

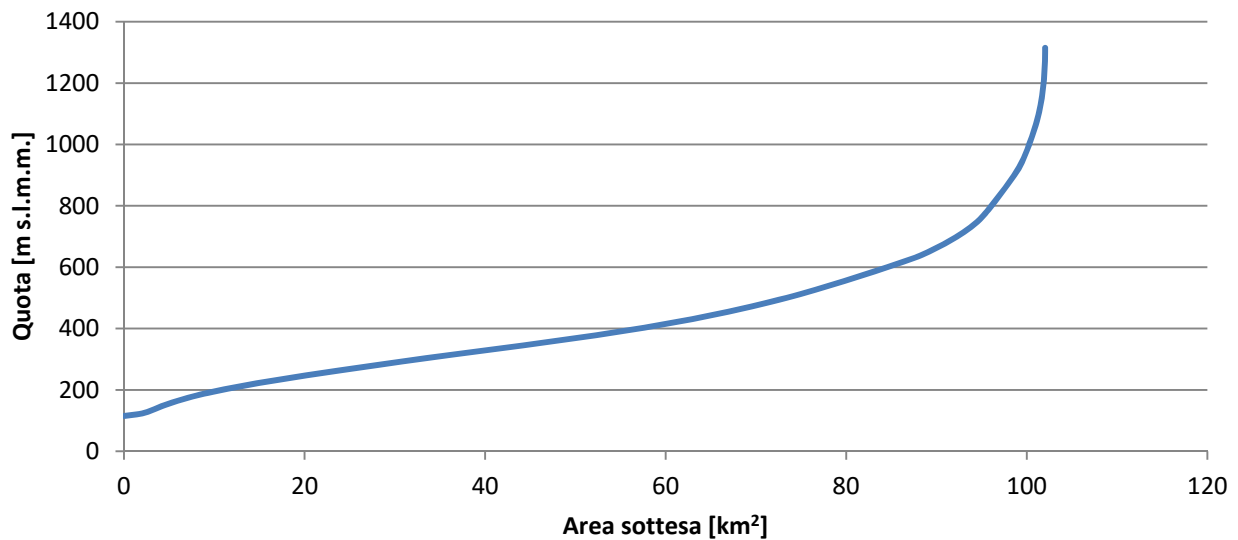
Sottobacino 1**Dati input e tempo di corrivazione bacino**

DATI DI INPUT	
Area Bacino [m ²]	32477464,49
Area Bacino [ha]	32477,46
Area Bacino [km ²]	32,48
Lunghezza Asta [m]	9147
Lunghezza Asta [km]	9,147
Zmax [m s.l.m.m]	635
Zmed [m s.l.m.m]	239,22
Zmin [m s.l.m.m]	45
Tc (Giandotti) [ore]	3,275272506
Tc (Giandotti) [min]	196,5163503

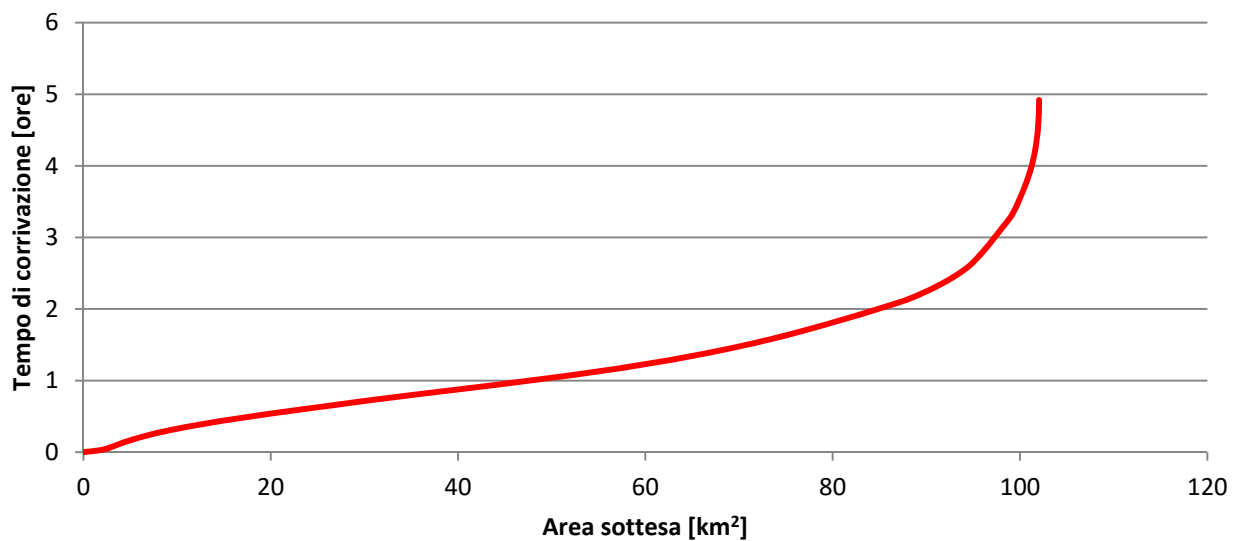
Curva ipsografica e curva aree-tempi

Quota [m]	Area Sottesa [km²]	Tempo di corrivazione [ore]
45	0	0
50	0,226410748	0,02779661
150	7,275769728	0,583728814
175	9,979922417	0,722711864
200	12,7821168	0,861694915
225	15,65371347	1,000677966
250	18,40553011	1,139661017
275	20,87860917	1,278644068
300	23,12971654	1,417627119
325	25,25186734	1,556610169
350	27,208402	1,69559322
375	28,86374266	1,834576271
400	30,08639614	1,973559322
425	30,90107569	2,112542373
450	31,45482987	2,251525424
475	31,86082673	2,390508475
500	32,08218292	2,529491525
525	32,26302801	2,668474576
550	32,36238464	2,807457627
575	32,41753717	2,946440678
600	32,45382369	3,085423729
625	32,47202757	3,22440678
635	32,47746449	3,28

Curva ipsografica



Curva aree - tempi di corrivazione

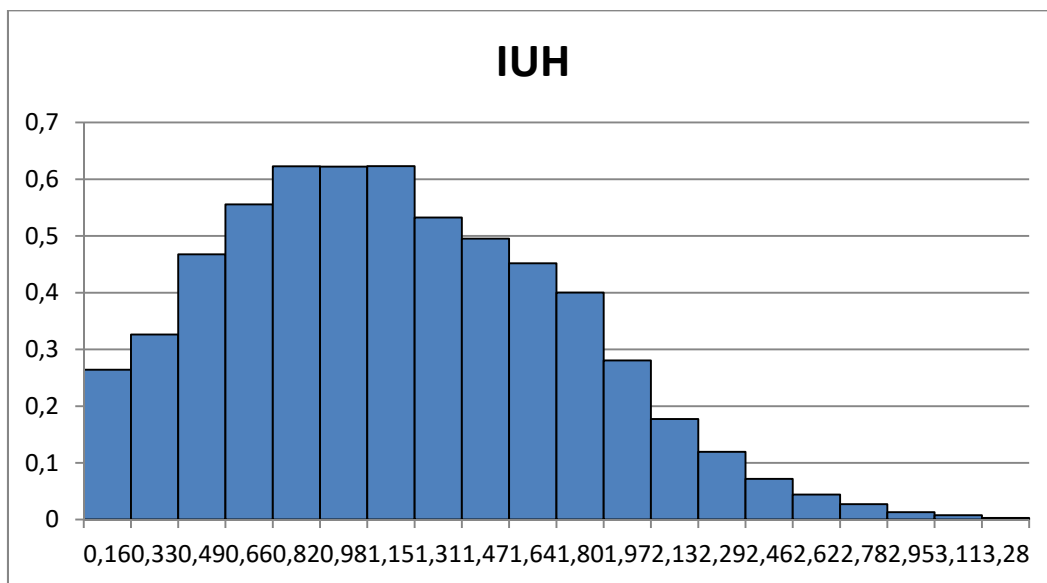


Idrogramma unitario istantaneo

Step	T _c [ore]	T _c [min]	Quota [m]	A [km²]	ΔA [km²]	ΔA/dt	IUH
0	0,00	0	45	0			
1	0,16	9,825818	74	1,404953	1,404953	8,579154	0,264157
2	0,33	19,65164	103	3,139871	1,734917	10,59403	0,326196
3	0,49	29,47745	133	5,627507	2,487637	15,19041	0,467722
4	0,66	39,30327	162	8,582234	2,954726	18,04263	0,555543
5	0,82	49,12909	192	11,8942	3,311968	20,22408	0,622711
6	0,98	58,95491	221	15,20317	3,308965	20,20574	0,622147
7	1,15	68,78072	251	18,51703	3,313861	20,23564	0,623067

8	1,31	78,60654	280	21,34949	2,832466	17,29606	0,532556
9	1,47	88,43236	310	23,98378	2,634284	16,08589	0,495294
10	1,64	98,25818	339	26,3871	2,403322	14,67556	0,451869
11	1,80	108,084	369	28,51511	2,128007	12,99438	0,400105
12	1,97	117,9098	398	30,00679	1,491683	9,108756	0,280464
13	2,13	127,7356	427	30,94978	0,942993	5,758255	0,1773
14	2,29	137,5614	457	31,58576	0,635979	3,88352	0,119576
15	2,46	147,3873	486	31,96728	0,381517	2,329679	0,071732
16	2,62	157,2131	516	32,20249	0,235205	1,436247	0,044223
17	2,78	167,0389	545	32,34718	0,144698	0,883581	0,027206
18	2,95	176,8647	575	32,41754	0,070354	0,429604	0,013228
19	3,11	186,6905	604	32,45867	0,041136	0,251191	0,007734
20	3,28	196,5164	634	32,47509	0,016413	0,100226	0,003086

Dove $dt = T_c/20 = 0.246$ ore



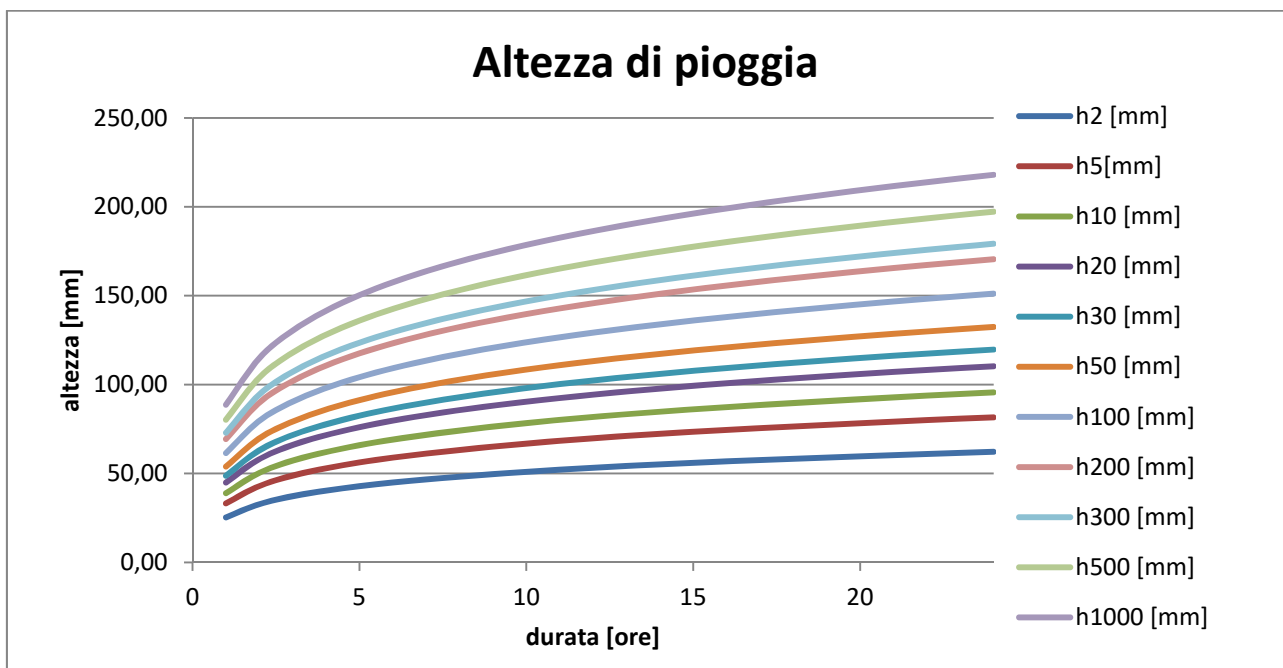
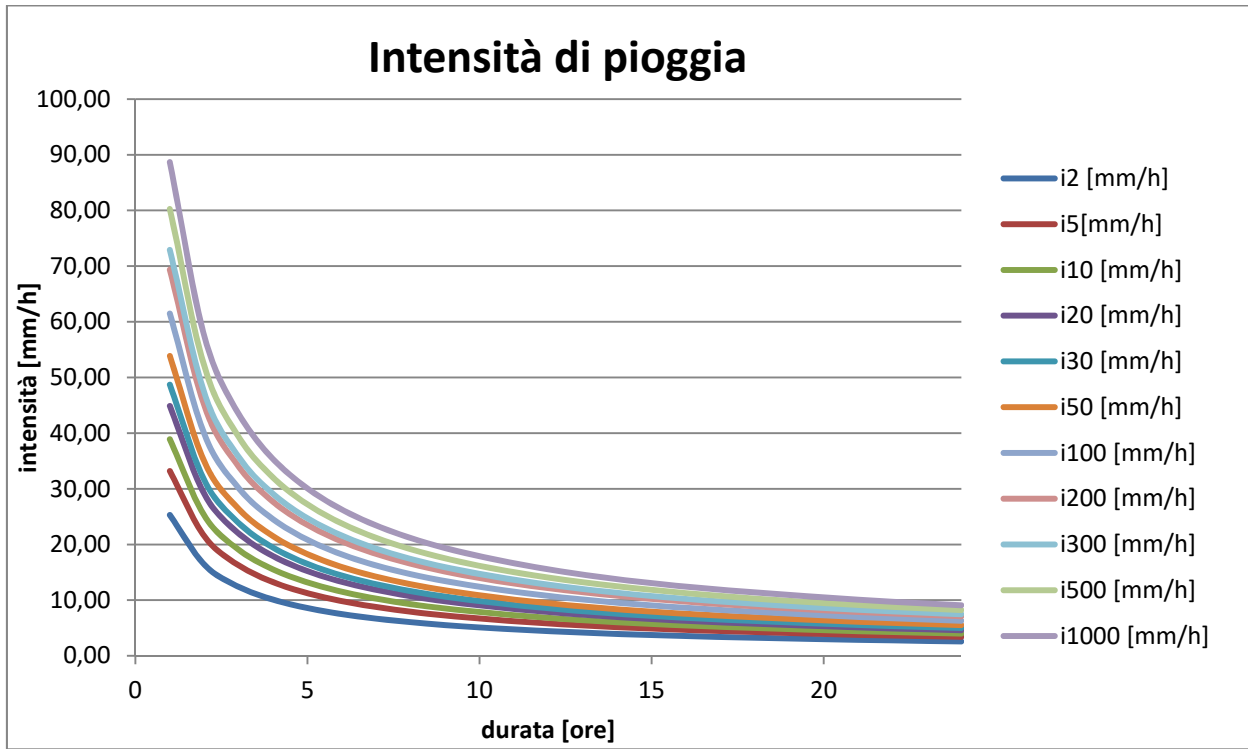
Curva di probabilità pluviometrica

Parametri di distribuzione	
Area omogenea	A1
$m(l_0)$ (mm/ora)	77,08
d_c (ore)	0,3661
C	0,7995
$D \cdot 10^5$	3,6077
ρ^2	0,9994
Z_{med} [m]	239,22

d	$\mu(i(d))$ [mm/h]	$\mu(h(d))$ [mm]	i_2 [mm/h]	i_5 [mm/h]	i_{10} [mm/h]	i_{20} [mm/h]	i_{30} [mm/h]	i_{50} [mm/h]	i_{100} [mm/h]	i_{200} [mm/h]	i_{300} [mm/h]	i_{500} [mm/h]	i_{1000} [mm/h]
1	27,21	27,21	25,30	33,19	38,90	44,89	48,70	53,87	61,48	69,37	72,91	80,26	88,69
2	17,62	35,24	16,39	21,50	25,20	29,07	31,54	34,89	39,82	44,93	47,22	51,98	57,44
3	13,33	40,00	12,40	16,27	19,07	22,00	23,87	26,40	30,13	34,00	35,73	39,33	43,46

4	10,85	43,41	10,09	13,24	15,52	17,91	19,43	21,49	24,53	27,68	29,09	32,02	35,38
5	9,22	46,10	8,57	11,25	13,18	15,21	16,50	18,26	20,84	23,51	24,71	27,20	30,06
6	8,05	48,33	7,49	9,83	11,52	13,29	14,42	15,95	18,20	20,54	21,59	23,76	26,26
7	7,18	50,24	6,67	8,76	10,26	11,84	12,85	14,21	16,22	18,30	19,23	21,17	23,40
8	6,49	51,92	6,04	7,92	9,28	10,71	11,62	12,85	14,67	16,55	17,39	19,14	21,16
9	5,94	53,42	5,52	7,24	8,49	9,79	10,62	11,75	13,41	15,13	15,91	17,51	19,35
10	5,48	54,78	5,09	6,68	7,83	9,04	9,80	10,85	12,38	13,97	14,68	16,16	17,86
11	5,09	56,02	4,74	6,21	7,28	8,40	9,12	10,08	11,51	12,99	13,65	15,02	16,60
12	4,76	57,17	4,43	5,81	6,81	7,86	8,53	9,43	10,77	12,15	12,77	14,05	15,53
13	4,48	58,24	4,17	5,47	6,41	7,39	8,02	8,87	10,12	11,42	12,01	13,22	14,60
14	4,23	59,24	3,94	5,16	6,05	6,98	7,57	8,38	9,56	10,79	11,34	12,48	13,79
15	4,01	60,18	3,73	4,89	5,74	6,62	7,18	7,94	9,07	10,23	10,75	11,84	13,08
16	3,82	61,07	3,55	4,66	5,46	6,30	6,83	7,56	8,63	9,73	10,23	11,26	12,44
17	3,64	61,92	3,39	4,44	5,21	6,01	6,52	7,21	8,23	9,29	9,76	10,74	11,87
18	3,48	62,72	3,24	4,25	4,98	5,75	6,24	6,90	7,87	8,89	9,34	10,28	11,36
19	3,34	63,49	3,11	4,08	4,78	5,51	5,98	6,62	7,55	8,52	8,95	9,86	10,89
20	3,21	64,22	2,99	3,92	4,59	5,30	5,75	6,36	7,26	8,19	8,61	9,47	10,47
21	3,09	64,92	2,88	3,77	4,42	5,10	5,53	6,12	6,99	7,88	8,29	9,12	10,08
22	2,98	65,60	2,77	3,64	4,26	4,92	5,34	5,90	6,74	7,60	7,99	8,80	9,72
23	2,88	66,25	2,68	3,51	4,12	4,75	5,16	5,70	6,51	7,34	7,72	8,50	9,39
24	2,79	66,87	2,59	3,40	3,98	4,60	4,99	5,52	6,30	7,11	7,47	8,22	9,08

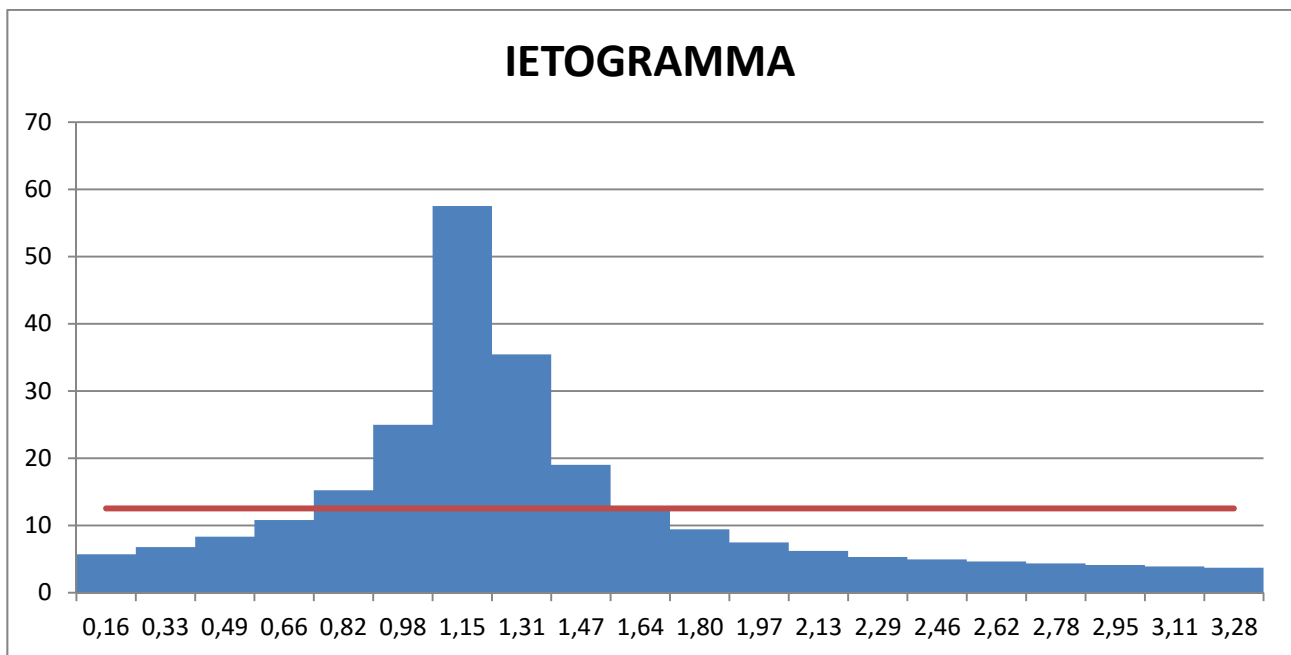
d	$\mu(i(d))$ [mm/h]	$\mu(h(d))$ [mm]	h_2 [mm]	h_5 [mm]	h_{10} [mm]	h_{20} [mm]	h_{30} [mm]	h_{50} [mm]	h_{100} [mm]	h_{200} [mm]	h_{300} [mm]	h_{500} [mm]	h_{1000} [mm]
1	27,21	27,21	25,30	33,19	38,90	44,89	48,70	53,87	61,48	69,37	72,91	80,26	88,69
2	17,62	35,24	32,77	42,99	50,39	58,14	63,08	69,77	79,64	89,86	94,44	103,96	114,88
3	13,33	40,00	37,20	48,80	57,20	66,00	71,60	79,20	90,40	101,99	107,19	117,99	130,39
4	10,85	43,41	40,38	52,97	62,08	71,63	77,71	85,96	98,12	110,71	116,35	128,07	141,53
5	9,22	46,10	42,87	56,24	65,92	76,07	82,52	91,28	104,19	117,56	123,55	136,00	150,29
6	8,05	48,33	44,94	58,96	69,11	79,74	86,51	95,69	109,22	123,24	129,52	142,57	157,55
7	7,18	50,24	46,72	61,29	71,84	82,89	89,93	99,47	113,54	128,11	134,64	148,20	163,78
8	6,49	51,92	48,28	63,34	74,24	85,66	92,93	102,79	117,33	132,39	139,13	153,15	169,25
9	5,94	53,42	49,68	65,17	76,39	88,14	95,61	105,76	120,72	136,21	143,16	157,58	174,14
10	5,48	54,78	50,94	66,83	78,33	90,38	98,05	108,46	123,79	139,68	146,80	161,59	178,57
11	5,09	56,02	52,10	68,35	80,11	92,43	100,28	110,92	126,61	142,85	150,14	165,26	182,63
12	4,76	57,17	53,17	69,75	81,75	94,33	102,34	113,20	129,21	145,79	153,22	168,65	186,38
13	4,48	58,24	54,16	71,05	83,28	96,10	104,25	115,32	131,62	148,51	156,08	171,81	189,86
14	4,23	59,24	55,10	72,28	84,72	97,75	106,04	117,30	133,89	151,07	158,77	174,76	193,13
15	4,01	60,18	55,97	73,42	86,06	99,30	107,73	119,16	136,02	153,47	161,29	177,54	196,20
16	3,82	61,07	56,80	74,51	87,34	100,77	109,32	120,93	138,03	155,74	163,68	180,17	199,10
17	3,64	61,92	57,58	75,54	88,54	102,16	110,83	122,60	139,93	157,89	165,94	182,66	201,85
18	3,48	62,72	58,33	76,52	89,69	103,49	112,27	124,19	141,75	159,94	168,09	185,02	204,47
19	3,34	63,49	59,04	77,45	90,78	104,75	113,64	125,70	143,48	161,89	170,14	187,28	206,96
20	3,21	64,22	59,72	78,35	91,83	105,96	114,95	127,15	145,13	163,76	172,11	189,44	209,35
21	3,09	64,92	60,38	79,20	92,84	107,12	116,21	128,54	146,72	165,55	173,99	191,52	211,64
22	2,98	65,60	61,00	80,03	93,80	108,23	117,42	129,88	148,25	167,27	175,80	193,51	213,84
23	2,88	66,25	61,61	80,82	94,73	109,31	118,58	131,17	149,72	168,93	177,54	195,43	215,96
24	2,79	66,87	62,19	81,58	95,63	110,34	119,70	132,41	151,13	170,53	179,22	197,28	218,01



