

ANEXO A-II

Cuadro N°A2-1. Estadísticas de los modelos matemáticos geoespaciales de la precipitación máxima en 24 horas.

<i>Periodo de retorno(T)</i>	<i>Coefficiente de correlación múltiple (R)</i>	<i>Coefficiente de determinación (R²)</i>	<i>R² ajustado</i>	<i>Error típico</i>	<i>Obs.</i>
5	0.9307	0.8663	0.7159	8.3815	18
10	0.9112	0.8303	0.6395	11.8190	18
20	0.8958	0.8025	0.5804	15.8181	18
50	0.8806	0.7755	0.5229	22.0169	18
100	0.8733	0.7627	0.4957	27.0943	18
200	0.8685	0.7543	0.4779	32.7050	18
1000	0.8646	0.7476	0.4636	47.0103	18

Fuente: Elaboración Propia

Cuadro N°A2-2. Coeficientes del modelo matemático geoespacial de la precipitación máxima en 24 horas.

PPmax24Hrs=Ax²+By²+Cz²+Dxy+Exz+Fyz+Gx+Hy+Iz+J , PP= Precipitación máxima en 24 horas , X = Longitud, Y = Latitud , Z = Altura										
<i>T</i>	Coeficientes del modelo geoespacial									
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>	<i>G</i>	<i>H</i>	<i>I</i>	<i>J</i>
5	6.84421E-02	3.90016E-02	-1.07794E+00	-4.11083E-09	2.59262E-09	1.21648E-07	-9.98651E-10	-3.57452E-09	-5.98300E-06	-3.27451E+05
10	1.43049E-01	7.42118E-02	-1.75894E+00	-8.00843E-09	-1.07369E-07	2.05119E-07	-6.26112E-10	-7.49601E-09	-5.12414E-06	-6.81644E+05
20	2.22954E-01	1.08943E-01	-2.44114E+00	-1.19012E-08	-2.23841E-07	2.89285E-07	2.84423E-11	-1.17075E-08	-4.32078E-06	-1.05987E+06
50	3.37737E-01	1.54487E-01	-3.32113E+00	-1.70380E-08	-3.71078E-07	3.97782E-07	1.04935E-09	-1.77756E-08	-3.66440E-06	-1.60157E+06
100	4.28333E-01	1.88012E-01	-3.95187E+00	-2.08462E-08	-4.75399E-07	4.75548E-07	1.94348E-09	-2.25746E-08	-3.40554E-06	-2.02824E+06
200	5.26460E-01	2.21255E-01	-4.58579E+00	-2.46335E-08	-5.66937E-07	5.52824E-07	2.86267E-09	-2.77864E-08	-3.61086E-06	-2.48921E+06
1000	7.64508E-01	2.95469E-01	-5.93649E+00	-3.31346E-08	-7.16543E-07	7.14500E-07	5.05600E-09	-4.04564E-08	-5.70814E-06	-3.60512E+06

Fuente: Elaboración Propia

Cuadro N°A2-3. Precipitaciones en mm desagregadas para diferentes duraciones y tiempos de retorno – Subcuenca Bajo Chicama

Lluvias máximas - Bajo Chicama (mm)																											
T (Años)	Pmax. 24 horas	Duración en minutos																									
		10	20	30	40	50	60	70	80	90	100	110	120	150	180	210	240	270	300	330	360	390	420	450	480	720	1440
5	26.2	7.6	9.0	10.0	10.7	11.3	11.8	12.3	12.7	13.1	13.5	13.8	14.1	14.9	15.6	16.2	16.7	17.2	17.7	18.1	18.5	18.9	19.3	19.6	19.9	22.0	26.2
10	36.0	10.4	12.3	13.7	14.7	15.5	16.2	16.9	17.5	18.0	18.5	18.9	19.3	20.4	21.4	22.2	23.0	23.7	24.3	24.9	25.4	25.9	26.4	26.9	27.3	30.2	36.0
20	46.8	13.5	16.1	17.8	19.1	20.2	21.1	22.0	22.7	23.4	24.0	24.6	25.1	26.6	27.8	28.9	29.9	30.8	31.6	32.4	33.1	33.7	34.4	35.0	35.5	39.3	46.8
50	63.3	18.3	21.7	24.0	25.8	27.3	28.6	29.7	30.7	31.6	32.5	33.3	34.0	36.0	37.6	39.1	40.4	41.7	42.8	43.8	44.8	45.7	46.5	47.3	48.1	53.2	63.3
100	77.2	22.3	26.5	29.3	31.5	33.3	34.9	36.2	37.5	38.6	39.6	40.6	41.5	43.9	45.9	47.7	49.3	50.8	52.1	53.4	54.6	55.7	56.7	57.7	58.6	64.9	77.2
200	93.1	26.9	32.0	35.4	38.0	40.2	42.1	43.7	45.2	46.6	47.8	49.0	50.0	52.9	55.4	57.6	59.5	61.3	62.9	64.4	65.9	67.2	68.5	69.6	70.8	78.3	93.1
1000	136.2	39.3	46.8	51.7	55.6	58.8	61.5	63.9	66.1	68.1	69.9	71.6	73.2	77.4	81.0	84.2	87.0	89.6	92.0	94.2	96.3	98.2	100.1	101.8	103.5	114.5	136.2

Fuente: Elaboración Propia

Cuadro N°A2-4. Intensidad de lluvia (mm/h) para diferentes duraciones y tiempos de retorno – Subcuenca Bajo Chicama

