.2	47.0	250.0	32.6	203.8	41.2	214.4	31.0	181.0	39.8	271.4	43.7	183.9	36.0	211.8	52.4	244.0	47.3	251.0	31.8	193.8
Ll. acum. en el año	157	75.2	131	12.2	17	01.6	93	7.8	173	38.9	150	3.2	147	75.2	175	50.2	183	30.4	15	97.4	142	27.8	181	15.4	155	58.8	156	69.8	206	80.8	173	33.6	161	15.2
No. días Iluvia año	208	57%	211	58%	242	66%	185	51%	225	62%	237	65%	226	62%	219	60%	214	59%	190	55%	222	61%	260	73%	232	64%	221	64%	266	73%	236	66%	265	73%





	anscurrido o a la fec		365
No. de	días con al	gún N.A. e	n el año
Estación	Α	N	R
Alc	43	0	0
Ara	16	0	0
Bos	55	0	0
Chec	0	0	0
Car	57	0	0
Emas	15	0	0
Enea	9	0	0
Hos	59	3	0
Ing	43	10	0
Pal	41	15	0
Niza	5	0	0
Oli	91	0	0
Pos	27	0	0
Qman	25	0	0
Ruta	71	19	0
Yar	81	0	0
Prom.	44	0	0

#### CONVENCIONES

Ll. d.: Lluvia diaria en mm

A25 : Indicador Iluvia antecedente de 25 días en mm

11 mes: Lluvia parcial o total en el mes en mm

Máx. mes: Valores máximos de lluvia diaria y A25 en el mes en mm

Ll. acum. en el año: Lluvia acumulada en el año en mm No. días lluvia año: Número de días con lluvia en lo corrido del año

Resalta la lluvia diaria máxima del mes

valor Iluvia diaria correspondiente a una estación cercana

\* Indicadores con base a los días de funcinamiento de cada estación

NIVELES DE ALERTA (N.A.)

Amarilla o baja: A 200 mm <= A25 < 300 mm Naranja o media: N 300 mm <= A25 < 400 mm

Roia o alta: R A25 >= 400 mm

#### OBSERVACIONES:

1. La lluvia promedio y acumulada en lo corrido del año para

Manizales se calcularon con el Método de los Polígonos de Thiesser

Otras entidades propietarias y participantes