Ietogramma di progetto - Ietogramma Chicago

d [ore]	$\mu(h(d))$ [mm]	$\Delta \mu(h(d))$ [mm]	i [mm/ora]	Chicago i [mm/ora]	Costante i [mm/ora]
0,163764	9,422663	9,422663	57,538192	0,163764	9,422663
0,327527	15,230071	5,807408	35,462135	0,327527	15,230071
0,491291	19,319304	4,089234	24,970341	0,491291	19,319304
0,655055	22,433304	3,114000	19,015212	0,655055	22,433304
0,818818	24,929613	2,496309	15,243367	0,818818	24,929613
0,982582	27,004317	2,074704	12,668891	0,982582	27,004317
1,146345	28,775192	1,770875	10,813605	1,146345	28,775192
1,310109	30,317896	1,542704	9,420308	1,310109	30,317896

1,473873	31,683610	1,365713	8,339541	1,473873	31,683610
1,637636	32,908408	1,224799	7,479065	1,637636	32,908408
1,801400	34,018586	1,110177	6,779146	1,801400	34,018586
1,965164	35,033845	1,015259	6,199540	1,965164	35,033845
2,128927	35,969300	0,935455	5,712225	2,128927	35,969300
2,292691	36,836778	0,867478	5,297135	2,292691	36,836778
2,456454	37,645697	0,808919	4,939551	2,456454	37,645697
2,620218	38,403668	0,757972	4,628450	2,620218	38,403668
2,783982	39,116928	0,713259	4,355421	2,783982	39,116928
2,947745	39,790642	0,673715	4,113946	2,947745	39,790642
3,111509	40,429140	0,638498	3,898898	3,111509	40,429140
3,275273	41,036080	0,606940	3,706193	3,275273	41,036080



Pioggia efficace (metodo Curve Number)

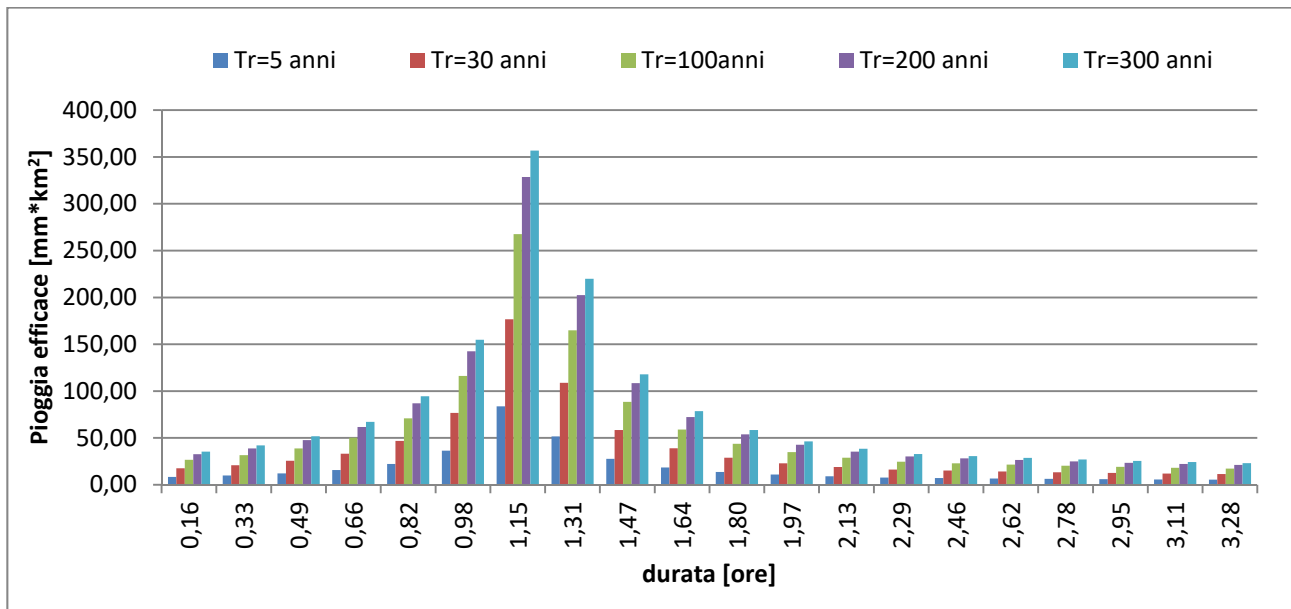
CODICE	INDICE	AREA	AREA*INDICE
111-A	89	0	0
111-C	94	0	0
112-A	77	4010,29523	308792,7327
112-B	85	477147,0962	40557503,18
112-C	90	97616,26257	8785463,632
112-D	92	0	0
121-A	81	104284,1113	8447013,017
121-B	88	155828,4093	13712900,01
121-C	91	34871,62269	3173317,665
211-A	61	318246,7642	19413052,62
211-B	73	0	0
211-C	81	0	0
211-D	84	0	0
221-A	76	0	0

221-C	90	0	0
221-D	93	0	0
222-A	43	0	0
222-C	76	0	0
223-A	43	480327,638	20654088,44
223-B	65	2392636,305	155521359,8
223-C	76	2659615,176	202130753,3
223-D	82	0	0
231-A	49	0	0
231-C	79	0	0
231-D	84	0	0
241-A	61	195131,2581	11903006,75
241-B	73	922564,0419	67347175,06
241-C	81	163934,8809	13278725,36
241-D	84	0	0
242-A	61	120975,2027	7379487,365
242-B	73	986160,1444	71989690,54
242-C	81	1306881,899	105857433,9
242-D	84	0	0
243-A	61	729071,737	44473375,96
243-B	73	4020092,688	293466766,2
243-C	81	2848073,635	230693964,4
243-D	84	0	0
311-A	36	1756025,739	63216926,6
311-B	60	1672742,669	100364560,1
311-C	73	6858038,548	500636814
311-D	79	0	0
312-A	36	0	0
312-B	60	0	0
312-C	73	0	0
312-D	79	0	0
313-A	36	0	0
313-B	60	0	0
313-C	73	0	0
313-D	79	0	0
321-A	49	0	0
321-B	69	0	0
321-C	79	35,30405466	2789,020318
321-D	84	0	0
323-A	35	294014,0913	10290493,19
323-B	56	303068,1676	16971817,39
323-C	70	1721552,883	120508701,8
323-D	77	0	0
324-A	35	309366,2663	10827819,32
324-B	56	1088031,228	60929748,74
324-C	70	457120,427	31998429,89
324-D	77	0	0
331-A	46	0	0

331-C	77	0	0
331-D	82	0	0
333-A	63	0	0
333-C	85	0	0
333-D	88	0	0
511-A	98	0	0
511-C	98	0	0
511-D	98	0	0
Somma		32477464,49	2234841970

Asciutto	CN I	48,09469764	S I	274,1247465	IA I	21,92997972
Medio	CN II	68,81	S II	115,1323935	IA II	8,059267548
Umido	CN III	83,53681388	S III	50,05756241	IA III	4,004604993

		Tr=5	Tr=30	Tr=100	Tr=200	Tr=300	Tr=5	Tr=30	Tr=100	Tr=200	Tr=300
d	Chicago	Pioggia Totale media	Pioggia Totale media	Pioggia Totale media	Pioggia Totale media	Pioggia Totale media	Pioggia efficace	Pioggia efficace	Pioggia efficace	Pioggia efficace	Pioggia efficace
[h]	[mm/h]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm*kmq]	[mm*kmq]	[mm*kmq]	[mm*kmq]	[mm*kmq]
0,16	5,71	1,14	1,67	2,11	2,39	2,51	8,31	17,54	26,57	32,62	35,43
0,33	6,78	1,35	1,99	2,51	2,83	2,98	9,87	20,81	31,53	38,71	42,05
0,49	8,34	1,67	2,44	3,09	3,48	3,66	12,14	25,61	38,79	47,62	51,73
0,66	10,81	2,16	3,17	4,00	4,52	4,75	15,74	33,20	50,30	61,75	67,07
0,82	15,24	3,05	4,47	5,64	6,37	6,69	22,18	46,80	70,90	87,05	94,55
0,98	24,97	4,99	7,32	9,24	10,43	10,96	36,34	76,67	116,15	142,60	154,88
1,15	57,54	11,50	16,87	21,30	24,03	25,25	83,74	176,66	267,64	328,58	356,88
1,31	35,46	7,09	10,40	13,12	14,81	15,56	51,61	108,88	164,95	202,51	219,96
1,47	19,02	3,80	5,57	7,04	7,94	8,35	27,67	58,38	88,45	108,59	117,94
1,64	12,67	2,53	3,71	4,69	5,29	5,56	18,44	38,90	58,93	72,35	78,58
1,80	9,42	1,88	2,76	3,49	3,93	4,13	13,71	28,92	43,82	53,80	58,43
1,97	7,48	1,49	2,19	2,77	3,12	3,28	10,88	22,96	34,79	42,71	46,39
2,13	6,20	1,24	1,82	2,29	2,59	2,72	9,02	19,03	28,84	35,40	38,45
2,29	5,30	1,06	1,55	1,96	2,21	2,32	7,71	16,26	24,64	30,25	32,86
2,46	4,94	0,99	1,45	1,83	2,06	2,17	7,19	15,17	22,98	28,21	30,64
2,62	4,63	0,92	1,36	1,71	1,93	2,03	6,74	14,21	21,53	26,43	28,71
2,78	4,36	0,87	1,28	1,61	1,82	1,91	6,34	13,37	20,26	24,87	27,01
2,95	4,11	0,82	1,21	1,52	1,72	1,81	5,99	12,63	19,14	23,49	25,52
3,11	3,90	0,78	1,14	1,44	1,63	1,71	5,67	11,97	18,14	22,26	24,18
3,28	3,71	0,74	1,09	1,37	1,55	1,63	5,39	11,38	17,24	21,16	22,99
	Totale	50,06	73,45	92,74	104,64	109,98					
	netta	11,23	23,69	35,89	44,06	47,86					
	Φ	0,22	0,32	0,39	0,42	0,44					



Gli stessi calcoli sono stati eseguiti per lo ietogramma costante.

d	costante	Tr=5	Tr=30	Tr=100	Tr=5	Tr=30	Tr=100
		Pioggia Totale media	Pioggia Totale media	Pioggia Totale media	Pioggia efficace	Pioggia efficace	Pioggia efficace
[h]	[mm/h]	[mm]	[mm]	[mm]	[mm*kmq]	[mm*kmq]	[mm*kmq]
0,16	12,53	2,50	3,67	4,64	18,23	38,47	58,28
0,33	12,53	2,50	3,67	4,64	18,23	38,47	58,28
0,49	12,53	2,50	3,67	4,64	18,23	38,47	58,28
0,66	12,53	2,50	3,67	4,64	18,23	38,47	58,28
0,82	12,53	2,50	3,67	4,64	18,23	38,47	58,28
0,98	12,53	2,50	3,67	4,64	18,23	38,47	58,28
1,15	12,53	2,50	3,67	4,64	18,23	38,47	58,28
1,31	12,53	2,50	3,67	4,64	18,23	38,47	58,28
1,47	12,53	2,50	3,67	4,64	18,23	38,47	58,28
1,64	12,53	2,50	3,67	4,64	18,23	38,47	58,28
1,80	12,53	2,50	3,67	4,64	18,23	38,47	58,28
1,97	12,53	2,50	3,67	4,64	18,23	38,47	58,28
2,13	12,53	2,50	3,67	4,64	18,23	38,47	58,28
2,29	12,53	2,50	3,67	4,64	18,23	38,47	58,28
2,46	12,53	2,50	3,67	4,64	18,23	38,47	58,28
2,62	12,53	2,50	3,67	4,64	18,23	38,47	58,28
2,78	12,53	2,50	3,67	4,64	18,23	38,47	58,28
2,95	12,53	2,50	3,67	4,64	18,23	38,47	58,28
3,11	12,53	2,50	3,67	4,64	18,23	38,47	58,28
3,28	12,53	2,50	3,67	4,64	18,23	38,47	58,28
	Totale	50,06	73,45	92,74			
	netta	11,23	23,69	35,89			
	Φ	0,22	0,32	0,39			

Sviluppo integrali di convoluzione

Segue lo sviluppo degli integrali di convoluzione in forma discreta organizzati in maniera da formare la cosiddetta "matrice di convoluzione".

Le tabelle che seguono riportano i risultati per i diversi periodi di ritorno.

Tempo di ritorno = 5 anni

Pioggia Efficace [mm*km ²]	8,31	9,87	12,14	15,74	22,18	36,34	83,74	51,61	27,67	18,44	13,71	10,88	9,02	7,71	7,19	6,74	6,34	5,99	5,67	5,39	Totale [m ³ /s]	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0,16	2,20																					0,61
0,33	2,71	2,61																				1,48
0,49	3,89	3,22	3,21																			2,86
0,66	4,62	4,61	3,96	4,16																		4,82
0,82	5,18	5,48	5,68	5,13	5,86																	7,59
0,98	5,17	6,14	6,74	7,36	7,24	9,60																11,74
1,15	5,18	6,14	7,56	8,74	10,38	11,85	22,12															19,99
1,31	4,43	6,15	7,55	9,80	12,32	17,00	27,31	13,63														27,28
1,47	4,12	5,25	7,56	9,79	13,81	20,19	39,16	16,83	7,31													34,45
1,64	3,76	4,89	6,46	9,81	13,80	22,63	46,52	24,14	9,03	4,87												40,53
1,80	3,33	4,46	6,01	8,38	13,82	22,61	52,14	28,67	12,94	6,01	3,62											45,00
1,97	2,33	3,95	5,48	7,79	11,81	22,64	52,10	32,14	15,37	8,62	4,47	2,88										47,11
2,13	1,47	2,77	4,86	7,11	10,99	19,35	52,17	32,11	17,23	10,24	6,41	3,55	2,38									47,40
2,29	0,99	1,75	3,40	6,30	10,02	18,00	44,59	32,16	17,22	11,48	7,62	5,09	2,94	2,04								45,44
2,46	0,60	1,18	2,15	4,41	8,88	16,42	41,47	27,48	17,24	11,47	8,54	6,05	4,22	2,51	1,90							42,92
2,62	0,37	0,71	1,45	2,79	6,22	14,54	37,84	25,56	14,74	11,49	8,53	6,78	5,01	3,61	2,34	1,78						39,93
2,78	0,23	0,44	0,87	1,88	3,93	10,19	33,50	23,32	13,71	9,82	8,54	6,77	5,62	4,28	3,36	2,20	1,67					36,20
2,95	0,11	0,27	0,54	1,13	2,65	6,44	23,48	20,65	12,50	9,13	7,30	6,78	5,61	4,80	3,99	3,15	2,07	1,58				31,17
3,11	0,06	0,13	0,33	0,70	1,59	4,35	14,85	14,47	11,07	8,33	6,79	5,80	5,62	4,80	4,48	3,74	2,96	1,95	1,50			25,98
3,28	0,03	0,08	0,16	0,43	0,98	2,61	10,01	9,15	7,76	7,38	6,19	5,39	4,80	4,80	4,47	4,19	3,52	2,80	1,85	1,42		21,68
3,44		0,03	0,09	0,21	0,60	1,61	6,01	6,17	4,91	5,17	5,49	4,92	4,47	4,11	4,48	4,19	3,95	3,33	2,65	1,76		17,81
3,60			0,04	0,12	0,29	0,99	3,70	3,70	3,31	3,27	3,84	4,35	4,08	3,82	3,83	4,20	3,94	3,73	3,15	2,52		14,69
3,77				0,05	0,17	0,48	2,28	2,28	1,99	2,20	2,43	3,05	3,61	3,48	3,56	3,59	3,95	3,72	3,53	3,00		12,05
3,93					0,07	0,28	1,11	1,40	1,22	1,32	1,64	1,93	2,53	3,08	3,25	3,34	3,38	3,73	3,53	3,36		9,77
4,09						0,11	0,65	0,68	0,75	0,82	0,98	1,30	1,60	2,16	2,88	3,04	3,14	3,19	3,54	3,36		7,83
4,26							0,26	0,40	0,37	0,50	0,61	0,78	1,08	1,37	2,02	2,70	2,86	2,97	3,02	3,36		6,19

1,97	4,92	8,33	11,57	16,44	24,92	47,77	109,91	67,80	32,43	18,19	9,43	6,07									99,39
2,13	3,11	5,84	10,24	15,00	23,18	40,83	110,07	67,74	36,36	21,61	13,53	7,49	5,03								100,01
2,29	2,10	3,69	7,18	13,28	21,15	37,97	94,08	67,84	36,32	24,22	16,07	10,74	6,21	4,30							95,88
2,46	1,26	2,49	4,54	9,31	18,73	34,64	87,50	57,98	36,38	24,20	18,01	12,76	8,90	5,31	4,01						90,56
2,62	0,78	1,49	3,06	5,89	13,13	30,67	79,83	53,93	31,09	24,24	17,99	14,30	10,57	7,61	4,95	3,75					84,24
2,78	0,48	0,92	1,84	3,97	8,30	21,50	70,68	49,20	28,92	20,72	18,02	14,29	11,85	9,04	7,09	4,64	3,53				76,38
2,95	0,23	0,57	1,13	2,38	5,60	13,59	49,55	43,56	26,38	19,27	15,40	14,31	11,84	10,13	8,43	6,65	4,36	3,34			65,75
3,11	0,14	0,28	0,70	1,47	3,36	9,17	31,32	30,54	23,36	17,58	14,33	12,23	11,86	10,12	9,44	7,89	6,25	4,12	3,16		54,81
3,28	0,05	0,16	0,34	0,90	2,07	5,50	21,12	19,30	16,37	15,56	13,07	11,37	10,14	10,13	9,44	8,85	7,43	5,91	3,90	3,01	45,73
3,44		0,06	0,20	0,44	1,27	3,39	12,67	13,02	10,35	10,91	11,57	10,38	9,43	8,66	9,45	8,84	8,33	7,02	5,60	3,71	37,58
3,60			0,08	0,26	0,62	2,09	7,81	7,81	6,98	6,90	8,11	9,19	8,60	8,06	8,08	8,85	8,32	7,87	6,65	5,32	31,00
3,77				0,10	0,36	1,01	4,81	4,81	4,19	4,65	5,13	6,44	7,62	7,35	7,51	7,57	8,33	7,86	7,45	6,32	25,42
3,93					0,14	0,59	2,34	2,96	2,58	2,79	3,46	4,07	5,34	6,51	6,85	7,04	7,12	7,87	7,45	7,09	20,61
4,09						0,24	1,37	1,44	1,59	1,72	2,07	2,75	3,37	4,56	6,07	6,42	6,62	6,73	7,46	7,08	16,52
4,26							0,55	0,84	0,77	1,06	1,28	1,65	2,28	2,88	4,25	5,69	6,04	6,26	6,38	7,09	13,06
4,42								0,34	0,45	0,51	0,79	1,02	1,37	1,94	2,69	3,99	5,35	5,71	5,93	6,06	10,04
4,59									0,18	0,30	0,38	0,62	0,84	1,17	1,81	2,52	3,75	5,05	5,41	5,64	7,69
4,75										0,12	0,22	0,30	0,52	0,72	1,09	1,70	2,37	3,54	4,79	5,14	5,70
4,91											0,09	0,18	0,25	0,44	0,67	1,02	1,60	2,24	3,36	4,55	4,00
5,08												0,07	0,15	0,22	0,41	0,63	0,96	1,51	2,12	3,19	2,57
5,24													0,06	0,13	0,20	0,39	0,59	0,91	1,43	2,02	1,59
5,40														0,05	0,12	0,19	0,36	0,56	0,86	1,36	0,97
5,57															0,05	0,11	0,18	0,34	0,53	0,82	0,56
5,73																0,04	0,10	0,17	0,33	0,50	0,32
5,90																	0,04	0,10	0,16	0,31	0,17
6,06																		0,04	0,09	0,15	0,08
6,22																			0,04	0,09	0,03
6,39																				0,04	0,01
6,55																					0,00