Intensidades máximas - Bajo Chicama (mm/hora)																										
T (Años)	Duración en minutos																									
	10	20	30	40	50	60	70	80	90	100	110	120	150	180	210	240	270	300	330	360	390	420	450	480	720	1440
5	45.4	27.0	19.9	16.0	13.6	11.8	10.5	9.5	8.7	8.1	7.5	7.0	6.0	5.2	4.6	4.2	3.8	3.5	3.3	3.1	2.9	2.8	2.6	2.5	1.8	1.1
10	62.3	37.0	27.3	22.0	18.6	16.2	14.5	13.1	12.0	11.1	10.3	9.7	8.2	7.1	6.3	5.7	5.3	4.9	4.5	4.2	4.0	3.8	3.6	3.4	2.5	1.5
20	81.0	48.2	35.5	28.6	24.2	21.1	18.8	17.0	15.6	14.4	13.4	12.6	10.6	9.3	8.3	7.5	6.8	6.3	5.9	5.5	5.2	4.9	4.7	4.4	3.3	1.9
50	109.6	65.2	48.1	38.8	32.8	28.6	25.5	23.0	21.1	19.5	18.2	17.0	14.4	12.5	11.2	10.1	9.3	8.6	8.0	7.5	7.0	6.6	6.3	6.0	4.4	2.6
100	133.7	79.5	58.6	47.3	40.0	34.9	31.1	28.1	25.7	23.8	22.1	20.7	17.5	15.3	13.6	12.3	11.3	10.4	9.7	9.1	8.6	8.1	7.7	7.3	5.4	3.2
200	161.3	95.9	70.8	57.0	48.3	42.1	37.5	33.9	31.0	28.7	26.7	25.0	21.2	18.5	16.4	14.9	13.6	12.6	11.7	11.0	10.3	9.8	9.3	8.8	6.5	3.9
1000	235.9	140.3	103.5	83.4	70.5	61.5	54.8	49.6	45.4	41.9	39.1	36.6	30.9	27.0	24.0	21.8	19.9	18.4	17.1	16.0	15.1	14.3	13.6	12.9	9.5	5.7

Fuente: Elaboración Propia

Cuadro N°A2-5. Precipitaciones en mm desagregadas para diferentes duraciones y tiempos de retorno – Subcuenca Medio Bajo Chicama

Lluvias máximas - Medio Bajo Chicama (mm)																											
T (Años)	Pmax. 24 horas	Duración en minutos																									
		10	20	30	40	50	60	70	80	90	100	110	120	150	180	210	240	270	300	330	360	390	420	450	480	720	1440
5	32.2	9.3	11.0	12.2	13.1	13.9	14.5	15.1	15.6	16.1	16.5	16.9	17.3	18.3	19.1	19.9	20.6	21.2	21.7	22.3	22.8	23.2	23.6	24.1	24.5	27.1	32.2
10	45.2	13.0	15.5	17.2	18.4	19.5	20.4	21.2	21.9	22.6	23.2	23.8	24.3	25.7	26.9	27.9	28.9	29.7	30.5	31.3	32.0	32.6	33.2	33.8	34.3	38.0	45.2
20	58.9	17.0	20.2	22.4	24.1	25.4	26.6	27.7	28.6	29.5	30.3	31.0	31.7	33.5	35.0	36.4	37.7	38.8	39.8	40.8	41.7	42.5	43.3	44.1	44.8	49.6	58.9
50	79.0	22.8	27.1	30.0	32.3	34.1	35.7	37.1	38.4	39.5	40.6	41.5	42.4	44.9	47.0	48.8	50.5	52.0	53.4	54.7	55.9	57.0	58.1	59.1	60.0	66.4	79.0
100	95.3	27.5	32.7	36.2	38.9	41.1	43.1	44.8	46.3	47.7	48.9	50.1	51.2	54.2	56.7	58.9	60.9	62.7	64.4	66.0	67.4	68.8	70.1	71.3	72.4	80.2	95.3
200	113.3	32.7	38.9	43.0	46.2	48.9	51.2	53.2	55.0	56.6	58.1	59.5	60.9	64.3	67.4	70.0	72.4	74.5	76.5	78.4	80.1	81.7	83.2	84.7	86.1	95.2	113.3
1000	159.6	46.1	54.8	60.6	65.2	68.9	72.1	75.0	77.5	79.8	81.9	83.9	85.8	90.7	94.9	98.6	102.0	105.0	107.8	110.4	112.9	115.2	117.3	119.3	121.3	134.2	159.6

Fuente: Elaboración Propia

Cuadro N°A2-6. Intensidad de lluvia (mm/h) para diferentes duraciones y tiempos de retorno – Subcuenca Medio Bajo Chicama

Intensidades máximas - Medio Bajo Chicama (mm/hora)																										
T (Años)	Duración en minutos																									
	10	20	30	40	50	60	70	80	90	100	110	120	150	180	210	240	270	300	330	360	390	420	450	480	720	1440
5	55.7	33.1	24.5	19.7	16.7	14.5	13.0	11.7	10.7	9.9	9.2	8.6	7.3	6.4	5.7	5.1	4.7	4.3	4.0	3.8	3.6	3.4	3.2	3.1	2.3	1.3
10	78.3	46.5	34.3	27.7	23.4	20.4	18.2	16.5	15.1	13.9	13.0	12.1	10.3	9.0	8.0	7.2	6.6	6.1	5.7	5.3	5.0	4.7	4.5	4.3	3.2	1.9
20	102.1	60.7	44.8	36.1	30.5	26.6	23.7	21.5	19.6	18.2	16.9	15.8	13.4	11.7	10.4	9.4	8.6	8.0	7.4	6.9	6.5	6.2	5.9	5.6	4.1	2.5
50	136.8	81.4	60.0	48.4	40.9	35.7	31.8	28.8	26.3	24.3	22.7	21.2	18.0	15.7	13.9	12.6	11.6	10.7	9.9	9.3	8.8	8.3	7.9	7.5	5.5	3.3
100	165.1	98.2	72.4	58.4	49.4	43.1	38.4	34.7	31.8	29.4	27.3	25.6	21.7	18.9	16.8	15.2	13.9	12.9	12.0	11.2	10.6	10.0	9.5	9.1	6.7	4.0
200	196.2	116.7	86.1	69.4	58.7	51.2	45.6	41.2	37.8	34.9	32.5	30.4	25.7	22.5	20.0	18.1	16.6	15.3	14.2	13.3	12.6	11.9	11.3	10.8	7.9	4.7
1000	276.5	164.4	121.3	97.7	82.7	72.1	64.2	58.1	53.2	49.2	45.8	42.9	36.3	31.6	28.2	25.5	23.3	21.6	20.1	18.8	17.7	16.8	15.9	15.2	11.2	6.7