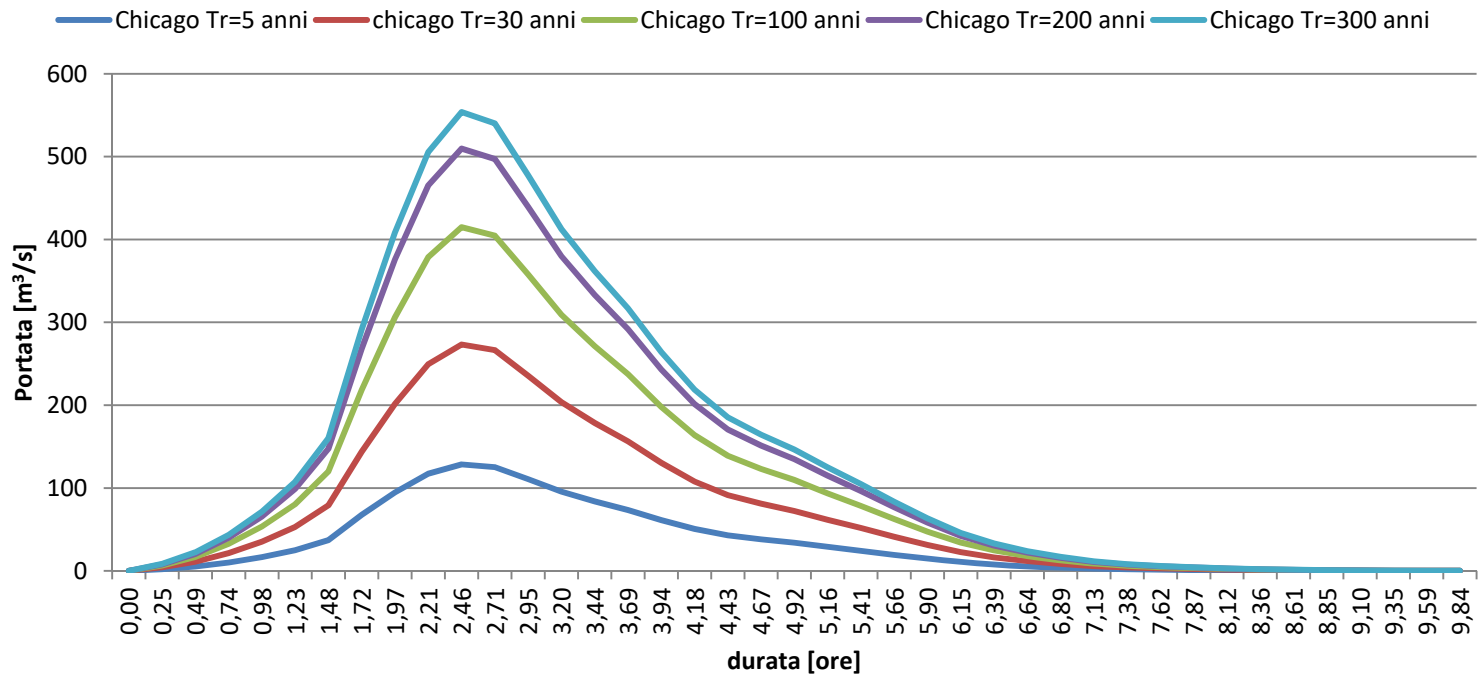
Tempo di ritorno = 100 anni

Pioggia Efficace [mm*km²]	80.54	95.15	116.68	151.39	215.78	369.52	1042.93	557.39	273.25	177.98	131.75	104.78	87.20	74.86	69.98	65.73	62.00	58.70	55.75	53.11	Totale [m³/s]	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0.25	23.00																					6.39
0.49	33.24	27.17																				16.78
0.74	44.76	39.27	33.32																			32.60
0.98	48.53	52.88	48.16	43.23																		53.56
1.23	43.45	57.34	64.85	62.48	61.62																	80.48
1.48	31.60	51.34	70.32	84.14	89.06	105.52																119.99
1.72	24.13	37.33	62.96	91.23	119.93	152.51	297.82															218.31
1.97	20.70	28.51	45.78	81.68	130.03	205.38	430.44	159.17														306.02
2.21	17.78	24.45	34.96	59.40	116.42	222.68	579.65	230.05	78.03													378.73
2.46	11.46	21.00	29.99	45.35	84.66	199.38	628.48	309.79	112.78	50.82												414.92
2.71	7.49	13.54	25.76	38.91	64.64	144.98	562.71	335.89	151.87	73.45	37.62											404.69
2.95	5.13	8.85	16.60	33.42	55.46	110.70	409.19	300.74	164.66	98.92	54.38	29.92										357.77
3.20	4.81	6.06	10.86	21.54	47.63	94.97	312.44	218.69	147.43	107.25	73.22	43.25	24.90									309.18
3.44	3.68	5.68	7.44	14.09	30.70	81.57	268.03	166.98	107.21	96.03	79.39	58.24	35.99	21.38								271.22
3.69	2.59	4.35	6.97	9.65	20.08	52.57	230.23	143.25	81.86	69.83	71.09	63.14	48.47	30.90	19.98							237.48
3.94	2.14	3.06	5.34	9.04	13.75	34.38	148.36	123.04	70.23	53.32	51.69	56.54	52.55	41.61	28.88	18.77						197.97
4.18	1.43	2.53	3.76	6.92	12.88	23.55	97.04	79.29	60.32	45.74	39.47	41.11	47.05	45.11	38.89	27.13	17.70					163.87
4.43	0.95	1.69	3.10	4.87	9.87	22.06	66.47	51.86	38.87	39.29	33.86	31.39	34.21	40.39	42.17	36.53	25.59	16.76				138.87
4.67	0.43	1.12	2.07	4.02	6.95	16.90	62.25	35.53	25.42	25.32	29.08	26.93	26.12	29.37	37.76	39.61	34.46	24.23	15.92			123.19
4.92	0.17	0.50	1.38	2.68	5.73	11.90	47.69	33.27	17.42	16.56	18.74	23.13	22.41	22.43	27.46	35.46	37.36	32.62	23.01	15.17		109.75
5.16		0.20	0.62	1.79	3.82	9.81	33.58	25.49	16.31	11.34	12.26	14.91	19.25	19.24	20.96	25.79	33.45	35.37	30.99	21.92		93.64
5.41			0.24	0.80	2.55	6.54	27.69	17.95	12.50	10.62	8.40	9.75	12.40	16.53	17.98	19.69	24.32	31.67	33.60	29.52		78.54
5.66				0.31	1.14	4.37	18.47	14.80	8.80	8.14	7.86	6.68	8.11	10.65	15.45	16.89	18.57	23.03	30.08	32.01		62.60
5.90					0.44	1.95	12.32	9.87	7.26	5.73	6.03	6.25	5.56	6.97	9.95	14.51	15.93	17.58	21.87	28.66		47.47
6.15						0.76	5.51	6.59	4.84	4.73	4.24	4.79	5.21	4.77	6.51	9.35	13.69	15.09	16.70	20.84		34.33
6.39							2.14	2.94	3.23	3.15	3.50	3.37	3.99	4.47	4.46	6.12	8.82	12.96	14.33	15.91		24.83
6.64								1.14	1.44	2.10	2.33	2.78	2.81	3.42	4.18	4.19	5.77	8.35	12.31	13.65		17.91

Tempo di ritorno = 300 anni

Pioggia Efficace [mm*km ²]	107.47	126.97	155.70	202.02	287.94	493.10	1391.69	743.79	364.63	237.49	175.81	139.82	116.37	99.90	93.38	87.71	82.73	78.32	74.40	70.87	Totale [m ³ /s]	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0.25	30.69																					8.52
0.49	44.35	36.26																				22.39
0.74	59.73	52.40	44.46																			43.50
0.98	64.76	70.57	64.26	57.69																		71.47
1.23	57.98	76.51	86.54	83.38	82.22																	107.40
1.48	42.16	68.51	93.83	112.28	118.84	140.81																160.12
1.72	32.20	49.82	84.01	121.74	160.03	203.51	397.41															291.31
1.97	27.62	38.04	61.09	109.00	173.51	274.06	574.38	212.40														408.36
2.21	23.72	32.63	46.65	79.26	155.36	297.14	773.48	306.98	104.12													505.37
2.46	15.29	28.03	40.02	60.52	112.97	266.05	838.64	413.39	150.49	67.82												553.67
2.71	10.00	18.06	34.37	51.92	86.26	193.46	750.89	448.21	202.66	98.02	50.20											540.02
2.95	6.85	11.81	22.15	44.60	74.00	147.72	546.03	401.31	219.73	132.00	72.56	39.93										477.41
3.20	6.41	8.09	14.49	28.74	63.56	126.73	416.92	291.82	196.74	143.12	97.71	57.71	33.23									412.57
3.44	4.91	7.58	9.92	18.80	40.96	108.85	357.67	222.82	143.06	128.14	105.94	77.71	48.03	28.53								361.92
3.69	3.46	5.81	9.29	12.88	26.79	70.14	307.22	191.16	109.24	93.18	94.86	84.26	64.67	41.23	26.67							316.90
3.94	2.85	4.09	7.12	12.06	18.35	45.88	197.97	164.19	93.71	71.15	68.98	75.44	70.12	55.52	38.54	25.05						264.17
4.18	1.90	3.37	5.01	9.24	17.19	31.43	129.49	105.81	80.49	61.04	52.67	54.86	62.78	60.20	51.90	36.20	23.62					218.67
4.43	1.27	2.25	4.13	6.50	13.17	29.43	88.70	69.20	51.87	52.43	45.18	41.89	45.66	53.90	56.27	48.75	34.14	22.37				185.31
4.67	0.57	1.50	2.76	5.36	9.27	22.55	83.07	47.41	33.93	33.78	38.81	35.93	34.86	39.19	50.38	52.85	45.98	32.33	21.24			164.39
4.92	0.22	0.67	1.84	3.58	7.65	15.88	63.64	44.40	23.24	22.10	25.01	30.87	29.91	29.93	36.64	47.32	49.85	43.53	30.70	20.24		146.45
5.16		0.26	0.82	2.39	5.10	13.09	44.81	34.01	21.77	15.14	16.36	19.89	25.69	25.67	27.97	34.41	44.64	47.20	41.35	29.25		124.95
5.41			0.32	1.07	3.40	8.73	36.95	23.95	16.67	14.18	11.21	13.01	16.55	22.05	24.00	26.28	32.46	42.26	44.83	39.39		104.81
5.66				0.41	1.52	5.83	24.65	19.75	11.74	10.86	10.49	8.91	10.83	14.21	20.61	22.54	24.78	30.73	40.14	42.71		83.53
5.90					0.59	2.60	16.44	13.17	9.68	7.65	8.04	8.35	7.42	9.29	13.28	19.36	21.26	23.46	29.19	38.24		63.34
6.15						1.01	7.35	8.79	6.46	6.31	5.66	6.39	6.95	6.37	8.69	12.48	18.26	20.13	22.29	27.81		45.81
6.39							2.85	3.93	4.31	4.21	4.67	4.50	5.32	5.96	5.95	8.16	11.77	17.29	19.12	21.23		33.13

Idrogrammi di piena



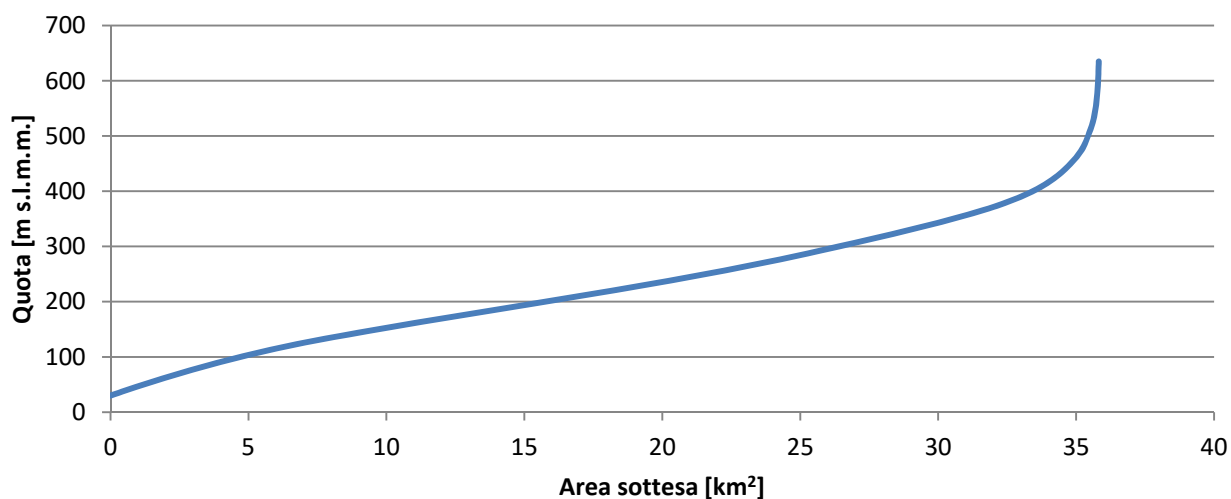
Bacino 2**Dati input e tempo di corrivazione bacino**

DATI DI INPUT	
Area Bacino [m ²]	35820868,96
Area Bacino [ha]	35820,87
Area Bacino [km ²]	35,82
Lunghezza Asta [m]	11309
Lunghezza Asta [km]	11,309
Zmax [m s.l.m.m]	635
Zmed [m s.l.m.m]	227,21
Zmin [m s.l.m.m]	30
Tc (Giandotti) [ore]	3,64
Tc (Giandotti) [min]	218,45

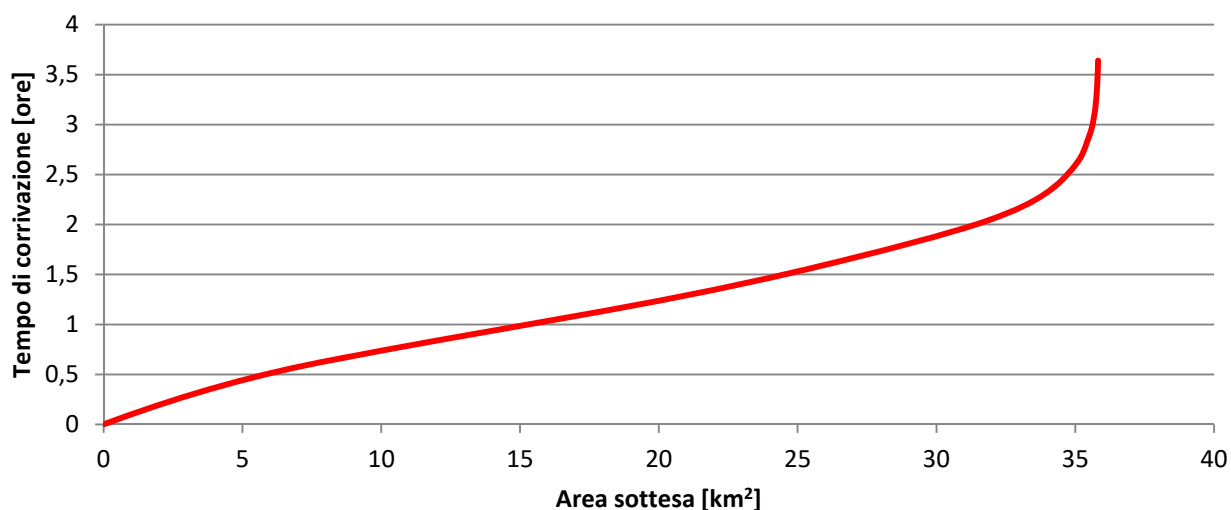
Curva ipsografica e curva aree-tempi

Quota [m]	Area Sottesa [km²]	Tempo di corrivazione [ore]
30	0	0
50	1,202481387	0,120330579
75	2,856574063	0,270743802
100	4,6883196	0,421157025
125	6,965708036	0,571570248
150	9,692982525	0,721983471
175	12,70528494	0,872396694
200	15,73927872	1,022809917
225	18,75586159	1,17322314
250	21,59672201	1,323636364
275	24,11407702	1,474049587
300	26,39691162	1,62446281
325	28,54889858	1,774876033
350	30,53349086	1,925289256
375	32,20518096	2,075702479
400	33,42983865	2,226115702
425	34,24450524	2,376528926
450	34,7982506	2,526942149
475	35,20424101	2,677355372
500	35,42559368	2,827768595
525	35,6064359	2,978181818
550	35,70579094	3,128595041
575	35,76094259	3,279008264
600	35,79722854	3,429421488
635	35,82086896	3,64

Curva ipsografica



Curva aree - tempi di corrivazione

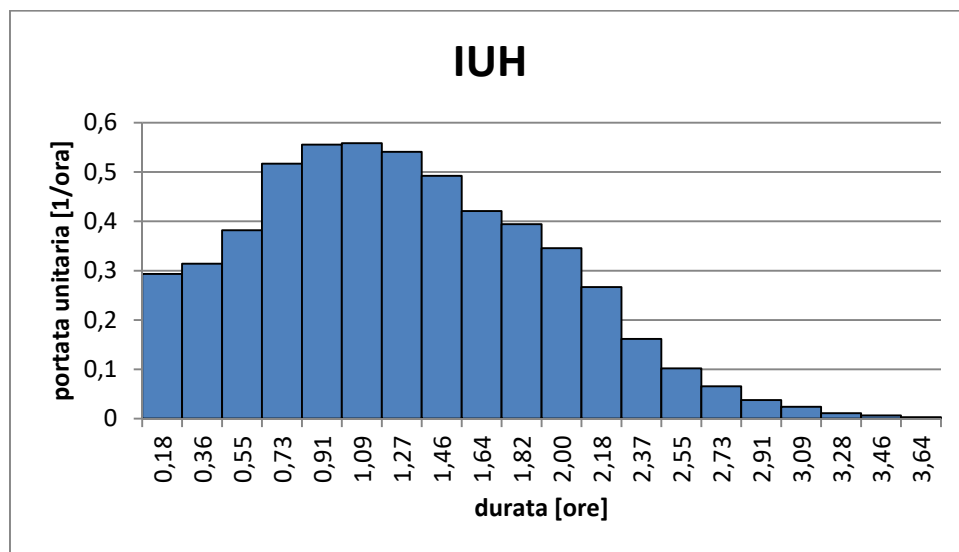


Idrogramma unitario istantaneo

Step	T _c [ore]	T _c [min]	Quota [m]	A [km²]	ΔA [km²]	ΔA/dt	IUH
0	0,00	0	30	0			
1	0,18	10,92268872	60	1,912682501	1,912682501	10,50665757	0,293311075
2	0,36	21,84537743	90	3,961789344	2,049106842	11,25605734	0,314231834
3	0,55	32,76806615	120	6,453741402	2,491952059	13,68867386	0,382142429
4	0,73	43,69075486	151	9,825079783	3,37133838	18,51927745	0,516996879
5	0,91	54,61344358	181	13,44881578	3,623736	19,90573619	0,555702214
6	1,09	65,5361323	211	17,09027977	3,641463984	20,00311871	0,558420811
7	1,27	76,45882101	241	20,61758897	3,527309199	19,37604901	0,540915103
8	1,46	87,38150973	272	23,82837765	3,210788688	17,63735343	0,492376482
9	1,64	98,30419845	302	26,57387438	2,745496729	15,08143352	0,421023665

10	1,82	109,2268872	332	29,14453459	2,570660203	14,12102974	0,394212372
11	2,00	120,1495759	362	31,39837586	2,253841272	12,38069489	0,345627989
12	2,18	131,0722646	393	33,13784449	1,739468631	9,555167283	0,266748618
13	2,37	141,9949533	423	34,19269215	1,054847663	5,794439579	0,161761558
14	2,55	152,917642	453	34,85752418	0,664832024	3,652024012	0,101952413
15	2,73	163,8403307	483	35,28560695	0,428082777	2,351524179	0,065646765
16	2,91	174,7630195	514	35,53062802	0,245021063	1,345938181	0,037574135
17	3,09	185,6857082	544	35,68736353	0,156735518	0,860972178	0,024035491
18	3,28	196,6083969	574	35,75944117	0,072077636	0,395933478	0,011053151
19	3,46	207,5310856	604	35,80207786	0,042636686	0,234209841	0,006538363
20	3,64	218,4537743	635	35,82086896	0,018791103	0,103222404	0,002881628

Dove $dt = T_c/20 = 0.182$ ore



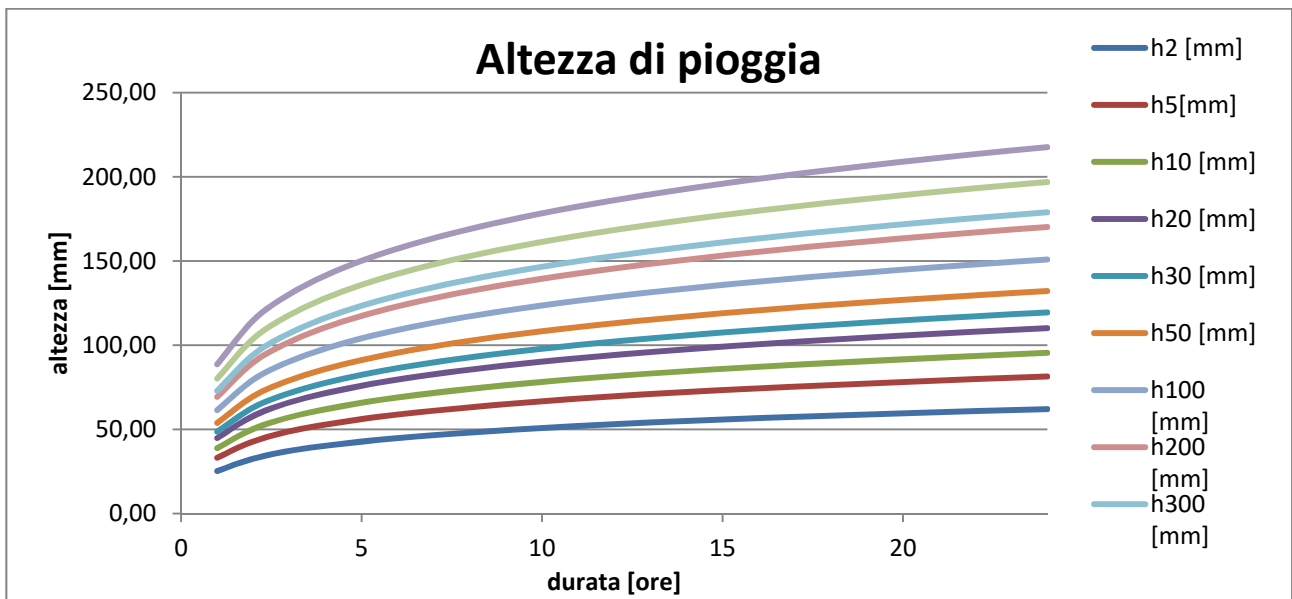
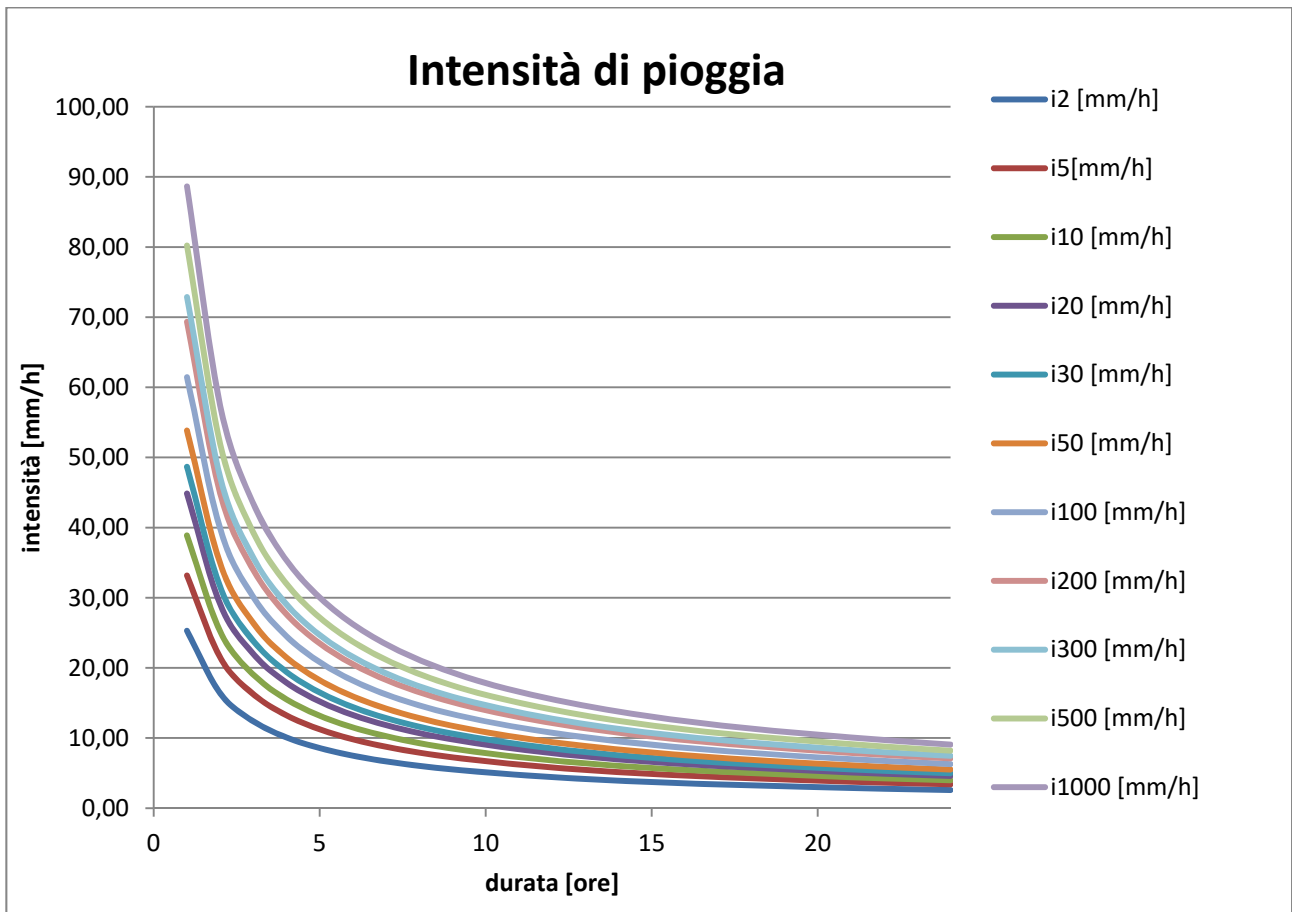
Curva di probabilità pluviometrica

Parametri di distribuzione	
Area omogenea	A1
$m(l_0)$ (mm/ora)	77,08
d_c (ore)	0,3661
C	0,7995
$D \cdot 10^5$	3,6077
ρ^2	0,9994
Z_{med} [m]	227,21

d	$\mu(i(d))$ [mm/h]	$\mu(h(d))$ [mm]	i_2 [mm/h]	i_5 [mm/h]	i_{10} [mm/h]	i_{20} [mm/h]	i_{30} [mm/h]	i_{50} [mm/h]	i_{100} [mm/h]	i_{200} [mm/h]	i_{300} [mm/h]	i_{500} [mm/h]	i_{1000} [mm/h]
1	27,19	27,19	25,29	33,17	38,88	44,86	48,67	53,84	61,45	69,33	72,87	80,21	88,64
2	17,61	35,21	16,37	21,48	25,18	29,05	31,51	34,86	39,79	44,89	47,18	51,94	57,39
3	13,32	39,96	12,39	16,25	19,05	21,98	23,84	26,37	30,10	33,97	35,70	39,29	43,42
4	10,84	43,37	10,08	13,23	15,50	17,89	19,41	21,47	24,50	27,65	29,06	31,98	35,34
5	9,21	46,05	8,56	11,24	13,17	15,20	16,48	18,23	20,81	23,48	24,68	27,17	30,02
6	8,04	48,27	7,48	9,81	11,50	13,27	14,40	15,93	18,18	20,51	21,56	23,73	26,23
7	7,17	50,17	6,67	8,74	10,25	11,83	12,83	14,19	16,20	18,28	19,21	21,14	23,37
8	6,48	51,85	6,03	7,91	9,27	10,69	11,60	12,83	14,65	16,53	17,37	19,12	21,13

9	5,93	53,34	5,51	7,23	8,48	9,78	10,61	11,74	13,39	15,11	15,88	17,48	19,32
10	5,47	54,70	5,09	6,67	7,82	9,02	9,79	10,83	12,36	13,95	14,66	16,14	17,83
11	5,09	55,94	4,73	6,20	7,27	8,39	9,10	10,07	11,49	12,97	13,63	15,00	16,58
12	4,76	57,08	4,42	5,80	6,80	7,85	8,51	9,42	10,75	12,13	12,75	14,03	15,51
13	4,47	58,15	4,16	5,46	6,40	7,38	8,01	8,86	10,11	11,41	11,99	13,20	14,58
14	4,22	59,15	3,93	5,15	6,04	6,97	7,56	8,37	9,55	10,77	11,32	12,46	13,77
15	4,01	60,09	3,73	4,89	5,73	6,61	7,17	7,93	9,05	10,21	10,74	11,82	13,06
16	3,81	60,97	3,54	4,65	5,45	6,29	6,82	7,55	8,61	9,72	10,21	11,24	12,42
17	3,64	61,81	3,38	4,44	5,20	6,00	6,51	7,20	8,22	9,27	9,74	10,73	11,85
18	3,48	62,61	3,24	4,24	4,97	5,74	6,23	6,89	7,86	8,87	9,32	10,26	11,34
19	3,34	63,38	3,10	4,07	4,77	5,50	5,97	6,60	7,54	8,51	8,94	9,84	10,87
20	3,21	64,11	2,98	3,91	4,58	5,29	5,74	6,35	7,24	8,17	8,59	9,46	10,45
21	3,09	64,81	2,87	3,76	4,41	5,09	5,52	6,11	6,97	7,87	8,27	9,10	10,06
22	2,98	65,48	2,77	3,63	4,26	4,91	5,33	5,89	6,73	7,59	7,98	8,78	9,70
23	2,88	66,13	2,67	3,51	4,11	4,74	5,15	5,69	6,50	7,33	7,71	8,48	9,37
24	2,78	66,75	2,59	3,39	3,98	4,59	4,98	5,51	6,29	7,09	7,45	8,20	9,07

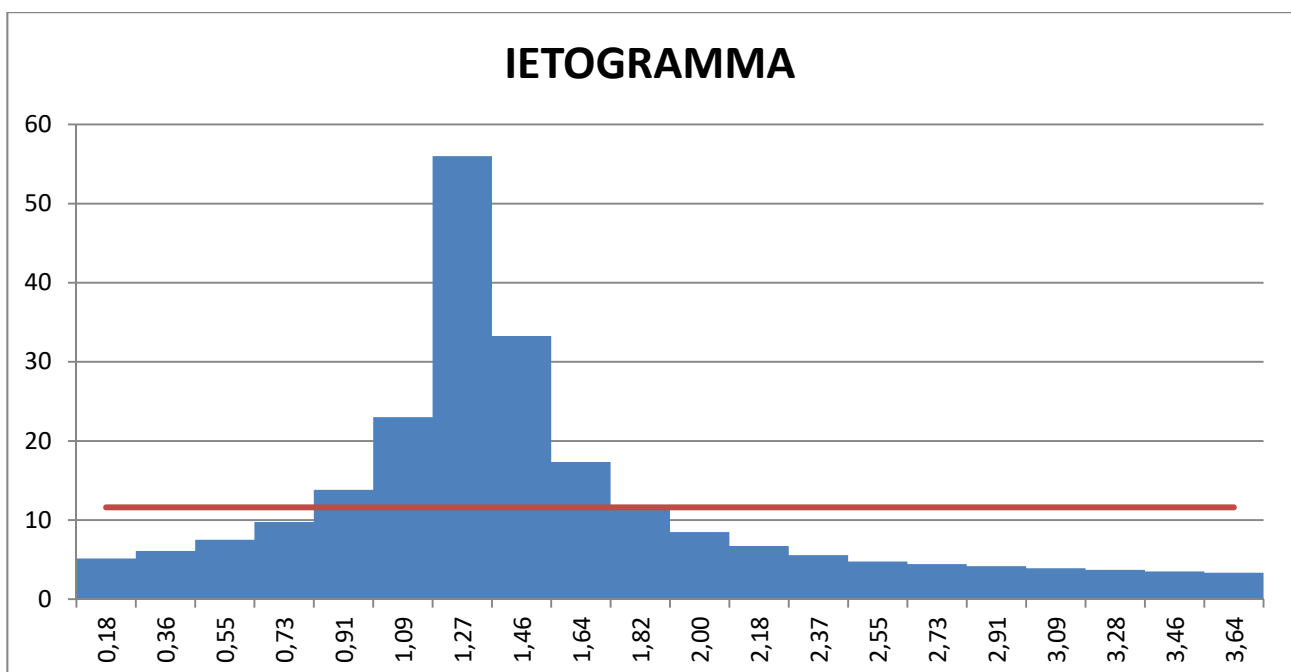
d	$\mu(i(d))$ [mm/h]	$\mu(h(d))$ [mm]	h_2 [mm]	h_5 [mm]	h_{10} [mm]	h_{20} [mm]	h_{30} [mm]	h_{50} [mm]	h_{100} [mm]	h_{200} [mm]	h_{300} [mm]	h_{500} [mm]	h_{1000} [mm]
1	27,19	27,19	25,29	33,17	38,88	44,86	48,67	53,84	61,45	69,33	72,87	80,21	88,64
2	17,61	35,21	32,75	42,96	50,35	58,10	63,03	69,72	79,58	89,79	94,36	103,87	114,79
3	13,32	39,96	37,16	48,75	57,14	65,93	71,53	79,12	90,31	101,90	107,09	117,88	130,27
4	10,84	43,37	40,33	52,91	62,02	71,56	77,63	85,87	98,01	110,59	116,23	127,94	141,38
5	9,21	46,05	42,82	56,18	65,85	75,98	82,42	91,17	104,07	117,42	123,41	135,84	150,11
6	8,04	48,27	44,89	58,89	69,02	79,64	86,40	95,57	109,09	123,08	129,36	142,39	157,35
7	7,17	50,17	46,66	61,21	71,75	82,78	89,81	99,34	113,39	127,94	134,46	148,01	163,56
8	6,48	51,85	48,22	63,25	74,14	85,55	92,80	102,65	117,17	132,21	138,95	152,94	169,02
9	5,93	53,34	49,61	65,08	76,28	88,01	95,48	105,62	120,55	136,02	142,95	157,36	173,89
10	5,47	54,70	50,87	66,73	78,22	90,25	97,91	108,30	123,61	139,48	146,59	161,35	178,31
11	5,09	55,94	52,02	68,24	79,99	92,30	100,13	110,76	126,42	142,64	149,91	165,01	182,36
12	4,76	57,08	53,09	69,64	81,63	94,19	102,18	113,03	129,01	145,56	152,98	168,40	186,09
13	4,47	58,15	54,08	70,94	83,15	95,95	104,09	115,14	131,42	148,28	155,84	171,54	189,57
14	4,22	59,15	55,01	72,16	84,58	97,59	105,87	117,11	133,67	150,83	158,52	174,49	192,82
15	4,01	60,09	55,88	73,31	85,92	99,14	107,55	118,97	135,80	153,22	161,03	177,26	195,88
16	3,81	60,97	56,71	74,39	87,19	100,61	109,14	120,73	137,80	155,48	163,41	179,87	198,77
17	3,64	61,81	57,49	75,41	88,39	101,99	110,65	122,39	139,70	157,63	165,66	182,35	201,51
18	3,48	62,61	58,23	76,39	89,54	103,31	112,08	123,98	141,51	159,66	167,80	184,71	204,12
19	3,34	63,38	58,94	77,32	90,63	104,57	113,44	125,49	143,23	161,61	169,85	186,96	206,61
20	3,21	64,11	59,62	78,21	91,67	105,78	114,75	126,93	144,88	163,47	171,81	189,12	208,99
21	3,09	64,81	60,27	79,06	92,67	106,93	116,00	128,32	146,46	165,26	173,68	191,18	211,27
22	2,98	65,48	60,90	79,88	93,64	108,04	117,21	129,65	147,98	166,97	175,48	193,16	213,46
23	2,88	66,13	61,50	80,67	94,56	109,11	118,37	130,93	149,45	168,62	177,22	195,07	215,57
24	2,78	66,75	62,08	81,44	95,45	110,14	119,48	132,17	150,86	170,22	178,89	196,92	217,61



Ietogramma di progetto - Ietogramma Chicago

d [ore]	$\mu(h(d))$ [mm]	$\Delta \mu(h(d))$ [mm]	i [mm/ora]	Chicago i [mm/ora]	Costante i [mm/ora]
0,182044812	10,19549004	10,19549004	56,00538641	5,139642099	11,60391364
0,364089624	16,25133172	6,055841681	33,26566474	6,099150346	11,60391364
0,546134436	20,44016143	4,188829713	23,00988239	7,507658597	11,60391364
0,728179248	23,59896485	3,15880342	17,3517904	9,755616532	11,60391364
0,91022406	26,11668077	2,517715919	13,83019869	13,83019869	11,60391364
1,092268872	28,20185649	2,085175718	11,4541892	23,00988239	11,60391364
1,274313684	29,97781587	1,775959377	9,755616532	56,00538641	11,60391364

1,456358495	31,52288928	1,545073415	8,487324623	33,26566474	11,60391364
1,638403307	32,88961958	1,366730297	7,507658597	17,3517904	11,60391364
1,820448119	34,11480275	1,225183172	6,730118582	11,4541892	11,60391364
2,002492931	35,22512143	1,110318678	6,099150346	8,487324623	11,60391364
2,184537743	36,24048994	1,015368511	5,577574553	6,730118582	11,60391364
2,366582555	37,17613512	0,935645179	5,139642099	5,577574553	11,60391364
2,548627367	38,04394205	0,867806937	4,766996259	4,766996259	11,60391364
2,730672179	38,85335368	0,809411626	4,44622188	4,44622188	11,60391364
2,912716991	39,61198945	0,75863577	4,167302337	4,167302337	11,60391364
3,094761803	40,32608149	0,714092038	3,9226168	3,9226168	11,60391364
3,276806615	41,00078879	0,674707297	3,706270394	3,706270394	11,60391364
3,458851427	41,64042794	0,639639155	3,513635728	3,513635728	11,60391364
3,640896239	42,24864553	0,608217591	3,341032269	3,341032269	11,60391364



Pioggia efficace (metodo Curve Number)

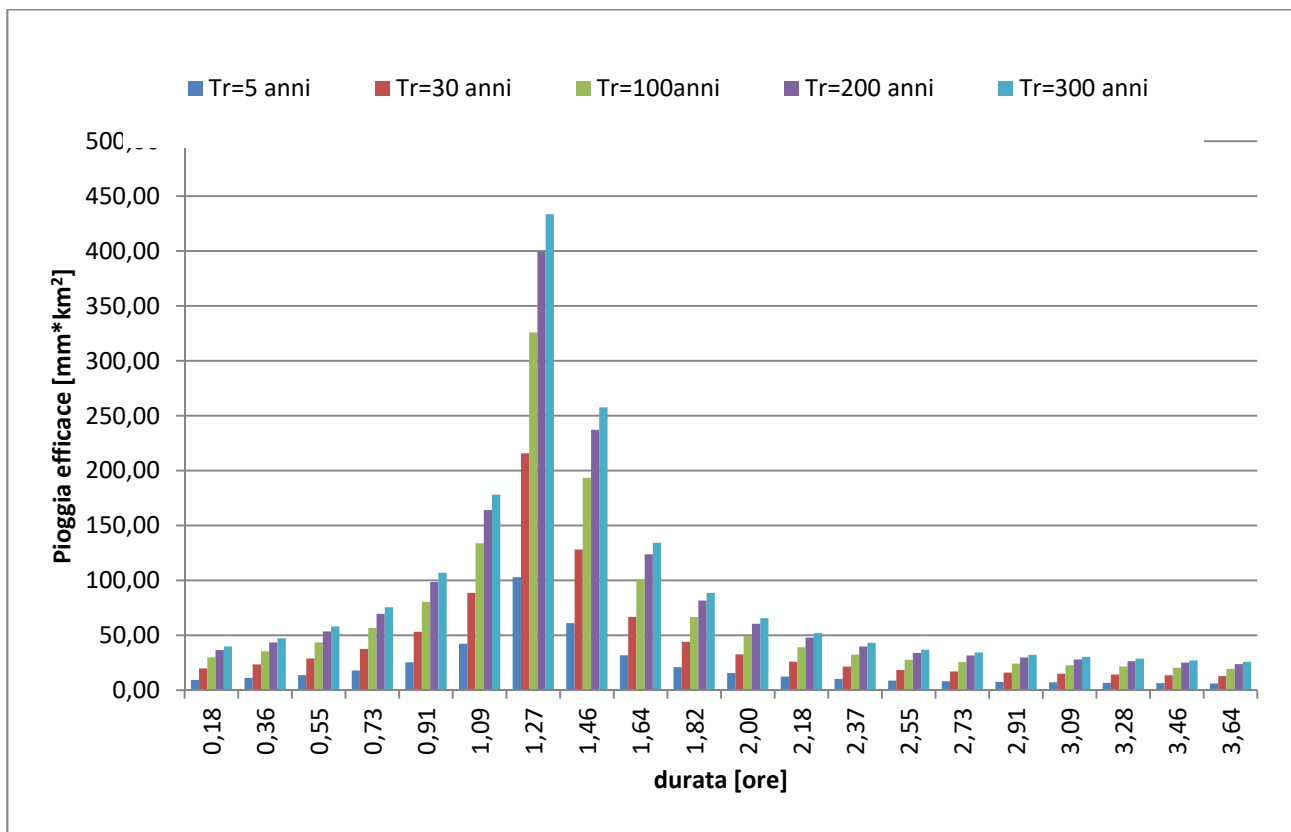
CODICE	INDICE	AREA	AREA*INDICE
111-A	89	0	0
111-C	94	0	0
112-A	77	4010,29523	308792,7327
112-B	85	477147,0962	40557503,18
112-C	90	97616,26257	8785463,632
112-D	92	0	0
121-A	81	104284,1113	8447013,017
121-B	88	155828,4093	13712900,01
121-C	91	34871,62269	3173317,665
211-A	61	962084,4152	58687149,33
211-B	73	0	0
211-C	81	177180,6085	14351629,29

211-D	84	0	0
221-A	76	0	0
221-C	90	0	0
221-D	93	0	0
222-A	43	0	0
222-C	76	0	0
223-A	43	480327,638	20654088,44
223-B	65	2392636,305	155521359,8
223-C	76	2659615,176	202130753,3
223-D	82	0	0
231-A	49	0	0
231-C	79	0	0
231-D	84	0	0
241-A	61	195131,2581	11903006,75
241-B	73	922564,0419	67347175,06
241-C	81	163934,8809	13278725,36
241-D	84	0	0
242-A	61	128168,183	7818259,162
242-B	73	986160,1444	71989690,54
242-C	81	1389880,326	112580306,4
242-D	84	0	0
243-A	61	732588,9424	44687925,49
243-B	73	4020092,688	293466766,2
243-C	81	2995145,809	242606810,5
243-D	84	0	0
311-A	36	1993253,957	71757142,46
311-B	60	1672742,669	100364560,1
311-C	73	8309103,179	606564532,1
311-D	79	0	0
312-A	36	0	0
312-B	60	0	0
312-C	73	0	0
312-D	79	0	0
313-A	36	0	0
313-B	60	0	0
313-C	73	0	0
313-D	79	0	0
321-A	49	151181,9707	7407916,567
321-B	69	0	0
321-C	79	418339,1502	33048792,87
321-D	84	0	0
323-A	35	294014,0913	10290493,19
323-B	56	303068,1676	16971817,39
323-C	70	1721552,883	120508701,8
323-D	77	0	0
324-A	35	309366,2663	10827819,32
324-B	56	1088031,228	60929748,74
324-C	70	457120,427	31998429,89

324-D	77	0	0
331-A	46	23826,75871	1096030,901
331-C	77	0	0
331-D	82	0	0
333-A	63	0	0
333-C	85	0	0
333-D	88	0	0
511-A	98	0	0
511-C	98	0	0
511-D	98	0	0
Somma		35820868,96	2463774621

Asciutto	CN I	48.06	S I	274.51	IA I	19.22
Medio	CN II	68.78	S II	115.29	IA II	8.07
Umido	CN III	83.52	S III	50.13	IA III	3.51

		Tr=5	Tr=30	Tr=100	Tr=200	Tr=300	Tr=5	Tr=30	Tr=100	Tr=200	Tr=300
d	Chicago	Pioggia Totale media	Pioggia Totale media	Pioggia Totale media	Pioggia Totale media	Pioggia Totale media	Pioggia efficace	Pioggia efficace	Pioggia efficace	Pioggia efficace	Pioggia efficace
[h]	[mm/h]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm*kmq]	[mm*kmq]	[mm*kmq]	[mm*kmq]	[mm*kmq]
0,18	5,14	1,14	1,67	2,11	2,39	2,51	9,44	19,80	29,90	36,66	39,79
0,36	6,10	1,35	1,99	2,51	2,83	2,98	11,21	23,50	35,48	43,50	47,22
0,55	7,51	1,67	2,45	3,09	3,49	3,66	13,79	28,92	43,68	53,55	58,13
0,73	9,76	2,17	3,18	4,01	4,53	4,76	17,92	37,58	56,76	69,58	75,53
0,91	13,83	3,07	4,51	5,69	6,42	6,75	25,41	53,28	80,46	98,64	107,08
1,09	23,01	5,11	7,50	9,47	10,68	11,23	42,28	88,64	133,87	164,11	178,15
1,27	56,01	12,44	18,25	23,04	26,00	27,32	102,90	215,75	325,84	399,44	433,60
1,46	33,27	7,39	10,84	13,69	15,44	16,23	61,12	128,15	193,54	237,26	257,55
1,64	17,35	3,85	5,65	7,14	8,05	8,47	31,88	66,84	100,95	123,76	134,34
1,82	11,45	2,54	3,73	4,71	5,32	5,59	21,04	44,13	66,64	81,69	88,68
2,00	8,49	1,88	2,77	3,49	3,94	4,14	15,59	32,70	49,38	60,53	65,71
2,18	6,73	1,49	2,19	2,77	3,12	3,28	12,37	25,93	39,16	48,00	52,11
2,37	5,58	1,24	1,82	2,29	2,59	2,72	10,25	21,49	32,45	39,78	43,18
2,55	4,77	1,06	1,55	1,96	2,21	2,33	8,76	18,36	27,73	34,00	36,91
2,73	4,45	0,99	1,45	1,83	2,06	2,17	8,17	17,13	25,87	31,71	34,42
2,91	4,17	0,93	1,36	1,71	1,93	2,03	7,66	16,05	24,25	29,72	32,26
3,09	3,92	0,87	1,28	1,61	1,82	1,91	7,21	15,11	22,82	27,98	30,37
3,28	3,71	0,82	1,21	1,52	1,72	1,81	6,81	14,28	21,56	26,43	28,69
3,46	3,51	0,78	1,14	1,45	1,63	1,71	6,46	13,54	20,44	25,06	27,20
3,64	3,34	0,74	1,09	1,37	1,55	1,63	6,14	12,87	19,44	23,83	25,87
	Totale	51,54	75,63	95,48	107,73	113,23					
	netta	11,90	24,96	37,69	46,21	50,16					
	Φ	0,23	0,33	0,39	0,43	0,44					



Gli stessi calcoli sono stati eseguiti per lo ietogramma costante.