Fuente: Elaboración Propia

Cuadro N°A2-7. Precipitaciones en mm desagregadas para diferentes duraciones y tiempos de retorno – Subcuenca Medio Chicama

Lluvias máximas - Medio Chicama (mm)																											
T (Años)	Pmax. 24 horas	Duración en minutos																									
		10	20	30	40	50	60	70	80	90	100	110	120	150	180	210	240	270	300	330	360	390	420	450	480	720	1440
5	38.2	11.0	13.1	14.5	15.6	16.5	17.3	17.9	18.6	19.1	19.6	20.1	20.5	21.7	22.7	23.6	24.4	25.2	25.8	26.4	27.0	27.6	28.1	28.6	29.0	32.1	38.2
10	52.2	15.1	17.9	19.8	21.3	22.5	23.6	24.5	25.3	26.1	26.8	27.4	28.0	29.7	31.0	32.3	33.4	34.4	35.3	36.1	36.9	37.7	38.4	39.0	39.7	43.9	52.2
20	66.7	19.3	22.9	25.3	27.2	28.8	30.1	31.3	32.4	33.4	34.2	35.1	35.8	37.9	39.7	41.2	42.6	43.9	45.1	46.2	47.2	48.1	49.0	49.9	50.7	56.1	66.7
50	87.5	25.3	30.0	33.2	35.7	37.8	39.5	41.1	42.5	43.7	44.9	46.0	47.0	49.7	52.0	54.1	55.9	57.6	59.1	60.5	61.9	63.1	64.3	65.4	66.5	73.6	87.5
100	104.1	30.1	35.8	39.6	42.5	45.0	47.1	48.9	50.6	52.1	53.5	54.8	56.0	59.2	61.9	64.4	66.5	68.5	70.4	72.1	73.6	75.1	76.5	77.9	79.1	87.6	104.1
200	122.2	35.3	41.9	46.4	49.9	52.7	55.2	57.4	59.3	61.1	62.7	64.2	65.6	69.4	72.6	75.5	78.1	80.4	82.5	84.5	86.4	88.1	89.8	91.3	92.8	102.7	122.2
1000	167.9	48.5	57.6	63.8	68.5	72.5	75.8	78.8	81.5	83.9	86.2	88.2	90.2	95.4	99.8	103.7	107.2	110.5	113.4	116.1	118.7	121.1	123.4	125.5	127.5	141.1	167.9

Fuente: Elaboración Propia

Cuadro N°A2-8. Intensidad de lluvia (mm/h) para diferentes duraciones y tiempos de retorno – Subcuenca Medio Chicama

Intensidades máximas - Medio Chicama (mm/hora)																										
T (Años)	Duración en minutos																									
	10	20	30	40	50	60	70	80	90	100	110	120	150	180	210	240	270	300	330	360	390	420	450	480	720	1440
5	66.2	39.4	29.0	23.4	19.8	17.3	15.4	13.9	12.7	11.8	11.0	10.3	8.7	7.6	6.7	6.1	5.6	5.2	4.8	4.5	4.2	4.0	3.8	3.6	2.7	1.6
10	90.4	53.8	39.7	32.0	27.0	23.6	21.0	19.0	17.4	16.1	15.0	14.0	11.9	10.3	9.2	8.3	7.6	7.1	6.6	6.2	5.8	5.5	5.2	5.0	3.7	2.2
20	115.6	68.7	50.7	40.9	34.6	30.1	26.9	24.3	22.2	20.5	19.1	17.9	15.2	13.2	11.8	10.7	9.8	9.0	8.4	7.9	7.4	7.0	6.7	6.3	4.7	2.8
50	151.5	90.1	66.5	53.6	45.3	39.5	35.2	31.9	29.2	26.9	25.1	23.5	19.9	17.3	15.4	14.0	12.8	11.8	11.0	10.3	9.7	9.2	8.7	8.3	6.1	3.6
100	180.4	107.3	79.1	63.8	53.9	47.1	41.9	37.9	34.7	32.1	29.9	28.0	23.7	20.6	18.4	16.6	15.2	14.1	13.1	12.3	11.6	10.9	10.4	9.9	7.3	4.3
200	211.6	125.8	92.8	74.8	63.3	55.2	49.2	44.5	40.7	37.6	35.0	32.8	27.8	24.2	21.6	19.5	17.9	16.5	15.4	14.4	13.6	12.8	12.2	11.6	8.6	5.1
1000	290.7	172.9	127.5	102.8	86.9	75.8	67.6	61.1	56.0	51.7	48.1	45.1	38.1	33.3	29.6	26.8	24.5	22.7	21.1	19.8	18.6	17.6	16.7	15.9	11.8	7.0