		Tr=5	Tr=30	Tr=100	Tr=5	Tr=30	Tr=100
d	costante	Pioggia Totale media	Pioggia Totale media	Pioggia Totale media	Pioggia efficace	Pioggia efficace	Pioggia efficace
[h]	[mm/h]	[mm]	[mm]	[mm]	[mm*kmq]	[mm*kmq]	[mm*kmq]
0,18	11,60	2,58	3,78	4,77	21,32	44,70	67,51
0,36	11,60	2,58	3,78	4,77	21,32	44,70	67,51
0,55	11,60	2,58	3,78	4,77	21,32	44,70	67,51
0,73	11,60	2,58	3,78	4,77	21,32	44,70	67,51
0,91	11,60	2,58	3,78	4,77	21,32	44,70	67,51
1,09	11,60	2,58	3,78	4,77	21,32	44,70	67,51
1,27	11,60	2,58	3,78	4,77	21,32	44,70	67,51
1,46	11,60	2,58	3,78	4,77	21,32	44,70	67,51
1,64	11,60	2,58	3,78	4,77	21,32	44,70	67,51
1,82	11,60	2,58	3,78	4,77	21,32	44,70	67,51
2,00	11,60	2,58	3,78	4,77	21,32	44,70	67,51
2,18	11,60	2,58	3,78	4,77	21,32	44,70	67,51
2,37	11,60	2,58	3,78	4,77	21,32	44,70	67,51
2,55	11,60	2,58	3,78	4,77	21,32	44,70	67,51
2,73	11,60	2,58	3,78	4,77	21,32	44,70	67,51
2,91	11,60	2,58	3,78	4,77	21,32	44,70	67,51
3,09	11,60	2,58	3,78	4,77	21,32	44,70	67,51
3,28	11,60	2,58	3,78	4,77	21,32	44,70	67,51
3,46	11,60	2,58	3,78	4,77	21,32	44,70	67,51
3,64	11,60	2,58	3,78	4,77	21,32	44,70	67,51
	Totale	51,54	75,63	95,48			
	netta	11,90	24,96	37,69			

	Φ	0,23	0,33	0,39			
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Sviluppo integrali di convoluzione

Segue lo sviluppo degli integrali di convoluzione in forma discreta organizzati in maniera da formare la cosiddetta "matrice di convoluzione".

Le tabelle che seguono riportano i risultati per i diversi periodi di ritorno.

Tempo di ritorno = 5 anni

Pioggia Efficace [mm*km ²]	9.44	11.21	13.79	17.92	25.41	42.28	102.90	61.12	31.88	21.04	15.59	12.37	10.25	8.76	8.17	7.66	7.21	6.81	6.46	6.14	Totale [m ³ /s]	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0.18	2.77																					0.77
0.36	2.97	3.29																				1.74
0.55	3.61	3.52	4.05																			3.10
0.73	4.88	4.28	4.33	5.26																		5.21
0.91	5.25	5.79	5.27	5.63	7.45																	8.17
1.09	5.27	6.23	7.13	6.85	7.98	12.40																12.74
1.27	5.11	6.26	7.67	9.27	9.71	13.28	30.18															22.63
1.46	4.65	6.06	7.70	9.96	13.14	16.16	32.33	17.93														29.98
1.64	3.98	5.52	7.46	10.01	14.12	21.86	39.32	19.21	9.35													36.34
1.82	3.72	4.72	6.79	9.70	14.19	23.49	53.20	23.36	10.02	6.17												43.15
2.00	3.26	4.42	5.81	8.83	13.74	23.61	57.18	31.60	12.18	6.61	4.57											47.73
2.18	2.52	3.87	5.44	7.55	12.51	22.87	57.46	33.96	16.48	8.04	4.90	3.63										49.79
2.37	1.53	2.99	4.77	7.07	10.70	20.82	55.66	34.13	17.72	10.88	5.96	3.89	3.01									49.75
2.55	0.96	1.81	3.68	6.20	10.02	17.80	50.66	33.06	17.80	11.69	8.06	4.73	3.22	2.57								47.85
2.73	0.62	1.14	2.23	4.78	8.78	16.67	43.32	30.09	17.24	11.75	8.67	6.39	3.92	2.75	2.40							44.66
2.91	0.35	0.74	1.41	2.90	6.78	14.61	40.56	25.73	15.70	11.38	8.71	6.87	5.30	3.35	2.57	2.25						41.44
3.09	0.23	0.42	0.91	1.83	4.11	11.28	35.56	24.09	13.42	10.36	8.43	6.90	5.69	4.53	3.12	2.41	2.11					37.62
3.28	0.10	0.27	0.52	1.18	2.59	6.84	27.45	21.12	12.57	8.86	7.68	6.69	5.72	4.87	4.22	2.93	2.26	2.00				32.74
3.46	0.06	0.12	0.33	0.67	1.67	4.31	16.65	16.30	11.02	8.30	6.57	6.09	5.54	4.89	4.54	3.96	2.75	2.14	1.89			27.17
3.64	0.03	0.07	0.15	0.43	0.95	2.78	10.49	9.89	8.50	7.27	6.15	5.21	5.05	4.74	4.56	4.25	3.73	2.60	2.03	1.80		22.41
3.82		0.03	0.09	0.20	0.61	1.59	6.75	6.23	5.16	5.61	5.39	4.87	4.31	4.31	4.42	4.28	4.00	3.52	2.47	1.93		18.27
4.00			0.04	0.12	0.28	1.02	3.87	4.01	3.25	3.40	4.16	4.27	4.04	3.69	4.02	4.14	4.02	3.78	3.34	2.35		14.95
4.19				0.05	0.17	0.47	2.47	2.30	2.09	2.15	2.52	3.30	3.54	3.45	3.44	3.77	3.90	3.80	3.59	3.17		12.27
4.37					0.07	0.28	1.14	1.47	1.20	1.38	1.59	2.00	2.73	3.03	3.22	3.22	3.55	3.68	3.60	3.41		9.88
4.55						0.12	0.67	0.68	0.77	0.79	1.02	1.26	1.66	2.34	2.82	3.02	3.03	3.35	3.49	3.43		7.90
4.73							0.30	0.40	0.35	0.51	0.59	0.81	1.04	1.42	2.18	2.65	2.84	2.87	3.18	3.32		6.23

2.18	5.28	8.12	11.40	15.82	26.23	47.95	120.48	71.21	34.56	16.86	10.27	7.60									104.39
2.37	3.20	6.27	10.00	14.82	22.43	43.64	116.70	71.56	37.15	22.81	12.49	8.15	6.30								104.31
2.55	2.02	3.80	7.71	12.99	21.00	37.32	106.23	69.32	37.33	24.52	16.90	9.91	6.75	5.39							100.33
2.73	1.30	2.40	4.68	10.02	18.41	34.94	90.84	63.10	36.16	24.64	18.17	13.40	8.21	5.77	5.02						93.63
2.91	0.74	1.54	2.95	6.08	14.21	30.64	85.05	53.95	32.91	23.87	18.26	14.41	11.11	7.02	5.38	4.71					86.90
3.09	0.48	0.88	1.90	3.83	8.62	23.64	74.57	50.52	28.14	21.73	17.69	14.48	11.94	9.49	6.55	5.04	4.43				78.87
3.28	0.22	0.56	1.09	2.47	5.43	14.34	57.55	44.29	26.35	18.58	16.10	14.02	12.00	10.20	8.86	6.13	4.75	4.19			68.65
3.46	0.13	0.26	0.70	1.41	3.50	9.04	34.90	34.18	23.10	17.39	13.77	12.77	11.62	10.25	9.52	8.30	5.77	4.49	3.97		56.96
3.64	0.06	0.15	0.32	0.90	2.00	5.82	22.00	20.73	17.83	15.25	12.89	10.92	10.58	9.93	9.56	8.92	7.81	5.46	4.25	3.78	46.99
3.82		0.07	0.19	0.42	1.28	3.33	14.16	13.07	10.81	11.77	11.30	10.22	9.05	9.04	9.26	8.96	8.40	7.38	5.17	4.04	38.31
4.00			0.08	0.25	0.59	2.13	8.11	8.41	6.81	7.14	8.72	8.96	8.47	7.73	8.43	8.68	8.44	7.93	7.00	4.92	31.34
4.19				0.11	0.35	0.98	5.19	4.82	4.39	4.50	5.29	6.92	7.43	7.24	7.21	7.90	8.17	7.97	7.52	6.65	25.73
4.37					0.15	0.58	2.38	3.08	2.51	2.90	3.33	4.19	5.73	6.35	6.75	6.76	7.44	7.72	7.56	7.15	20.72
4.55						0.26	1.41	1.42	1.61	1.66	2.15	2.64	3.48	4.90	5.92	6.33	6.36	7.03	7.32	7.19	16.57
4.73							0.62	0.84	0.74	1.06	1.23	1.70	2.19	2.97	4.57	5.55	5.96	6.01	6.66	6.96	13.07
4.92								0.37	0.44	0.49	0.79	0.97	1.41	1.87	2.77	4.28	5.22	5.63	5.70	6.34	10.08
5.10									0.19	0.29	0.36	0.62	0.81	1.21	1.75	2.60	4.03	4.93	5.34	5.42	7.65
5.28										0.13	0.21	0.29	0.52	0.69	1.12	1.64	2.44	3.81	4.68	5.07	5.72
5.46											0.09	0.17	0.24	0.44	0.64	1.05	1.54	2.31	3.61	4.45	4.04
5.64												0.07	0.14	0.20	0.41	0.60	0.99	1.46	2.19	3.43	2.64
5.83													0.06	0.12	0.19	0.39	0.57	0.94	1.38	2.08	1.59
6.01														0.05	0.11	0.18	0.36	0.54	0.89	1.31	0.96
6.19															0.05	0.10	0.17	0.34	0.51	0.84	0.56
6.37																0.05	0.10	0.16	0.33	0.48	0.31
6.55																	0.04	0.09	0.15	0.31	0.17
6.74																		0.04	0.09	0.14	0.08
6.92																			0.04	0.08	0.03
7.10																				0.04	0.01
7.28																					0

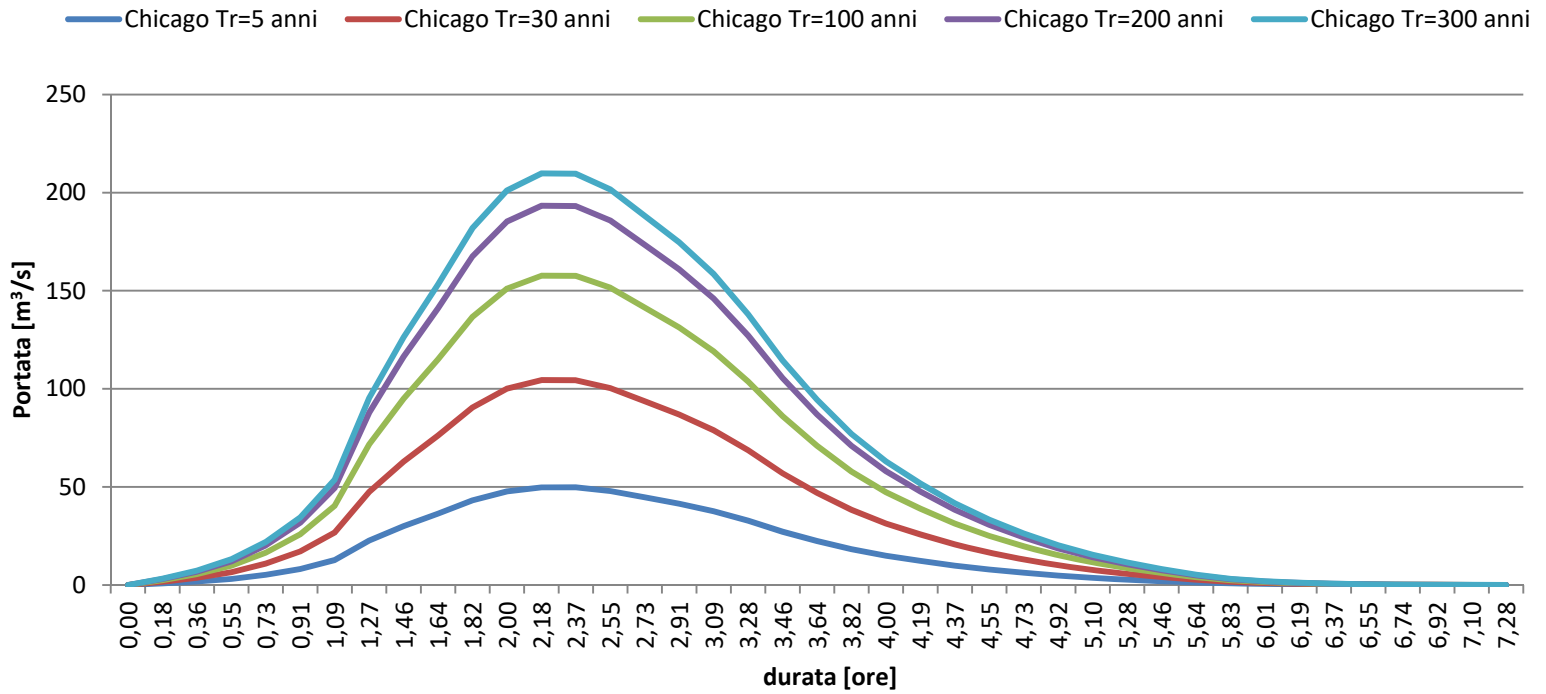
Tempo di ritorno = 100 anni

Pioggia Efficace [mm*km²]	29,90	35,48	43,68	56,76	80,46	133,87	325,84	193,54	100,95	66,64	49,38	39,16	32,45	27,73	25,87	24,25	22,82	21,56	20,44	19,44	Totale [m³/s]	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.18	8.77																					2.44
0.36	9.40	10.41																				5.50
0.55	11.43	11.15	12.81																			9.83
0.73	15.46	13.56	13.73	16.65																		16.50
0.91	16.62	18.35	16.69	17.84	23.60																	25.86
1.09	16.70	19.72	22.58	21.69	25.28	39.27																40.34
1.27	16.17	19.82	24.27	29.34	30.75	42.07	95.57															71.67
1.46	14.72	19.19	24.39	31.54	41.60	51.16	102.39	56.77														94.93
1.64	12.59	17.47	23.63	31.69	44.71	69.21	124.52	60.82	29.61													115.07
1.82	11.79	14.94	21.51	30.70	44.93	74.39	168.46	73.96	31.72	19.55												136.65
2.00	10.34	13.99	18.39	27.95	43.52	74.76	181.07	100.06	38.58	20.94	14.48											151.13
2.18	7.98	12.26	17.22	23.90	39.62	72.41	181.96	107.55	52.19	25.47	15.52	11.48										157.65
2.37	4.84	9.47	15.10	22.37	33.88	65.92	176.25	108.08	56.10	34.45	18.87	12.30	9.52									157.54
2.55	3.05	5.74	11.65	19.62	31.72	56.36	160.44	104.69	56.37	37.03	25.53	14.96	10.20	8.13								151.53
2.73	1.96	3.62	7.07	15.14	27.81	52.77	137.19	95.29	54.61	37.21	27.44	20.24	12.40	8.72	7.59							141.41
2.91	1.12	2.33	4.45	9.18	21.46	46.27	128.45	81.48	49.71	36.05	27.57	21.76	16.78	10.60	8.13	7.11						131.24
3.09	0.72	1.33	2.87	5.79	13.02	35.71	112.62	76.30	42.50	32.81	26.71	21.87	18.03	14.34	9.89	7.62	6.69					119.11
3.28	0.33	0.85	1.64	3.73	8.20	21.66	86.92	66.89	39.80	28.06	24.31	21.18	18.12	15.41	13.37	9.27	7.17	6.32				103.68
3.46	0.20	0.39	1.05	2.13	5.28	13.65	52.71	51.63	34.89	26.27	20.79	19.28	17.55	15.49	14.37	12.53	8.72	6.78	6.00			86.03
3.64	0.09	0.23	0.48	1.36	3.02	8.79	33.22	31.31	26.93	23.03	19.47	16.49	15.98	15.00	14.45	13.47	11.80	8.24	6.42	5.70		70.97
3.82		0.10	0.29	0.63	1.93	5.03	21.39	19.73	16.33	17.78	17.07	15.44	13.66	13.66	13.99	13.54	12.68	11.15	7.81	6.11		57.86
4.00			0.13	0.37	0.89	3.22	12.24	12.71	10.29	10.78	13.17	13.53	12.79	11.68	12.74	13.11	12.74	11.98	10.57	7.43		47.33
4.19				0.16	0.53	1.48	7.83	7.27	6.63	6.79	7.99	10.44	11.22	10.93	10.89	11.94	12.34	12.04	11.36	10.05		38.86
4.37					0.23	0.88	3.60	4.65	3.79	4.37	5.03	6.33	8.66	9.59	10.20	10.21	11.24	11.66	11.42	10.80		31.29
4.55						0.39	2.13	2.14	2.43	2.50	3.24	3.99	5.25	7.40	8.94	9.56	9.61	10.62	11.06	10.85		25.03
4.73							0.94	1.27	1.12	1.60	1.86	2.57	3.31	4.49	6.90	8.38	9.00	9.08	10.07	10.51		19.74
4.92								0.56	0.66	0.74	1.19	1.47	2.13	2.83	4.18	6.47	7.89	8.50	8.61	9.57		15.22

Tempo di ritorno = 300 anni

Pioggia Efficace [mm*km ²]	39.79	47.22	58.13	75.53	107.08	178.15	433.60	257.55	134.34	88.68	65.71	52.11	43.18	36.91	34.42	32.26	30.37	28.69	27.20	25.87	Totale [m ³ /s]	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0.18	11.67																					3.24
0.36	12.50	13.85																				7.32
0.55	15.21	14.84	17.05																			13.08
0.73	20.57	18.04	18.26	22.15																		21.95
0.91	22.11	24.41	22.21	23.73	31.41																	34.41
1.09	22.22	26.24	30.05	28.86	33.65	52.25																53.69
1.27	21.52	26.37	32.30	39.05	40.92	55.98	127.18															95.37
1.46	19.59	25.54	32.46	41.97	55.36	68.08	136.25	75.54														126.33
1.64	16.75	23.25	31.44	42.18	59.50	92.10	165.70	80.93	39.40													153.13
1.82	15.69	19.88	28.62	40.85	59.79	99.00	224.17	98.42	42.21	26.01												181.85
2.00	13.75	18.61	24.47	37.19	57.92	99.48	240.95	133.15	51.34	27.87	19.27											201.11
2.18	10.61	16.32	22.91	31.80	52.72	96.36	242.13	143.12	69.45	33.89	20.65	15.28										209.79
2.37	6.44	12.60	20.09	29.77	45.08	87.71	234.54	143.82	74.65	45.85	25.11	16.37	12.67									209.64
2.55	4.06	7.64	15.50	26.10	42.21	75.00	213.49	139.31	75.02	49.28	33.97	19.91	13.57	10.83								201.64
2.73	2.61	4.81	9.40	20.15	37.01	70.23	182.56	126.81	72.67	49.52	36.52	26.94	16.50	11.60	10.10							188.17
2.91	1.50	3.10	5.93	12.22	28.56	61.57	170.93	108.43	66.15	47.97	36.69	28.96	22.33	14.10	10.82	9.46						174.64
3.09	0.96	1.77	3.82	7.70	17.32	47.52	149.86	101.53	56.56	43.66	35.54	29.10	24.00	19.08	13.15	10.14	8.91					158.51
3.28	0.44	1.13	2.18	4.96	10.92	28.82	115.66	89.02	52.96	37.34	32.35	28.18	24.11	20.51	17.80	12.33	9.54	8.42				137.96
3.46	0.26	0.52	1.40	2.84	7.03	18.16	70.14	68.70	46.43	34.96	27.67	25.66	23.36	20.61	19.13	16.68	11.61	9.02	7.98			114.48
3.64	0.11	0.31	0.64	1.82	4.02	11.69	44.21	41.66	35.83	30.65	25.90	21.94	21.26	19.96	19.22	17.93	15.70	10.97	8.55	7.59		94.44
3.82		0.14	0.38	0.83	2.57	6.69	28.46	26.26	21.73	23.66	22.71	20.54	18.18	18.17	18.62	18.02	16.88	14.83	10.40	8.13		77.00
4.00			0.17	0.49	1.18	4.28	16.29	16.91	13.70	14.34	17.53	18.01	17.02	15.54	16.95	17.45	16.96	15.95	14.06	9.88		62.98
4.19				0.22	0.70	1.97	10.42	9.68	8.82	9.04	10.63	13.90	14.92	14.55	14.49	15.89	16.43	16.02	15.12	13.37		51.71
4.37					0.31	1.16	4.79	6.19	5.05	5.82	6.70	8.43	11.52	12.76	13.57	13.58	14.95	15.52	15.19	14.37		41.64
4.55						0.51	2.84	2.85	3.23	3.33	4.31	5.31	6.99	9.84	11.90	12.72	12.79	14.13	14.71	14.44		33.31
4.73							1.25	1.68	1.48	2.13	2.47	3.42	4.40	5.97	9.18	11.15	11.97	12.08	13.39	13.99		26.27

Idrogrammi di piena



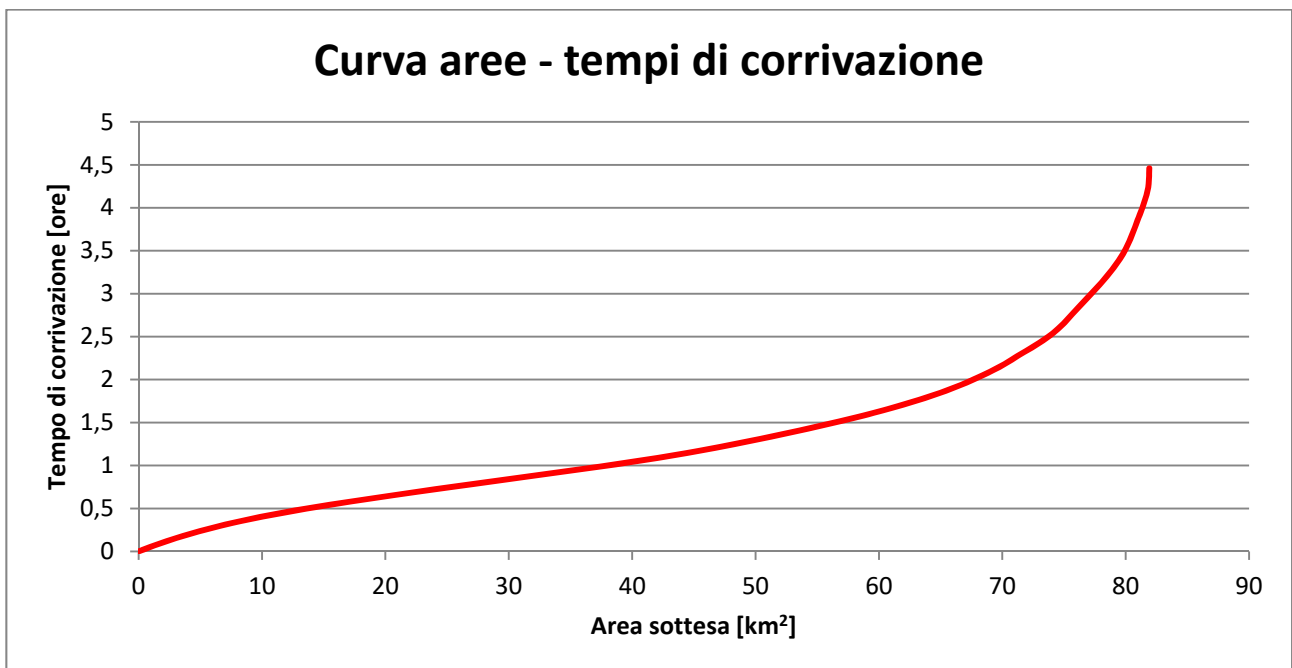
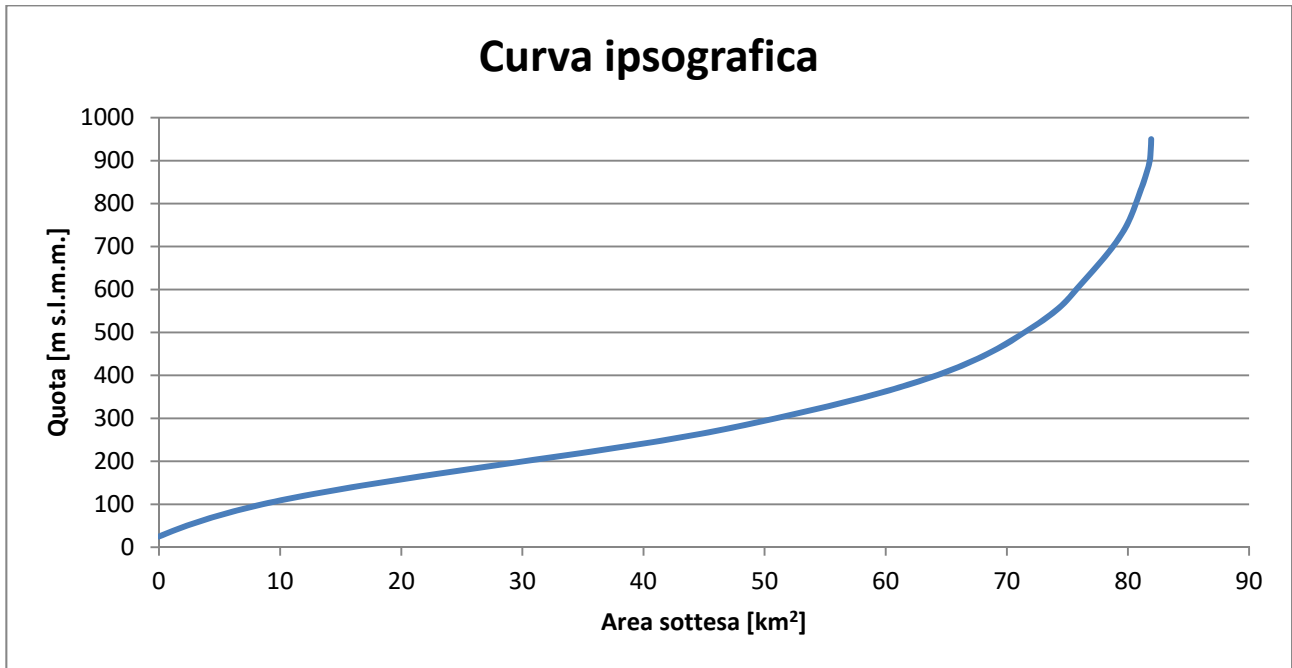
Bacino 3**Dati input e tempo di corrivazione bacino**

DATI DI INPUT	
Area Bacino [m ²]	81918828.18
Area Bacino [ha]	81918.83
Area Bacino [km ²]	81.92
Lunghezza Asta [m]	14421.72
Lunghezza Asta [km]	14.42172
Zmax [m s.l.m.m]	950
Zmed [m s.l.m.m]	287.94
Zmin [m s.l.m.m]	25
Tc (Giandotti) [ore]	4.458
Tc (Giandotti) [min]	267.51

Curva ipsografica e curva aree-tempi

Quota [m]	Area Sottesa [km²]	Tempo Corrivazione [ore]
25	0	0
25	0	0
50	2.274459377	0.120540541
75	5.093184639	0.241081081
100	8.536338041	0.361621622
125	12.97210082	0.482162162
150	18.16434123	0.602702703
175	24.02281614	0.723243243
200	30.12131152	0.843783784
225	36.23883099	0.964324324
250	41.93911693	1.084864865
275	46.73533008	1.205405405
300	50.89686633	1.325945946
325	54.7889414	1.446486486
350	58.33956221	1.567027027
375	61.46755934	1.687567568
400	64.19632122	1.808108108
425	66.48756655	1.928648649
450	68.39155061	2.049189189
475	70.0496018	2.16972973
500	71.41560538	2.29027027
525	72.82267859	2.410810811
550	74.01834205	2.531351351
575	74.96279439	2.651891892
600	75.7253616	2.772432432
625	76.52985639	2.892972973
650	77.30452814	3.013513514
675	78.0503467	3.134054054
700	78.77913684	3.254594595
725	79.38274107	3.375135135
750	79.91144265	3.495675676

775	80.31043543	3.616216216
800	80.65979775	3.736756757
825	80.96611342	3.857297297
850	81.2958082	3.977837838
875	81.57481872	4.098378378
900	81.80791966	4.218918919
925	81.88533088	4.339459459
950	81.91882818	4.46

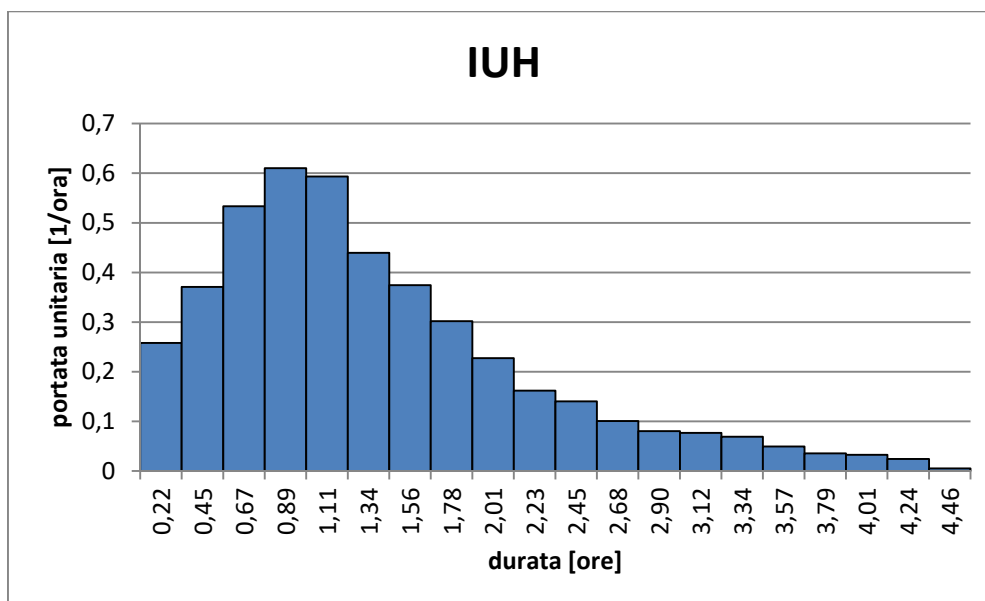


Idrogramma unitario istantaneo

Step	T _c [ore]	T _c [min]	Quota [m]	A [km ²]	ΔA [km ²]	ΔA/dt	IUH
0	0.00	0	25	0			
1	0.22	13.37527	71	4.714867	4.714867	21.15037	0.258187

2	0.45	26.75054	117	11.48576	6.770894	30.37349	0.370775
3	0.67	40.12581	163	21.22932	9.743556	43.70852	0.533559
4	0.89	53.50109	209	32.37132	11.142	49.9818	0.610138
5	1.11	66.87636	256	43.20526	10.83394	48.59988	0.593269
6	1.34	80.25163	302	51.2297	8.024441	35.99676	0.43942
7	1.56	93.6269	348	58.06975	6.840043	30.68368	0.374562
8	1.78	107.0022	394	63.5833	5.513552	24.73319	0.301923
9	2.01	120.3774	441	67.73521	4.151912	18.62502	0.227359
10	2.23	133.7527	487	70.69207	2.956864	13.26417	0.161918
11	2.45	147.128	533	73.2584	2.56633	11.51227	0.140533
12	2.68	160.5033	579	75.0963	1.837894	8.244591	0.100643
13	2.90	173.8785	626	76.56691	1.470608	6.596986	0.080531
14	3.12	187.2538	672	77.96841	1.401506	6.287002	0.076747
15	3.34	200.6291	718	79.2284	1.259991	5.652181	0.068997
16	3.57	214.0043	764	80.13087	0.902469	4.048376	0.049419
17	3.79	227.3796	810	80.77958	0.648712	2.91005	0.035524
18	4.01	240.7549	857	81.37929	0.599706	2.690216	0.03284
19	4.24	254.1302	903	81.82349	0.444203	1.992646	0.024325
20	4.46	267.5054	949	81.91803	0.094533	0.424064	0.005177

Dove $dt = T_c/20 = 0.223$ ore



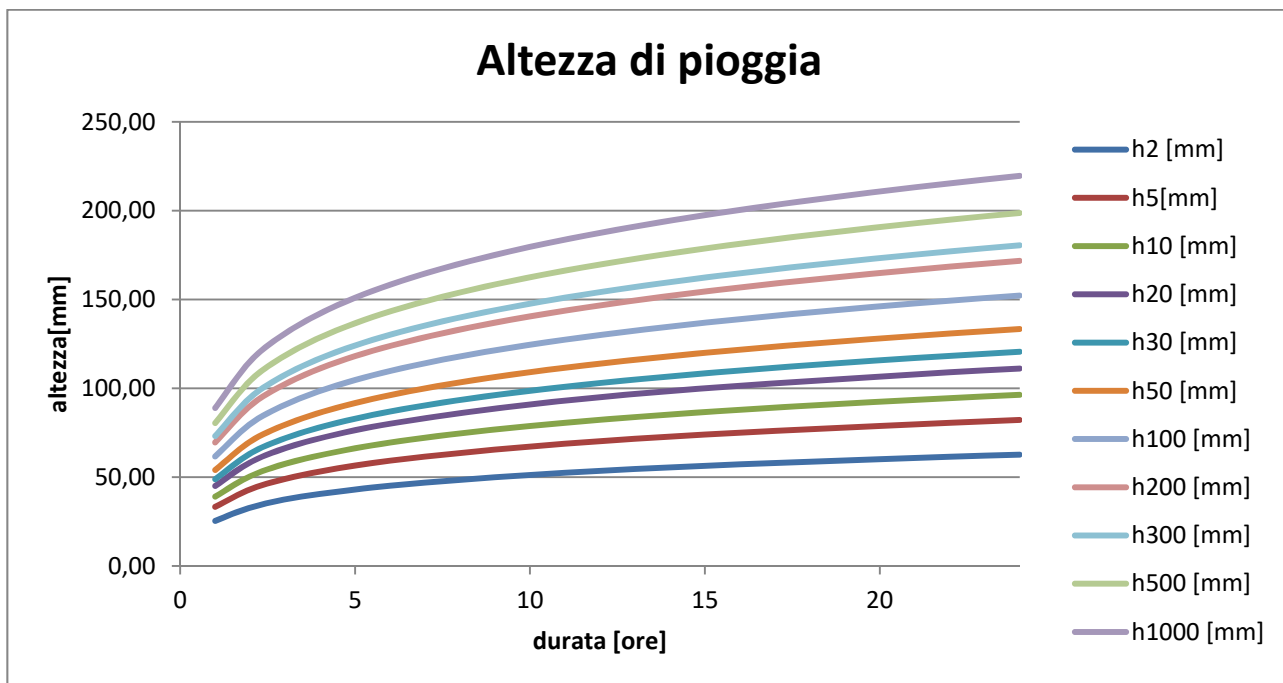
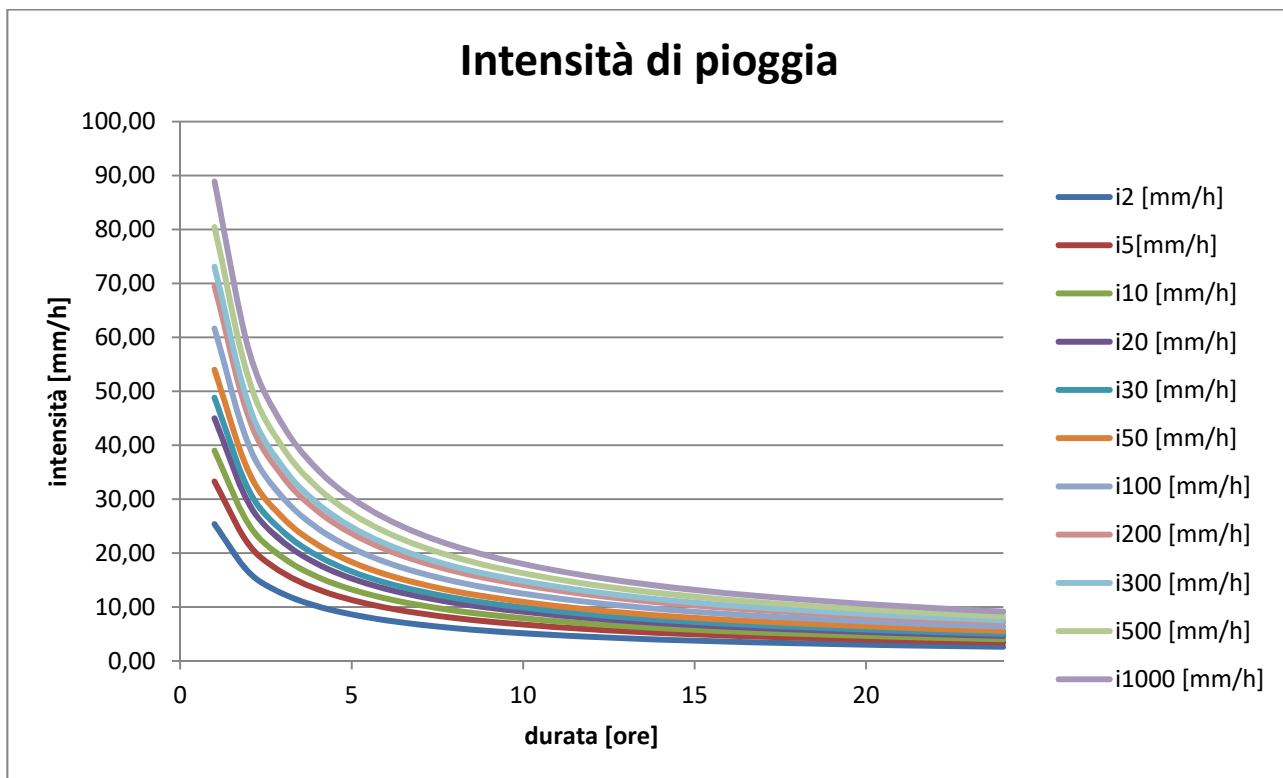
Curva di probabilità pluviometrica

Parametri di distribuzione	
Area omogenea	A1
$m(l_0)$ (mm/ora)	77.08
d_c (ore)	0.3661
C	0.7995
$D \cdot 10^5$	3.6077
ρ^2	0.9994
Z_{med} [m]	287.94

d	$\mu(i(d))$ [mm/h]	$\mu(h(d))$ [mm]	i_2 [mm/h]	i_5 [mm/h]	i_{10} [mm/h]	i_{20} [mm/h]	i_{30} [mm/h]	i_{50} [mm/h]	i_{100} [mm/h]	i_{200} [mm/h]	i_{300} [mm/h]	i_{500} [mm/h]	i_{1000} [mm/h]
1	27.27	27.27	25.36	33.27	38.99	44.99	48.81	53.99	61.63	69.53	73.08	80.44	88.90
2	17.68	35.35	16.44	21.57	25.28	29.17	31.64	35.00	39.95	45.08	47.38	52.15	57.63
3	13.38	40.15	12.45	16.33	19.14	22.08	23.96	26.50	30.25	34.13	35.87	39.49	43.63
4	10.90	43.60	10.14	13.30	15.59	17.99	19.51	21.58	24.64	27.80	29.21	32.16	35.54
5	9.26	46.32	8.62	11.30	13.25	15.29	16.58	18.34	20.94	23.62	24.83	27.33	30.20
6	8.10	48.57	7.53	9.88	11.58	13.36	14.49	16.03	18.30	20.64	21.70	23.88	26.39
7	7.21	50.50	6.71	8.80	10.32	11.90	12.91	14.29	16.31	18.40	19.34	21.28	23.52
8	6.53	52.20	6.07	7.96	9.33	10.77	11.68	12.92	14.75	16.64	17.49	19.25	21.27
9	5.97	53.72	5.55	7.28	8.54	9.85	10.68	11.82	13.49	15.22	16.00	17.61	19.46
10	5.51	55.10	5.12	6.72	7.88	9.09	9.86	10.91	12.45	14.05	14.77	16.25	17.96
11	5.12	56.36	4.76	6.25	7.33	8.45	9.17	10.14	11.58	13.07	13.73	15.11	16.70
12	4.79	57.53	4.46	5.85	6.86	7.91	8.58	9.49	10.83	12.22	12.85	14.14	15.63
13	4.51	58.61	4.19	5.50	6.45	7.44	8.07	8.93	10.19	11.50	12.08	13.30	14.70
14	4.26	59.63	3.96	5.20	6.09	7.03	7.62	8.43	9.63	10.86	11.41	12.56	13.88
15	4.04	60.58	3.76	4.93	5.78	6.66	7.23	8.00	9.13	10.30	10.82	11.91	13.17
16	3.84	61.48	3.57	4.69	5.50	6.34	6.88	7.61	8.68	9.80	10.30	11.34	12.53
17	3.67	62.34	3.41	4.47	5.24	6.05	6.56	7.26	8.29	9.35	9.83	10.82	11.95
18	3.51	63.15	3.26	4.28	5.02	5.79	6.28	6.95	7.93	8.95	9.40	10.35	11.44
19	3.36	63.93	3.13	4.10	4.81	5.55	6.02	6.66	7.60	8.58	9.02	9.93	10.97
20	3.23	64.67	3.01	3.95	4.62	5.34	5.79	6.40	7.31	8.25	8.67	9.54	10.54
21	3.11	65.39	2.90	3.80	4.45	5.14	5.57	6.17	7.04	7.94	8.34	9.19	10.15
22	3.00	66.07	2.79	3.66	4.29	4.96	5.38	5.95	6.79	7.66	8.05	8.86	9.79
23	2.90	66.73	2.70	3.54	4.15	4.79	5.19	5.74	6.56	7.40	7.78	8.56	9.46
24	2.81	67.37	2.61	3.42	4.01	4.63	5.02	5.56	6.34	7.16	7.52	8.28	9.15

d	$\mu(i(d))$ [mm/h]	$\mu(h(d))$ [mm]	h_2 [mm]	h_5 [mm]	h_{10} [mm]	h_{20} [mm]	h_{30} [mm]	h_{50} [mm]	h_{100} [mm]	h_{200} [mm]	h_{300} [mm]	h_{500} [mm]	h_{1000} [mm]
1	27.27	27.27	33.27	38.99	44.99	48.81	53.99	61.63	69.53	73.08	80.44	88.90	25.36
2	17.68	35.35	43.13	50.56	58.34	63.29	70.00	79.90	90.15	94.75	104.30	115.26	32.88
3	13.38	40.15	48.99	57.42	66.25	71.88	79.51	90.75	102.39	107.61	118.46	130.90	37.34
4	10.90	43.60	53.20	62.35	71.95	78.05	86.34	98.55	111.19	116.86	128.63	142.15	40.55
5	9.26	46.32	56.51	66.24	76.43	82.91	91.71	104.68	118.11	124.14	136.64	151.00	43.08
6	8.10	48.57	59.26	69.46	80.14	86.94	96.17	109.77	123.86	130.17	143.28	158.34	45.17
7	7.21	50.50	61.61	72.22	83.33	90.40	100.00	114.14	128.78	135.35	148.99	164.64	46.97
8	6.53	52.20	63.69	74.65	86.13	93.44	103.36	117.98	133.12	139.90	154.00	170.18	48.55
9	5.97	53.72	65.54	76.82	88.64	96.16	106.37	121.41	136.99	143.97	158.48	175.13	49.96
10	5.51	55.10	67.22	78.79	90.91	98.63	109.09	124.52	140.50	147.66	162.54	179.62	51.24
11	5.12	56.36	68.76	80.59	92.99	100.88	111.59	127.37	143.72	151.04	166.26	183.73	52.41
12	4.79	57.53	70.18	82.26	94.92	102.97	113.90	130.01	146.69	154.17	169.70	187.53	53.50
13	4.51	58.61	71.50	83.81	96.71	104.91	116.05	132.46	149.46	157.08	172.90	191.07	54.51
14	4.26	59.63	72.74	85.26	98.38	106.73	118.06	134.75	152.04	159.80	175.89	194.38	55.45
15	4.04	60.58	73.91	86.63	99.96	108.44	119.95	136.91	154.48	162.36	178.71	197.49	56.34
16	3.84	61.48	75.01	87.92	101.45	110.05	121.74	138.95	156.78	164.77	181.37	200.43	57.18
17	3.67	62.34	76.05	89.14	102.86	111.59	123.43	140.89	158.96	167.07	183.90	203.22	57.98
18	3.51	63.15	77.05	90.31	104.20	113.04	125.04	142.73	161.04	169.25	186.30	205.88	58.73
19	3.36	63.93	77.99	91.42	105.48	114.44	126.58	144.48	163.02	171.33	188.59	208.41	59.46