Fuente: Elaboración Propia

Cuadro N°A2-9. Precipitaciones en mm desagregadas para diferentes duraciones y tiempos de retorno – Subcuenca Quirripano

Lluvias máximas - Quirripano (mm)																											
T (Años)	Pmax. 24 horas	Duración en minutos																									
		10	20	30	40	50	60	70	80	90	100	110	120	150	180	210	240	270	300	330	360	390	420	450	480	720	1440
5	49.6	14.3	17.0	18.8	20.2	21.4	22.4	23.3	24.1	24.8	25.4	26.1	26.6	28.2	29.5	30.6	31.7	32.6	33.5	34.3	35.0	35.8	36.4	37.1	37.7	41.7	49.6
10	65.5	18.9	22.5	24.9	26.7	28.3	29.6	30.7	31.8	32.7	33.6	34.4	35.2	37.2	38.9	40.5	41.8	43.1	44.2	45.3	46.3	47.2	48.1	49.0	49.8	55.1	65.5
20	82.0	23.7	28.1	31.1	33.5	35.4	37.0	38.5	39.8	41.0	42.1	43.1	44.0	46.6	48.7	50.6	52.4	53.9	55.4	56.7	57.9	59.1	60.2	61.3	62.3	68.9	82.0
50	105.2	30.4	36.1	40.0	42.9	45.4	47.5	49.4	51.1	52.6	54.0	55.3	56.5	59.7	62.5	65.0	67.2	69.2	71.0	72.8	74.4	75.9	77.3	78.6	79.9	88.4	105.2
100	123.3	35.6	42.3	46.9	50.4	53.2	55.7	57.9	59.9	61.7	63.3	64.8	66.3	70.1	73.3	76.2	78.8	81.2	83.3	85.3	87.2	89.0	90.6	92.2	93.7	103.7	123.3
200	143.1	41.3	49.1	54.4	58.4	61.8	64.6	67.2	69.5	71.5	73.4	75.2	76.9	81.3	85.1	88.4	91.4	94.1	96.7	99.0	101.2	103.2	105.1	107.0	108.7	120.3	143.1
1000	191.8	55.4	65.8	72.9	78.3	82.8	86.6	90.0	93.1	95.9	98.4	100.8	103.0	108.9	114.0	118.5	122.5	126.2	129.6	132.7	135.6	138.3	140.9	143.4	145.7	161.3	191.8

Fuente: Elaboración Propia

Cuadro N°A2-10. Intensidad de lluvia (mm/h) para diferentes duraciones y tiempos de retorno – Subcuenca Quirripano

Intensidades máximas - Quirripano (mm/hora)																										
T (Años)	Duración en minutos																									
	10	20	30	40	50	60	70	80	90	100	110	120	150	180	210	240	270	300	330	360	390	420	450	480	720	1440
5	85.8	51.0	37.7	30.4	25.7	22.4	19.9	18.0	16.5	15.3	14.2	13.3	11.3	9.8	8.8	7.9	7.2	6.7	6.2	5.8	5.5	5.2	4.9	4.7	3.5	2.1
10	113.4	67.4	49.8	40.1	33.9	29.6	26.4	23.8	21.8	20.2	18.8	17.6	14.9	13.0	11.6	10.5	9.6	8.8	8.2	7.7	7.3	6.9	6.5	6.2	4.6	2.7
20	141.9	84.4	62.3	50.2	42.5	37.0	33.0	29.8	27.3	25.2	23.5	22.0	18.6	16.2	14.5	13.1	12.0	11.1	10.3	9.7	9.1	8.6	8.2	7.8	5.7	3.4
50	182.1	108.3	79.9	64.4	54.5	47.5	42.3	38.3	35.1	32.4	30.2	28.3	23.9	20.8	18.6	16.8	15.4	14.2	13.2	12.4	11.7	11.0	10.5	10.0	7.4	4.4
100	213.6	127.0	93.7	75.5	63.9	55.7	49.6	44.9	41.1	38.0	35.4	33.1	28.0	24.4	21.8	19.7	18.0	16.7	15.5	14.5	13.7	12.9	12.3	11.7	8.6	5.1
200	247.8	147.3	108.7	87.6	74.1	64.6	57.6	52.1	47.7	44.1	41.0	38.4	32.5	28.4	25.3	22.9	20.9	19.3	18.0	16.9	15.9	15.0	14.3	13.6	10.0	6.0
1000	332.2	197.5	145.7	117.4	99.3	86.6	77.2	69.8	63.9	59.1	55.0	51.5	43.6	38.0	33.9	30.6	28.0	25.9	24.1	22.6	21.3	20.1	19.1	18.2	13.4	8.0

Fuente: Elaboración Propia

Cuadro N°A2-11. Precipitaciones en mm desagregadas para diferentes duraciones y tiempos de retorno – Subcuenca Santanero