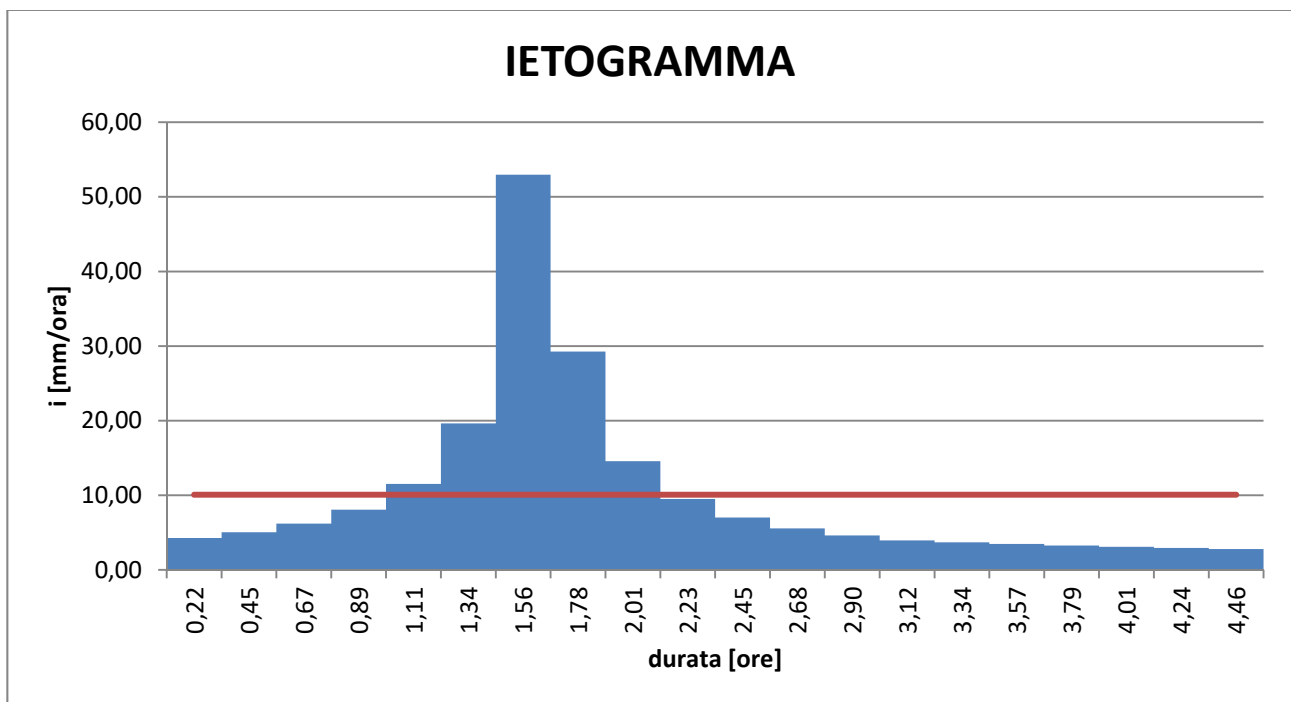
20	3.23	64.67	78.90	92.48	106.71	115.77	128.05	146.16	164.92	173.33	190.79	210.84	60.15
21	3.11	65.39	79.77	93.50	107.89	117.04	129.47	147.77	166.74	175.24	192.89	213.16	60.81
22	3.00	66.07	80.61	94.48	109.02	118.27	130.82	149.32	168.48	177.07	194.91	215.39	61.45
23	2.90	66.73	81.41	95.43	110.11	119.45	132.13	150.81	170.17	178.84	196.86	217.55	62.06
24	2.81	67.37	82.19	96.34	111.16	120.59	133.39	152.25	171.79	180.55	198.74	219.62	62.65



Ietogramma di progetto - Ietogramma Chicago

d [ore]	$\mu(h(d))$ [mm]	$\Delta \mu(h(d))$ [mm]	i [mm/ora]	Chicago i [mm/ora]	Costante i [mm/ora]
0.22	11.81	11.81	52.96	4.27	10.08
0.45	18.33	6.52	29.26	5.05	10.08

0.67	22.70	4.37	19.62	6.21	10.08
0.89	25.95	3.25	14.57	8.08	10.08
1.11	28.52	2.57	11.52	11.52	10.08
1.34	30.64	2.12	9.50	19.62	10.08
1.56	32.44	1.80	8.08	52.96	10.08
1.78	34.01	1.57	7.02	29.26	10.08
2.01	35.39	1.38	6.21	14.57	10.08
2.23	36.63	1.24	5.57	9.50	10.08
2.45	37.76	1.13	5.05	7.02	10.08
2.68	38.79	1.03	4.63	5.57	10.08
2.90	39.74	0.95	4.27	4.63	10.08
3.12	40.63	0.88	3.96	3.96	10.08
3.34	41.45	0.82	3.70	3.70	10.08
3.57	42.22	0.77	3.47	3.47	10.08
3.79	42.95	0.73	3.27	3.27	10.08
4.01	43.64	0.69	3.09	3.09	10.08
4.24	44.30	0.65	2.94	2.94	10.08
4.46	44.92	0.62	2.79	2.79	10.08



Pioggia efficace (metodo Curve Number)

CODICE	INDICE	AREA	AREA*INDICE
111-A	89	0	0
111-C	94	0	0
112-A	77	128699.5	9909860.373
112-B	85	858160.1	72943610.12
112-C	90	323195.5	29087590.7
112-D	92	0	0
121-A	81	104525.2	8466541.431
121-B	88	156188.7	13744602.49
121-C	91	34952.24	3180653.97

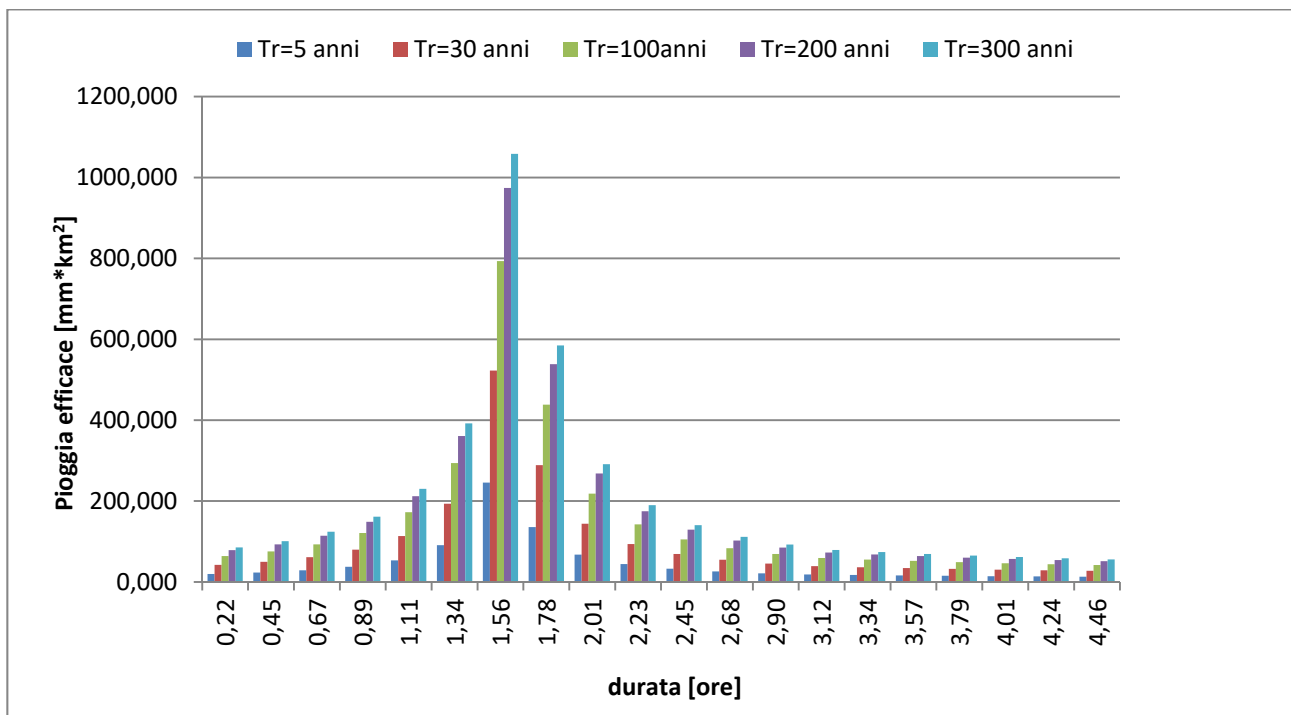
211-A	61	1155464	70483275.9
211-B	73	1053.985	76940.93219
211-C	81	635936.3	51510840.34
211-D	84	0	0
221-A	76	0	0
221-C	90	0	0
221-D	93	0	0
222-A	43	109154.8	4693658.118
222-C	76	796212.9	60512183.34
223-A	43	535129.4	23010562.08
223-B	65	2402371	156154103
223-C	76	3807411	289363247.4
223-D	82	0	0
231-A	49	0	0
231-C	79	0	0
231-D	84	0	0
241-A	61	195582.4	11930524.98
241-B	73	924696.9	67502873.12
241-C	81	164313.9	13309424.07
241-D	84	0	0
242-A	61	859056.7	52402456.21
242-B	73	988440	72156121.51
242-C	81	4329774	350711666.3
242-D	84	0	0
243-A	61	1287906	78562237.4
243-B	73	5213648	380596310.2
243-C	81	7714808	624899476.5
243-D	84	0	0
311-A	36	4924460	177280548.5
311-B	60	5399857	323991429.3
311-C	73	29984326	2188855810
311-D	79	0	0
312-A	36	75234.17	2708430.074
312-B	60	0	0
312-C	73	649424.6	47407995.81
312-D	79	0	0
313-A	36	22.03427	793.2338143
313-B	60	0	0
313-C	73	146.7261	10711.00488
313-D	79	0	0
321-A	49	280018.8	13720920.71
321-B	69	101067.1	6973630.432
321-C	79	1106093	87381356.28
321-D	84	0	0
323-A	35	294693.8	10314283.5
323-B	56	303768.8	17011054.06
323-C	70	1731053	121173692.1
323-D	77	0	0

324-A	35	624047.8	21841672.11
324-B	56	1142689	63990561.28
324-C	70	1377201	96404038.28
324-D	77	0	0
331-A	46	794417.8	36543220.63
331-C	77	81725.16	6292837.168
331-D	82	0	0
333-A	63	213152.7	13428621.07
333-C	85	108752.1	9243927.601
333-D	88	0	0
511-A	98	0	0
511-C	98	0	0
511-D	98	0	0
Somma		81918829.18	5689784294

Asciutto	CN I	48.86	S I	265.90	IA I	21.27
Medio	CN II	69.46	S II	111.68	IA II	8.93
Umido	CN III	83.95	S III	48.56	IA III	3.88

Si determina la pioggia totale media e quella efficace.

		Tr=5	Tr=30	Tr=100	Tr=200	Tr=300	Tr=5	Tr=30	Tr=100	Tr=200	Tr=300
d	Chicago	Pioggia Totale media	Pioggia Totale media	Pioggia Totale media	Pioggia Totale media	Pioggia Totale media	Pioggia efficace	Pioggia efficace	Pioggia efficace	Pioggia efficace	Pioggia efficace
[h]	[mm/h]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm*kmq]	[mm*kmq]	[mm*kmq]	[mm*kmq]	[mm*kmq]
0.22	4.27	1.075	1.578	1.992	2.248	2.362	19.792	42.090	63.897	78.486	85.258
0.45	5.05	1.274	1.869	2.359	2.662	2.798	23.442	49.851	75.679	92.958	100.979
0.67	6.21	1.566	2.298	2.901	3.273	3.440	28.820	61.289	93.044	114.287	124.149
0.89	8.08	2.036	2.988	3.772	4.256	4.473	37.479	79.702	120.996	148.622	161.446
1.11	11.52	2.905	4.262	5.381	6.071	6.381	53.462	113.691	172.595	212.002	230.295
1.34	19.62	4.946	7.257	9.163	10.339	10.866	91.037	193.600	293.905	361.009	392.159
1.56	52.96	13.350	19.587	24.730	27.903	29.326	245.701	522.508	793.221	974.331	1058.402
1.78	29.26	7.376	10.822	13.663	15.417	16.203	135.750	288.687	438.257	538.320	584.769
2.01	14.57	3.674	5.390	6.805	7.678	8.070	67.611	143.782	218.276	268.113	291.247
2.23	9.50	2.396	3.515	4.438	5.008	5.263	44.093	93.769	142.350	174.852	189.939
2.45	7.02	1.770	2.597	3.279	3.700	3.889	32.581	69.287	105.185	129.201	140.349
2.68	5.57	1.404	2.061	2.602	2.935	3.085	25.847	54.967	83.446	102.498	111.342
2.90	4.63	1.166	1.711	2.160	2.437	2.561	21.457	45.630	69.271	85.087	92.429
3.12	3.96	0.998	1.465	1.850	2.087	2.193	18.377	39.080	59.328	72.874	79.162
3.34	3.70	0.932	1.368	1.727	1.949	2.048	17.159	36.490	55.396	68.044	73.915
3.57	3.47	0.875	1.283	1.620	1.828	1.922	16.100	34.238	51.978	63.845	69.354
3.79	3.27	0.824	1.209	1.527	1.723	1.811	15.171	32.263	48.978	60.161	65.352
4.01	3.09	0.780	1.144	1.444	1.630	1.713	14.349	30.516	46.326	56.903	61.813
4.24	2.94	0.740	1.086	1.371	1.547	1.625	13.618	28.959	43.963	54.001	58.660
4.46	2.79	0.704	1.033	1.305	1.472	1.547	12.962	27.564	41.845	51.399	55.834
	Totale	50.792	74.522	94.090	106.163	111.575					
	netta	11.411	24.267	36.841	45.252	49.157					
	Φ	0.225	0.326	0.392	0.426	0.441					



Gli stessi calcoli sono stati eseguiti per lo ietogramma costante.

d	costante	Tr=5	Tr=30	Tr=100	Tr=5	Tr=30	Tr=100
		Pioggia Totale media	Pioggia Totale media	Pioggia Totale media	Pioggia efficace	Pioggia efficace	Pioggia efficace
[h]	[mm/h]	[mm]	[mm]	[mm]	[mm*kmq]	[mm*kmq]	[mm*kmq]
0.22	10.08	2.540	3.726	4.704	46.740	99.398	150.897
0.45	10.08	2.540	3.726	4.704	46.740	99.398	150.897
0.67	10.08	2.540	3.726	4.704	46.740	99.398	150.897
0.89	10.08	2.540	3.726	4.704	46.740	99.398	150.897
1.11	10.08	2.540	3.726	4.704	46.740	99.398	150.897
1.34	10.08	2.540	3.726	4.704	46.740	99.398	150.897
1.56	10.08	2.540	3.726	4.704	46.740	99.398	150.897
1.78	10.08	2.540	3.726	4.704	46.740	99.398	150.897
2.01	10.08	2.540	3.726	4.704	46.740	99.398	150.897
2.23	10.08	2.540	3.726	4.704	46.740	99.398	150.897
2.45	10.08	2.540	3.726	4.704	46.740	99.398	150.897
2.68	10.08	2.540	3.726	4.704	46.740	99.398	150.897
2.90	10.08	2.540	3.726	4.704	46.740	99.398	150.897
3.12	10.08	2.540	3.726	4.704	46.740	99.398	150.897
3.34	10.08	2.540	3.726	4.704	46.740	99.398	150.897
3.57	10.08	2.540	3.726	4.704	46.740	99.398	150.897
3.79	10.08	2.540	3.726	4.704	46.740	99.398	150.897
4.01	10.08	2.540	3.726	4.704	46.740	99.398	150.897
4.24	10.08	2.540	3.726	4.704	46.740	99.398	150.897
4.46	10.08	2.540	3.726	4.704	46.740	99.398	150.897
	Totale	50.792	74.522	94.090			
	netta	11.411	24.267	36.841			
	Φ	0.225	0.326	0.392			

Sviluppo integrali di convoluzione

Segue lo sviluppo degli integrali di convoluzione in forma discreta organizzati in maniera da formare la cosiddetta "matrice di convoluzione".

Le tabelle che seguono riportano i risultati per i diversi periodi di ritorno.

Tempo di ritorno = 5 anni

Pioggia Efficace [mm*km ²] T [ore]	19.79	23.44	28.82	37.48	53.46	91.04	245.70	135.75	67.61	44.09	32.58	25.85	21.46	18.38	17.16	16.10	15.17	14.35	13.62	12.96	Totale [m ³ /s]	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.22	5.11																					1.42
0.45	7.34	6.05																				3.72
0.67	10.56	8.69	7.44																			7.41
0.89	12.08	12.51	10.69	9.68																		12.48
1.11	11.74	14.30	15.38	13.90	13.80																	19.20
1.34	8.70	13.91	17.58	20.00	19.82	23.50																28.75
1.56	7.41	10.30	17.10	22.87	28.52	33.75	63.44															50.94
1.78	5.98	8.78	12.66	22.23	32.62	48.57	91.10	35.05														71.39
2.01	4.50	7.08	10.79	16.47	31.72	55.55	131.10	50.33	17.46													90.27
2.23	3.20	5.33	8.70	14.04	23.49	54.01	149.91	72.43	25.07	11.38												102.10
2.45	2.78	3.80	6.55	11.32	20.02	40.00	145.77	82.83	36.07	16.35	8.41											103.86
2.68	1.99	3.29	4.67	8.52	16.14	34.10	107.97	80.54	41.25	23.53	12.08	6.67										94.65
2.90	1.59	2.36	4.05	6.07	12.15	27.49	92.03	59.65	40.11	26.90	17.38	9.58	5.54									84.70
3.12	1.52	1.89	2.90	5.27	8.66	20.70	74.18	50.85	29.71	26.16	19.88	13.79	7.96	4.74								74.50
3.34	1.37	1.80	2.32	3.77	7.51	14.74	55.86	40.99	25.32	19.38	19.33	15.77	11.45	6.81	4.43							64.13
3.57	0.98	1.62	2.21	3.02	5.38	12.79	39.78	30.86	20.41	16.52	14.32	15.33	13.09	9.81	6.36	4.16						54.62
3.79	0.70	1.16	1.99	2.88	4.31	9.16	34.53	21.98	15.37	13.31	12.20	11.36	12.73	11.21	9.16	5.97	3.92					47.76
4.01	0.65	0.83	1.42	2.59	4.10	7.33	24.73	19.08	10.95	10.02	9.84	9.68	9.43	10.90	10.47	8.59	5.63	3.70				41.65
4.24	0.48	0.77	1.02	1.85	3.69	6.99	19.79	13.66	9.50	7.14	7.41	7.80	8.04	8.08	10.18	9.82	8.09	5.32	3.52			36.99
4.46	0.10	0.57	0.95	1.33	2.64	6.28	18.86	10.93	6.80	6.20	5.28	5.88	6.48	6.88	7.54	9.55	9.26	7.66	5.05	3.35		33.77
4.68		0.12	0.70	1.23	1.90	4.50	16.95	10.42	5.44	4.44	4.58	4.19	4.88	5.55	6.43	7.07	9.00	8.76	7.27	4.81		30.06
4.90			0.15	0.91	1.76	3.23	12.14	9.37	5.19	3.55	3.28	3.63	3.47	4.18	5.18	6.03	6.67	8.51	8.31	6.92		25.69
5.13				0.19	1.30	2.99	8.73	6.71	4.66	3.38	2.62	2.60	3.02	2.98	3.90	4.86	5.68	6.31	8.08	7.91		21.09
5.35					0.28	2.21	8.07	4.82	3.34	3.04	2.50	2.08	2.16	2.58	2.78	3.66	4.58	5.37	5.98	7.69		16.99
5.57						0.47	5.98	4.46	2.40	2.18	2.25	1.98	1.73	1.85	2.41	2.61	3.45	4.33	5.10	5.70		13.03