Lluvias máximas - Santanero (mm)																											
T (Años)	Pmax. 24 horas	Duración en minutos																									
		10	20	30	40	50	60	70	80	90	100	110	120	150	180	210	240	270	300	330	360	390	420	450	480	720	1440
5	54.4	15.7	18.7	20.7	22.2	23.5	24.6	25.5	26.4	27.2	27.9	28.6	29.2	30.9	32.3	33.6	34.7	35.8	36.7	37.6	38.4	39.2	40.0	40.7	41.3	45.7	54.4
10	73.3	21.2	25.2	27.9	29.9	31.7	33.1	34.4	35.6	36.7	37.6	38.6	39.4	41.7	43.6	45.3	46.9	48.3	49.5	50.7	51.9	52.9	53.9	54.8	55.7	61.7	73.3
20	93.2	26.9	32.0	35.4	38.0	40.2	42.1	43.7	45.2	46.6	47.8	49.0	50.1	52.9	55.4	57.6	59.5	61.3	62.9	64.5	65.9	67.2	68.5	69.7	70.8	78.3	93.2
50	121.8	35.2	41.8	46.3	49.7	52.6	55.0	57.2	59.1	60.9	62.5	64.0	65.4	69.2	72.4	75.3	77.8	80.2	82.3	84.3	86.1	87.9	89.5	91.1	92.6	102.4	121.8
100	144.9	41.8	49.7	55.0	59.1	62.5	65.5	68.0	70.3	72.4	74.4	76.2	77.8	82.3	86.1	89.5	92.6	95.3	97.9	100.2	102.4	104.5	106.5	108.3	110.1	121.8	144.9
200	169.8	49.0	58.3	64.5	69.3	73.3	76.7	79.7	82.4	84.9	87.1	89.2	91.2	96.4	100.9	104.9	108.5	111.7	114.7	117.5	120.0	122.5	124.8	126.9	129.0	142.8	169.8
1000	233.4	67.4	80.1	88.7	95.3	100.7	105.4	109.6	113.3	116.7	119.8	122.7	125.4	132.6	138.8	144.2	149.1	153.6	157.7	161.5	165.0	168.3	171.5	174.5	177.3	196.2	233.4

Fuente: Elaboración Propia

Cuadro N°A2-12. Intensidad de lluvia (mm/h) para diferentes duraciones y tiempos de retorno – Subcuenca Santanero

Intensidades máximas - Santanero (mm/hora)																											
T (Años)	Duración en minutos																										
	10	20	30	40	50	60	70	80	90	100	110	120	150	180	210	240	270	300	330	360	390	420	450	480	720	1440	
5	94.2	56.0	41.3	33.3	28.2	24.6	21.9	19.8	18.1	16.7	15.6	14.6	12.4	10.8	9.6	8.7	8.0	7.3	6.8	6.4	6.0	5.7	5.4	5.2	3.8	2.3	
10	127.0	75.5	55.7	44.9	38.0	33.1	29.5	26.7	24.4	22.6	21.0	19.7	16.7	14.5	12.9	11.7	10.7	9.9	9.2	8.6	8.1	7.7	7.3	7.0	5.1	3.1	
20	161.4	96.0	70.8	57.1	48.3	42.1	37.5	33.9	31.1	28.7	26.7	25.0	21.2	18.5	16.5	14.9	13.6	12.6	11.7	11.0	10.3	9.8	9.3	8.8	6.5	3.9	
50	211.0	125.5	92.6	74.6	63.1	55.0	49.0	44.4	40.6	37.5	34.9	32.7	27.7	24.1	21.5	19.5	17.8	16.5	15.3	14.4	13.5	12.8	12.1	11.6	8.5	5.1	
100	250.9	149.2	110.1	88.7	75.0	65.5	58.3	52.8	48.3	44.6	41.5	38.9	32.9	28.7	25.6	23.1	21.2	19.6	18.2	17.1	16.1	15.2	14.4	13.8	10.2	6.0	
200	294.0	174.8	129.0	104.0	87.9	76.7	68.3	61.8	56.6	52.3	48.7	45.6	38.6	33.6	30.0	27.1	24.8	22.9	21.4	20.0	18.8	17.8	16.9	16.1	11.9	7.1	
1000	404.2	240.3	177.3	142.9	120.9	105.4	93.9	85.0	77.8	71.9	66.9	62.7	53.0	46.3	41.2	37.3	34.1	31.5	29.4	27.5	25.9	24.5	23.3	22.2	16.4	9.7	

Fuente: Elaboración Propia

Cuadro N°A2-13. Precipitaciones en mm desagregadas para diferentes duraciones y tiempos de retorno – Subcuenca Medio Alto Chicama

Lluvias máximas – Medio Alto Chicama (mm)																											
T (Años)	Pmax. 24 horas	Duración en minutos																									
		10	20	30	40	50	60	70	80	90	100	110	120	150	180	210	240	270	300	330	360	390	420	450	480	720	1440
5	49.1	14.2	16.9	18.7	20.1	21.2	22.2	23.1	23.9	24.6	25.2	25.8	26.4	27.9	29.2	30.4	31.4	32.3	33.2	34.0	34.7	35.4	36.1	36.7	37.3	41.3	49.1
10	63.7	18.4	21.9	24.2	26.0	27.5	28.8	29.9	30.9	31.8	32.7	33.5	34.2	36.2	37.9	39.4	40.7	41.9	43.0	44.1	45.0	45.9	46.8	47.6	48.4	53.6	63.7
20	78.3	22.6	26.9	29.7	32.0	33.8	35.4	36.7	38.0	39.1	40.2	41.1	42.0	44.5	46.5	48.4	50.0	51.5	52.9	54.2	55.3	56.5	57.5	58.5	59.5	65.8	78.3
50	98.0	28.3	33.7	37.2	40.0	42.3	44.3	46.0	47.6	49.0	50.3	51.5	52.7	55.7	58.3	60.6	62.6	64.5	66.2	67.8	69.3	70.7	72.0	73.3	74.5	82.4	98.0
100	113.2	32.7	38.9	43.0	46.2	48.9	51.1	53.1	55.0	56.6	58.1	59.5	60.8	64.3	67.3	69.9	72.3	74.5	76.5	78.3	80.0	81.7	83.2	84.6	86.0	95.2	113.2
200	129.1	37.3	44.3	49.0	52.7	55.7	58.3	60.6	62.7	64.5	66.3	67.9	69.3	73.3	76.7	79.8	82.5	84.9	87.2	89.3	91.3	93.1	94.9	96.5	98.1	108.5	129.1
1000	166.8	48.2	57.3	63.4	68.1	72.0	75.4	78.3	81.0	83.4	85.6	87.7	89.6	94.8	99.2	103.1	106.6	109.8	112.7	115.4	118.0	120.3	122.6	124.7	126.7	140.3	166.8

Fuente: Elaboración Propia

Cuadro N°A2-14. Intensidad de lluvia (mm/h) para diferentes duraciones y tiempos de retorno – Subcuenca Medio Alto Chicama

Intensidades máximas – Medio Alto Chicama (mm/hora)																											
T (Años)	Duración en minutos																										
	10	20	30	40	50	60	70	80	90	100	110	120	150	180	210	240	270	300	330	360	390	420	450	480	720	1440	
5	85.1	50.6	37.3	30.1	25.5	22.2	19.8	17.9	16.4	15.1	14.1	13.2	11.2	9.7	8.7	7.8	7.2	6.6	6.2	5.8	5.5	5.2	4.9	4.7	3.4	2.0	
10	110.3	65.6	48.4	39.0	33.0	28.8	25.6	23.2	21.2	19.6	18.3	17.1	14.5	12.6	11.2	10.2	9.3	8.6	8.0	7.5	7.1	6.7	6.3	6.0	4.5	2.7	
20	135.6	80.6	59.5	47.9	40.5	35.4	31.5	28.5	26.1	24.1	22.4	21.0	17.8	15.5	13.8	12.5	11.4	10.6	9.8	9.2	8.7	8.2	7.8	7.4	5.5	3.3	
50	169.8	101.0	74.5	60.0	50.8	44.3	39.5	35.7	32.7	30.2	28.1	26.3	22.3	19.4	17.3	15.7	14.3	13.2	12.3	11.6	10.9	10.3	9.8	9.3	6.9	4.1	
100	196.1	116.6	86.0	69.3	58.6	51.1	45.6	41.2	37.7	34.9	32.5	30.4	25.7	22.4	20.0	18.1	16.6	15.3	14.2	13.3	12.6	11.9	11.3	10.8	7.9	4.7	
200	223.6	132.9	98.1	79.0	66.9	58.3	51.9	47.0	43.0	39.8	37.0	34.7	29.3	25.6	22.8	20.6	18.9	17.4	16.2	15.2	14.3	13.6	12.9	12.3	9.0	5.4	
1000	288.9	171.8	126.7	102.1	86.4	75.4	67.1	60.7	55.6	51.4	47.8	44.8	37.9	33.1	29.5	26.6	24.4	22.5	21.0	19.7	18.5	17.5	16.6	15.8	11.7	7.0	

Fuente: Elaboración Propia

Cuadro N°A2-15. Precipitaciones en mm desagregadas para diferentes duraciones y tiempos de retorno – Subcuenca Ochape

Lluvias máximas – Ochape (mm)																											
T (Años)	Pmax. 24 horas	Duración en minutos																									
		10	20	30	40	50	60	70	80	90	100	110	120	150	180	210	240	270	300	330	360	390	420	450	480	720	1440
5	60.9	17.6	20.9	23.1	24.9	26.3	27.5	28.6	29.6	30.5	31.3	32.0	32.7	34.6	36.2	37.6	38.9	40.1	41.1	42.1	43.1	43.9	44.8	45.5	46.3	51.2	60.9
10	80.9	23.3	27.8	30.7	33.0	34.9	36.5	38.0	39.3	40.4	41.5	42.5	43.5	46.0	48.1	50.0	51.7	53.2	54.6	56.0	57.2	58.3	59.4	60.5	61.5	68.0	80.9
20	101.0	29.1	34.7	38.4	41.2	43.6	45.6	47.4	49.0	50.5	51.8	53.1	54.2	57.4	60.0	62.4	64.5	66.4	68.2	69.9	71.4	72.8	74.2	75.5	76.7	84.9	101.0
50	127.9	36.9	43.9	48.6	52.2	55.2	57.8	60.1	62.1	64.0	65.7	67.3	68.7	72.7	76.1	79.1	81.7	84.2	86.4	88.5	90.5	92.3	94.0	95.6	97.2	107.6	127.9
100	148.3	42.8	50.9	56.4	60.6	64.0	67.0	69.7	72.0	74.2	76.1	78.0	79.7	84.3	88.2	91.7	94.8	97.6	100.2	102.6	104.9	107.0	109.0	110.9	112.7	124.7	148.3
200	169.5	48.9	58.2	64.4	69.2	73.2	76.6	79.6	82.3	84.8	87.0	89.1	91.1	96.3	100.8	104.8	108.3	111.6	114.5	117.3	119.9	122.3	124.6	126.8	128.8	142.6	169.5
1000	218.8	63.2	75.1	83.1	89.3	94.4	98.8	102.7	106.2	109.4	112.3	115.0	117.5	124.3	130.1	135.2	139.8	144.0	147.8	151.4	154.7	157.8	160.8	163.6	166.2	184.0	218.8

Fuente: Elaboración Propia

Cuadro N°A2-16. Intensidad de lluvia (mm/h) para diferentes duraciones y tiempos de retorno – Subcuenca Ochape

Intensidades máximas – Ochape (mm/hora)																											
T (Años)	Duración en minutos																										
	10	20	30	40	50	60	70	80	90	100	110	120	150	180	210	240	270	300	330	360	390	420	450	480	720	1440	
5	105.5	62.7	46.3	37.3	31.5	27.5	24.5	22.2	20.3	18.8	17.5	16.4	13.8	12.1	10.8	9.7	8.9	8.2	7.7	7.2	6.8	6.4	6.1	5.8	4.3	2.5	
10	140.1	83.3	61.5	49.5	41.9	36.5	32.6	29.5	27.0	24.9	23.2	21.7	18.4	16.0	14.3	12.9	11.8	10.9	10.2	9.5	9.0	8.5	8.1	7.7	5.7	3.4	
20	174.9	104.0	76.7	61.8	52.3	45.6	40.6	36.8	33.7	31.1	29.0	27.1	22.9	20.0	17.8	16.1	14.8	13.6	12.7	11.9	11.2	10.6	10.1	9.6	7.1	4.2	
50	221.6	131.8	97.2	78.3	66.3	57.8	51.5	46.6	42.6	39.4	36.7	34.4	29.1	25.4	22.6	20.4	18.7	17.3	16.1	15.1	14.2	13.4	12.8	12.2	9.0	5.3	
100	256.9	152.8	112.7	90.8	76.8	67.0	59.7	54.0	49.4	45.7	42.5	39.9	33.7	29.4	26.2	23.7	21.7	20.0	18.7	17.5	16.5	15.6	14.8	14.1	10.4	6.2	
200	293.6	174.6	128.8	103.8	87.8	76.6	68.2	61.7	56.5	52.2	48.6	45.5	38.5	33.6	29.9	27.1	24.8	22.9	21.3	20.0	18.8	17.8	16.9	16.1	11.9	7.1	
1000	378.9	225.3	166.2	134.0	113.3	98.8	88.0	79.7	72.9	67.4	62.7	58.8	49.7	43.4	38.6	34.9	32.0	29.6	27.5	25.8	24.3	23.0	21.8	20.8	15.3	9.1	

Fuente: Elaboración Propia

Cuadro N°A2-17. Precipitaciones en mm desagregadas para diferentes duraciones y tiempos de retorno – Subcuenca Chuquillanqui

Lluvias máximas – Chuquillanqui (mm)																											
T (Años)	Pmax. 24 horas	Duración en minutos																									
		10	20	30	40	50	60	70	80	90	100	110	120	150	180	210	240	270	300	330	360	390	420	450	480	720	1440
5	54.8	15.8	18.8	20.8	22.4	23.7	24.8	25.7	26.6	27.4	28.1	28.8	29.5	31.1	32.6	33.9	35.0	36.1	37.0	37.9	38.8	39.5	40.3	41.0	41.6	46.1	54.8
10	65.4	18.9	22.5	24.9	26.7	28.2	29.6	30.7	31.8	32.7	33.6	34.4	35.1	37.2	38.9	40.4	41.8	43.0	44.2	45.3	46.3	47.2	48.1	48.9	49.7	55.0	65.4
20	75.3	21.7	25.9	28.6	30.8	32.5	34.0	35.4	36.6	37.7	38.7	39.6	40.5	42.8	44.8	46.6	48.1	49.6	50.9	52.1	53.3	54.3	55.4	56.3	57.2	63.3	75.3
50	87.9	25.4	30.2	33.4	35.9	37.9	39.7	41.3	42.7	43.9	45.1	46.2	47.2	49.9	52.2	54.3	56.1	57.8	59.4	60.8	62.1	63.4	64.6	65.7	66.8	73.9	87.9
100	97.0	28.0	33.3	36.8	39.6	41.9	43.8	45.5	47.1	48.5	49.8	51.0	52.1	55.1	57.7	59.9	62.0	63.8	65.5	67.1	68.6	69.9	71.3	72.5	73.7	81.5	97.0
200	106.0	30.6	36.4	40.3	43.3	45.8	47.9	49.8	51.5	53.0	54.4	55.7	57.0	60.2	63.0	65.5	67.7	69.8	71.6	73.4	75.0	76.5	77.9	79.3	80.6	89.2	106.0
1000	126.0	36.4	43.3	47.9	51.4	54.4	56.9	59.2	61.2	63.0	64.7	66.2	67.7	71.6	74.9	77.9	80.5	82.9	85.1	87.2	89.1	90.9	92.6	94.2	95.7	106.0	126.0

Fuente: Elaboración Propia

Cuadro N°A2-18. Intensidad de lluvia (mm/h) para diferentes duraciones y tiempos de retorno – Subcuenca Chuquillanqui

Intensidades máximas – Chuquillanqui (mm/hora)																											
T (Años)	Duración en minutos																										
	10	20	30	40	50	60	70	80	90	100	110	120	150	180	210	240	270	300	330	360	390	420	450	480	720	1440	
5	94.9	56.5	41.6	33.6	28.4	24.8	22.1	20.0	18.3	16.9	15.7	14.7	12.5	10.9	9.7	8.8	8.0	7.4	6.9	6.5	6.1	5.8	5.5	5.2	3.8	2.3	
10	113.3	67.4	49.7	40.1	33.9	29.6	26.3	23.8	21.8	20.1	18.8	17.6	14.9	13.0	11.5	10.4	9.6	8.8	8.2	7.7	7.3	6.9	6.5	6.2	4.6	2.7	
20	130.5	77.6	57.2	46.1	39.0	34.0	30.3	27.4	25.1	23.2	21.6	20.2	17.1	14.9	13.3	12.0	11.0	10.2	9.5	8.9	8.4	7.9	7.5	7.2	5.3	3.1	
50	152.2	90.5	66.8	53.8	45.5	39.7	35.4	32.0	29.3	27.1	25.2	23.6	20.0	17.4	15.5	14.0	12.8	11.9	11.1	10.4	9.8	9.2	8.8	8.3	6.2	3.7	
100	167.9	99.9	73.7	59.4	50.2	43.8	39.0	35.3	32.3	29.9	27.8	26.0	22.0	19.2	17.1	15.5	14.2	13.1	12.2	11.4	10.8	10.2	9.7	9.2	6.8	4.0	
200	183.6	109.2	80.6	64.9	54.9	47.9	42.7	38.6	35.3	32.7	30.4	28.5	24.1	21.0	18.7	16.9	15.5	14.3	13.3	12.5	11.8	11.1	10.6	10.1	7.4	4.4	
1000	218.3	129.8	95.7	77.2	65.3	56.9	50.7	45.9	42.0	38.8	36.1	33.9	28.6	25.0	22.2	20.1	18.4	17.0	15.9	14.9	14.0	13.2	12.6	12.0	8.8	5.3	

Fuente: Elaboración Propia

Cuadro N°A2-19. Precipitaciones en mm desagregadas para diferentes duraciones y tiempos de retorno – Subcuenca Alto Chicama

Lluvias máximas – Alto Chicama (mm)																											
T (Años)	Pmax. 24 horas	Duración en minutos																									
		10	20	30	40	50	60	70	80	90	100	110	120	150	180	210	240	270	300	330	360	390	420	450	480	720	1440
5	48.2	13.9	16.6	18.3	19.7	20.8	21.8	22.6	23.4	24.1	24.8	25.4	25.9	27.4	28.7	29.8	30.8	31.7	32.6	33.4	34.1	34.8	35.4	36.1	36.6	40.6	48.2
10	58.8	17.0	20.2	22.3	24.0	25.4	26.6	27.6	28.6	29.4	30.2	30.9	31.6	33.4	35.0	36.3	37.6	38.7	39.7	40.7	41.6	42.4	43.2	44.0	44.7	49.5	58.8
20	69.1	19.9	23.7	26.2	28.2	29.8	31.2	32.4	33.5	34.5	35.5	36.3	37.1	39.2	41.1	42.7	44.1	45.5	46.7	47.8	48.8	49.8	50.8	51.6	52.5	58.1	69.1
50	82.5	23.8	28.3	31.4	33.7	35.6	37.3	38.7	40.1	41.3	42.4	43.4	44.3	46.9	49.1	51.0	52.7	54.3	55.8	57.1	58.4	59.5	60.6	61.7	62.7	69.4	82.5
100	92.6	26.7	31.8	35.2	37.8	40.0	41.8	43.5	44.9	46.3	47.5	48.7	49.7	52.6	55.0	57.2	59.1	60.9	62.5	64.1	65.5	66.8	68.0	69.2	70.3	77.8	92.6
200	102.9	29.7	35.3	39.1	42.0	44.4	46.5	48.3	49.9	51.4	52.8	54.1	55.3	58.4	61.2	63.6	65.7	67.7	69.5	71.2	72.7	74.2	75.6	76.9	78.2	86.5	102.9
1000	126.7	36.6	43.5	48.2	51.7	54.7	57.3	59.5	61.5	63.4	65.1	66.6	68.1	72.0	75.4	78.3	81.0	83.4	85.6	87.7	89.6	91.4	93.1	94.8	96.3	106.6	126.7

Fuente: Elaboración Propia

Cuadro N°A2-20. Intensidad de lluvia (mm/h) para diferentes duraciones y tiempos de retorno – Subcuenca Alto Chicama

Intensidades máximas – Alto Chicama (mm/hora)																											
T (Años)	Duración en minutos																										
	10	20	30	40	50	60	70	80	90	100	110	120	150	180	210	240	270	300	330	360	390	420	450	480	720	1440	
5	83.5	49.7	36.6	29.5	25.0	21.8	19.4	17.6	16.1	14.9	13.8	13.0	11.0	9.6	8.5	7.7	7.1	6.5	6.1	5.7	5.4	5.1	4.8	4.6	3.4	2.0	
10	101.9	60.6	44.7	36.0	30.5	26.6	23.7	21.4	19.6	18.1	16.9	15.8	13.4	11.7	10.4	9.4	8.6	7.9	7.4	6.9	6.5	6.2	5.9	5.6	4.1	2.5	
20	119.6	71.1	52.5	42.3	35.8	31.2	27.8	25.2	23.0	21.3	19.8	18.6	15.7	13.7	12.2	11.0	10.1	9.3	8.7	8.1	7.7	7.3	6.9	6.6	4.8	2.9	
50	142.9	85.0	62.7	50.5	42.7	37.3	33.2	30.0	27.5	25.4	23.7	22.2	18.8	16.4	14.6	13.2	12.1	11.2	10.4	9.7	9.2	8.7	8.2	7.8	5.8	3.4	
100	160.3	95.3	70.3	56.7	48.0	41.8	37.3	33.7	30.9	28.5	26.5	24.9	21.0	18.3	16.3	14.8	13.5	12.5	11.6	10.9	10.3	9.7	9.2	8.8	6.5	3.9	
200	178.2	105.9	78.2	63.0	53.3	46.5	41.4	37.5	34.3	31.7	29.5	27.6	23.4	20.4	18.2	16.4	15.0	13.9	12.9	12.1	11.4	10.8	10.3	9.8	7.2	4.3	
1000	219.5	130.5	96.3	77.6	65.7	57.3	51.0	46.2	42.2	39.0	36.3	34.1	28.8	25.1	22.4	20.2	18.5	17.1	15.9	14.9	14.1	13.3	12.6	12.0	8.9	5.3	

Fuente: Elaboración Propia