2.23	6.82	11.33	18.50	29.85	49.96	114.86	318.80	154.03	53.31	24.21												217.13
2.45	5.92	8.07	13.93	24.06	42.58	85.07	309.99	176.14	76.72	34.77	17.89											220.87
2.68	4.24	7.01	9.92	18.12	34.33	72.52	229.60	171.27	87.73	50.03	25.69	14.19										201.29
2.90	3.39	5.02	8.61	12.91	25.85	58.45	195.71	126.85	85.30	57.21	36.97	20.38	11.78									180.12
3.12	3.23	4.01	6.17	11.20	18.41	44.02	157.76	108.13	63.18	55.63	42.27	29.33	16.92	10.09								158.43
3.34	2.90	3.83	4.94	8.02	15.98	31.35	118.80	87.16	53.86	41.20	41.11	33.54	24.35	14.49	9.42							136.37
3.57	2.08	3.44	4.70	6.42	11.44	27.21	84.60	65.64	43.41	35.12	30.45	32.61	27.84	20.85	13.53	8.84						116.16
3.79	1.50	2.46	4.23	6.12	9.16	19.48	73.43	46.74	32.69	28.31	25.95	24.15	27.07	23.84	19.47	12.69	8.33					101.57
4.01	1.38	1.77	3.03	5.50	8.73	15.59	52.59	40.57	23.28	21.32	20.92	20.59	20.05	23.19	22.26	18.27	11.96	7.88				88.58
4.24	1.02	1.64	2.18	3.94	7.84	14.86	42.08	29.05	20.21	15.18	15.75	16.60	17.09	17.17	21.65	20.89	17.21	11.31	7.48			78.65
4.46	0.22	1.21	2.01	2.83	5.62	13.36	40.10	23.25	14.47	13.18	11.22	12.50	13.78	14.64	16.03	20.31	19.68	16.28	10.74	7.12		71.82
4.68		0.26	1.49	2.62	4.04	9.57	36.05	22.16	11.58	9.44	9.74	8.90	10.37	11.80	13.67	15.05	19.14	18.62	15.45	10.22		63.93
4.90			0.32	1.94	3.73	6.88	25.82	19.92	11.03	7.55	6.97	7.72	7.39	8.89	11.02	12.82	14.18	18.10	17.67	14.71		54.63
5.13				0.41	2.77	6.36	18.56	14.27	9.92	7.20	5.58	5.53	6.41	6.33	8.30	10.34	12.08	13.41	17.18	16.82		44.85
5.35					0.59	4.71	17.16	10.26	7.11	6.47	5.32	4.43	4.59	5.49	5.91	7.78	9.74	11.43	12.73	16.35		36.13
5.57						1.00	12.71	9.48	5.11	4.63	4.78	4.22	3.67	3.93	5.13	5.54	7.34	9.21	10.85	12.11		27.70
5.80							2.70	7.02	4.72	3.33	3.42	3.79	3.50	3.15	3.67	4.81	5.22	6.94	8.74	10.32		19.82
6.02								1.49	3.50	3.08	2.46	2.72	3.15	3.00	2.94	3.45	4.53	4.94	6.58	8.32		13.93
6.24									0.74	2.28	2.28	1.95	2.26	2.70	2.80	2.76	3.25	4.29	4.69	6.27		10.07
6.46										0.49	1.69	1.81	1.62	1.93	2.52	2.63	2.60	3.07	4.07	4.46		7.47
6.69											0.36	1.34	1.50	1.39	1.80	2.36	2.48	2.46	2.91	3.87		5.69
6.91												0.28	1.11	1.28	1.30	1.69	2.23	2.34	2.33	2.77		4.26
7.13													0.24	0.95	1.20	1.22	1.59	2.11	2.22	2.22		3.26
7.36														0.20	0.89	1.12	1.15	1.51	2.00	2.12		2.50
7.58															0.19	0.83	1.06	1.08	1.43	1.90		1.81
7.80																0.18	0.78	1.00	1.03	1.36		1.21
8.03																	0.17	0.74	0.95	0.98		0.79
8.25																		0.16	0.70	0.91		0.49
8.47																			0.15	0.67		0.23
8.69																				0.14		0.04

8.92																						0.00
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Tempo di ritorno = 100 anni

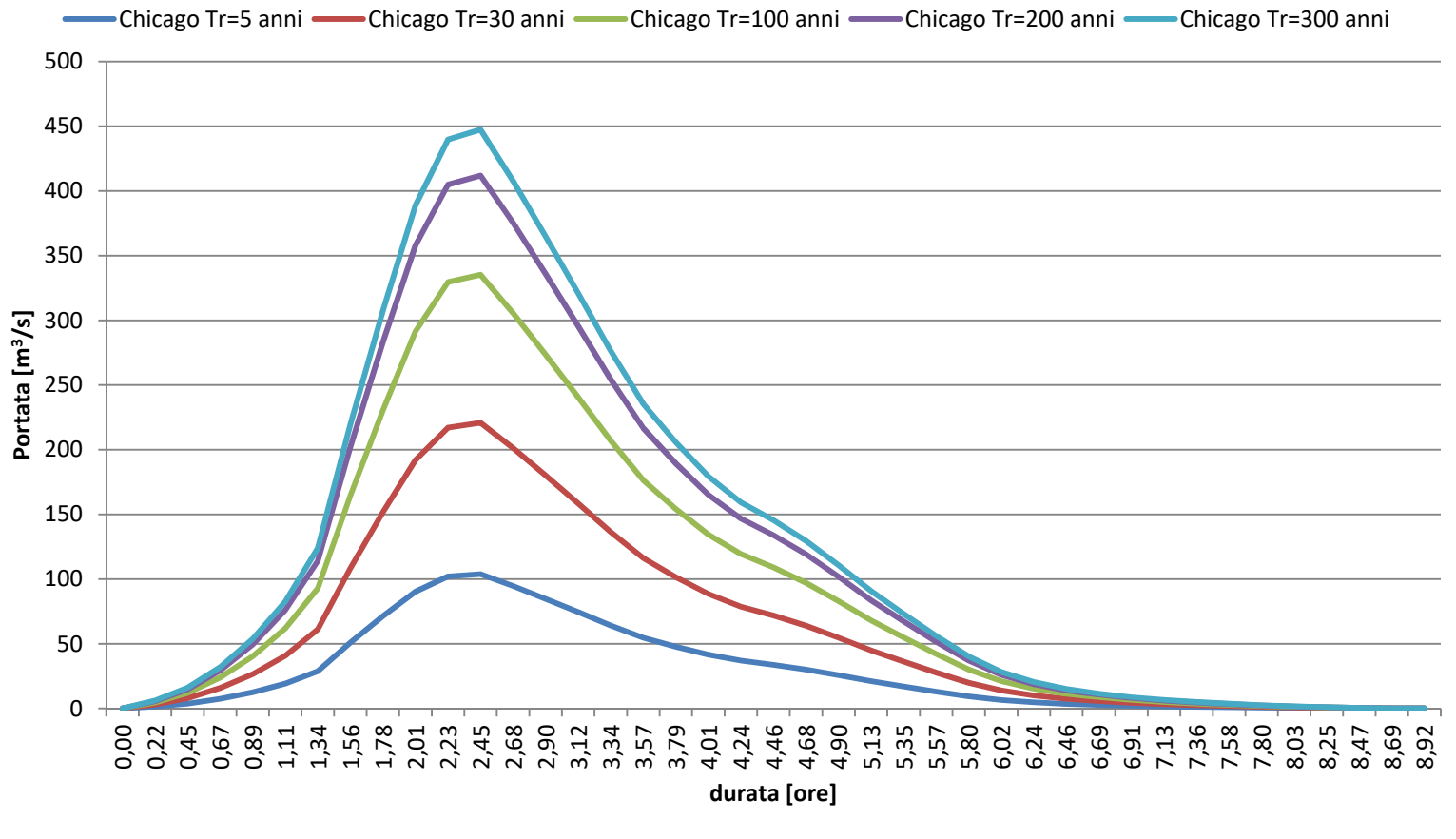
Pioggia Efficace [mm*km ²] T [ore]	63.90	75.68	93.04	121.00	172.60	293.90	793.22	438.26	218.28	142.35	105.19	83.45	69.27	59.33	55.40	51.98	48.98	46.33	43.96	41.84	Totale [m ³ /s]	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.22	16.50																					4.58
0.45	23.69	19.54																				12.01
0.67	34.09	28.06	24.02																			23.94
0.89	38.99	40.38	34.50	31.24																		40.31
1.11	37.91	46.17	49.64	44.86	44.56																	61.99
1.34	28.08	44.90	56.77	64.56	63.99	75.88																92.83
1.56	23.93	33.25	55.20	73.82	92.09	108.97	204.80															164.47
1.78	19.29	28.35	40.89	71.78	105.31	156.82	294.11	113.15														230.47
2.01	14.53	22.85	34.85	53.17	102.40	179.32	423.23	162.49	56.36													291.44
2.23	10.35	17.21	28.09	45.32	75.84	174.36	483.97	233.84	80.93	36.75												329.63
2.45	8.98	12.25	21.15	36.53	64.65	129.15	470.59	267.40	116.46	52.78	27.16											335.31
2.68	6.43	10.64	15.07	27.51	52.11	110.09	348.56	260.00	133.18	75.95	39.00	21.54										305.58
2.90	5.15	7.62	13.08	19.59	39.24	88.74	297.11	192.58	129.50	86.85	56.12	30.94	17.88									273.44
3.12	4.90	6.09	9.36	17.00	27.95	66.82	239.49	164.15	95.91	84.45	64.18	44.52	25.68	15.32								240.51
3.34	4.41	5.81	7.49	12.18	24.26	47.59	180.35	132.32	81.76	62.55	62.40	50.91	36.96	22.00	14.30							207.02
3.57	3.16	5.22	7.14	9.74	17.37	41.30	128.44	99.64	65.90	53.32	46.22	49.51	42.26	31.65	20.54	13.42						176.35
3.79	2.27	3.74	6.42	9.29	13.90	29.58	111.47	70.96	49.63	42.98	39.40	36.67	41.10	36.20	29.56	19.27	12.65					154.19
4.01	2.10	2.69	4.60	8.35	13.25	23.67	79.83	61.59	35.34	32.36	31.76	31.26	30.44	35.20	33.80	27.73	18.16	11.96				134.47
4.24	1.55	2.49	3.31	5.98	11.91	22.56	63.88	44.11	30.67	23.05	23.91	25.19	25.95	26.07	32.86	31.71	26.13	17.18	11.35			119.41
4.46	0.33	1.84	3.06	4.30	8.53	20.28	60.88	35.29	21.97	20.00	17.03	18.97	20.91	22.22	24.34	30.84	29.88	24.72	16.30	10.80		109.03
4.68		0.39	2.26	3.97	6.13	14.52	54.73	33.63	17.58	14.33	14.78	13.51	15.75	17.91	20.75	22.84	29.06	28.27	23.46	15.52		97.05
4.90			0.48	2.94	5.67	10.44	39.20	30.24	16.75	11.46	10.59	11.73	11.22	13.49	16.73	19.47	21.52	27.48	26.82	22.33		82.93
5.13				0.63	4.20	9.65	28.18	21.66	15.06	10.92	8.47	8.40	9.73	9.61	12.59	15.69	18.35	20.36	26.08	25.53		68.09

8.25																		0.29	1.31	1.69	0.92
8.47																			0.28	1.25	0.42
8.69																				0.27	0.07
8.92																					0.00

Tempo di ritorno = 300 anni

Pioggia Efficace [mm*km²] T [ore]	85.26	100.98	124.15	161.45	230.30	392.16	1058.40	584.77	291.25	189.94	140.35	111.34	92.43	79.16	73.92	69.35	65.35	61.81	58.66	55.83	Totale [m³/s]	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.22	22.01																					6.11
0.45	31.61	26.07																				16.02
0.67	45.49	37.44	32.05																			31.94
0.89	52.02	53.88	46.03	41.68																		53.78
1.11	50.58	61.61	66.24	59.86	59.46																	82.71
1.34	37.46	59.91	75.75	86.14	85.39	101.25																123.86
1.56	31.93	44.37	73.65	98.50	122.88	145.40	273.27															219.45
1.78	25.74	37.82	54.55	95.78	140.51	209.24	392.43	150.98														307.52
2.01	19.38	30.49	46.50	70.94	136.63	239.27	564.72	216.82	75.20													388.87
2.23	13.80	22.96	37.48	60.47	101.20	232.66	645.77	312.01	107.99	49.04												439.83
2.45	11.98	16.35	28.23	48.74	86.26	172.32	627.92	356.79	155.40	70.42	36.24											447.40
2.68	8.58	14.19	20.10	36.71	69.53	146.89	465.08	346.93	177.70	101.34	52.04	28.75										407.73
2.90	6.87	10.16	17.45	26.14	52.36	118.40	396.44	256.96	172.79	115.89	74.88	41.28	23.86									364.86
3.12	6.54	8.13	12.49	22.69	37.29	89.16	319.56	219.03	127.98	112.68	85.63	59.41	34.27	20.44								320.92
3.34	5.88	7.75	10.00	16.25	32.36	63.50	240.64	176.56	109.09	83.46	83.26	67.93	49.32	29.35	19.08							276.23
3.57	4.21	6.97	9.53	13.00	23.18	55.11	171.37	132.95	87.93	71.14	61.67	66.06	56.39	42.24	27.41	17.91						235.30
3.79	3.03	4.99	8.57	12.39	18.55	39.47	148.74	94.68	66.22	57.35	52.57	48.93	54.84	48.30	39.44	25.71	16.87					205.73
4.01	2.80	3.59	6.14	11.14	17.67	31.58	106.52	82.18	47.16	43.18	42.37	41.70	40.62	46.96	45.10	37.00	24.23	15.96				179.42
4.24	2.07	3.32	4.41	7.98	15.89	30.10	85.23	58.85	40.93	30.75	31.91	33.62	34.62	34.79	43.85	42.32	34.87	22.92	15.15			159.32
4.46	0.44	2.46	4.08	5.74	11.38	27.06	81.23	47.09	29.31	26.69	22.73	25.31	27.91	29.65	32.48	41.15	39.87	32.98	21.75	14.42		145.48

Idrogrammi di piena



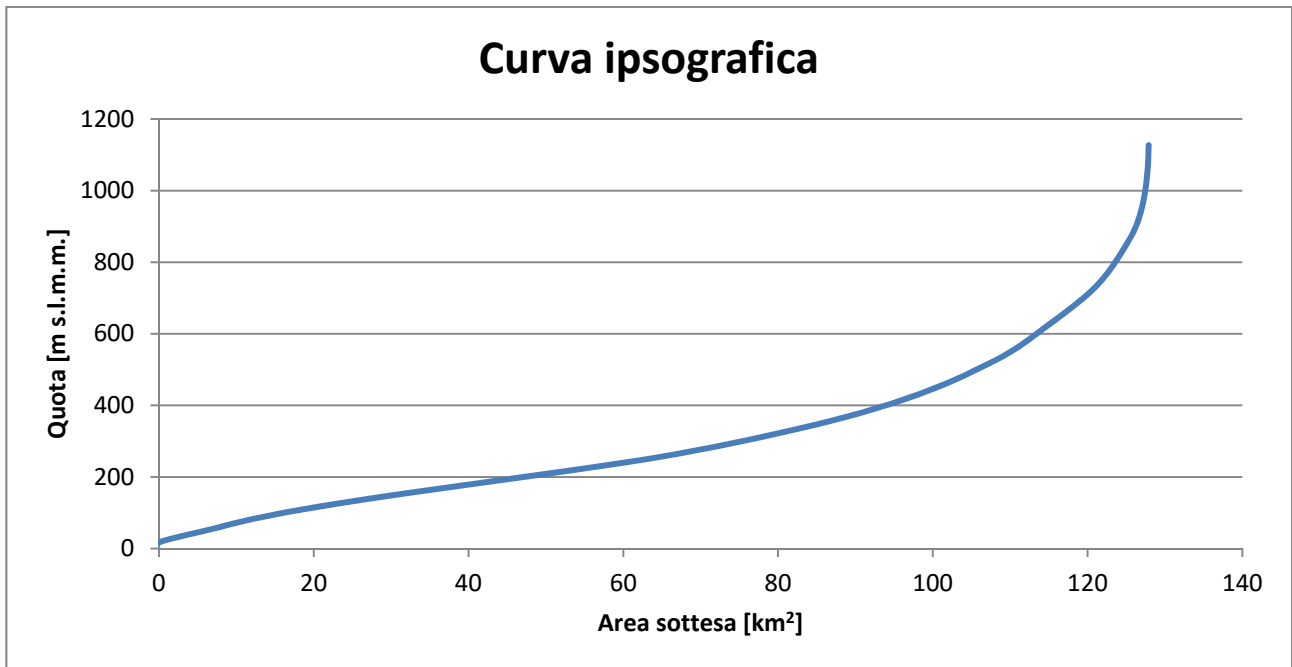
Bacino 4**Dati input e tempo di corrivazione bacino**

DATI DI INPUT	
Area Bacino [m ²]	127892500.08
Area Bacino [ha]	127892.50
Area Bacino [km ²]	127.89
Lunghezza Asta [m]	17188.91
Lunghezza Asta [km]	17.18891
Zmax [m s.l.m.m]	1127
Zmed [m s.l.m.m]	307.94
Zmin [m s.l.m.m]	17
Tc (Giandotti) [ore]	5.20
Tc (Giandotti) [min]	312.27

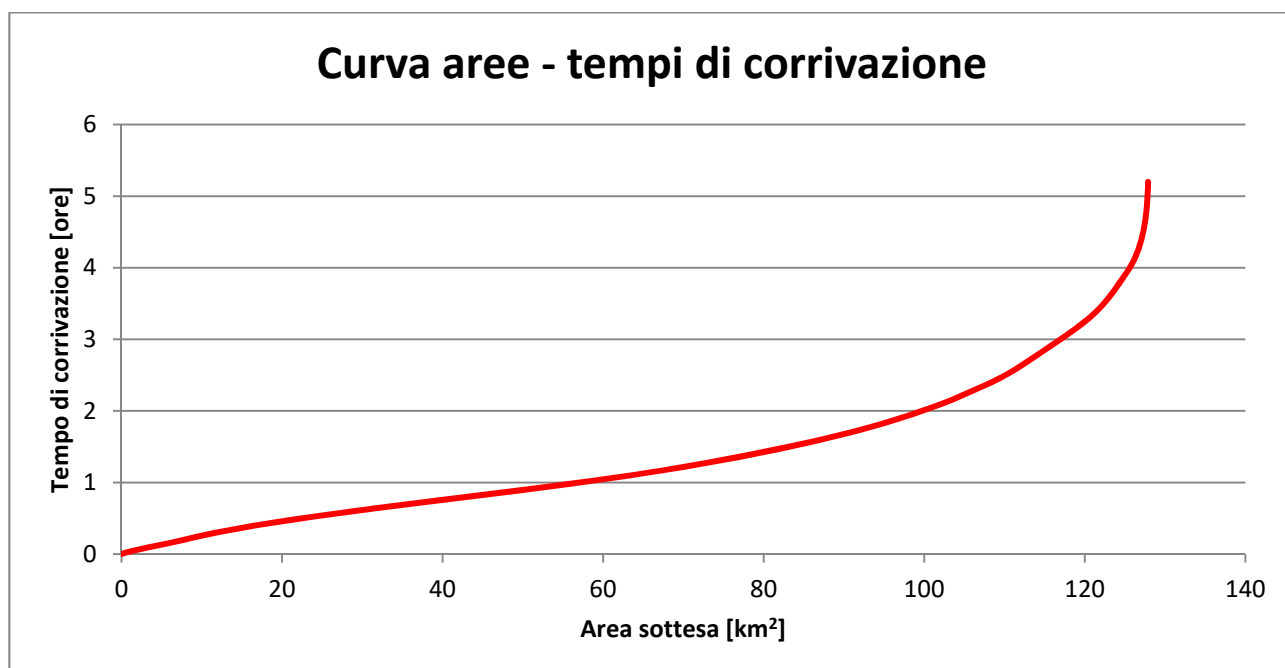
Curva ipsografica e curva aree-tempi

Quota [m]	Area Sottesa [km²]	Tempo Corrivazione [ore]
17	0	0
25	1.058157275	0.037477477
50	5.962991927	0.154594595
75	10.61937441	0.271711712
100	16.08145245	0.388828829
125	22.88413718	0.505945946
150	30.5002848	0.623063063
175	38.76817063	0.74018018
200	47.1496852	0.857297297
225	55.40268907	0.974414414
250	63.03549031	1.091531532
275	69.60235761	1.208648649
300	75.34968243	1.325765766
325	80.66803212	1.442882883
350	85.59368846	1.56
375	90.01640748	1.677117117
400	93.94711754	1.794234234
425	97.37944999	1.911351351
450	100.4596135	2.028468468
475	103.2473037	2.145585586
500	105.6360531	2.262702703
525	108.0048294	2.37981982
550	110.0683205	2.496936937
575	111.8465741	2.614054054
600	113.4040974	2.731171171
625	114.9787498	2.848288288
650	116.5167755	2.965405405
675	118.0296716	3.082522523
700	119.4576305	3.19963964
725	120.7410872	3.316756757
750	121.845979	3.433873874

775	122.7686415	3.550990991
800	123.5736284	3.668108108
825	124.3034875	3.785225225
850	125.0331229	3.902342342
875	125.692358	4.019459459
900	126.2723626	4.136576577
925	126.668133	4.253693694
950	126.9912094	4.370810811
975	127.2518021	4.487927928
1000	127.4580794	4.605045045
1025	127.6196829	4.722162162
1050	127.7322207	4.839279279
1075	127.8047562	4.956396396
1100	127.8554071	5.073513514
1127	127.8920432	5.2



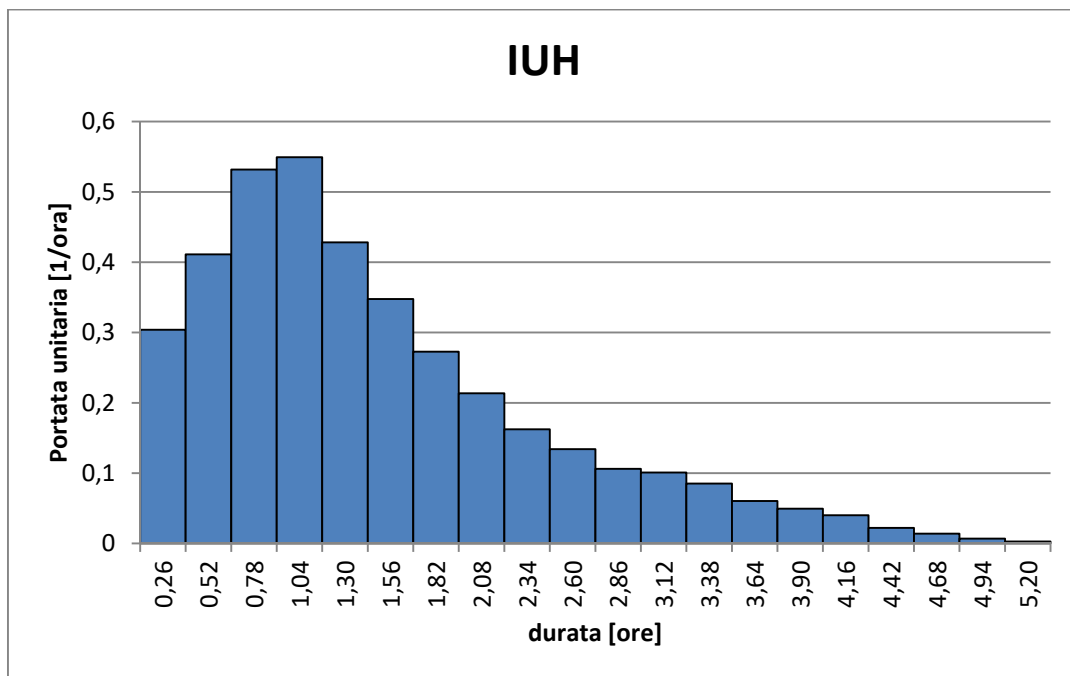
Curva aree - tempi di corrivazione



Idrogramma unitario istantaneo

Step	T _c [ore]	T _c [min]	Quota [m]	A [km ²]	ΔA [km ²]	ΔA/dt	IUH
0	0.00	0	17	0			
1	0.26	15.61368	72	10.11613	10.11613	38.8741	0.303959
2	0.52	31.22736	128	23.79884	13.68271	52.57969	0.411124
3	0.78	46.84104	183	41.49483	17.696	68.00189	0.531711
4	1.04	62.45472	239	59.77506	18.28023	70.24699	0.549266
5	1.30	78.0684	294	74.02402	14.24896	54.75567	0.428138
6	1.56	93.68208	350	85.59369	11.56967	44.45973	0.347634
7	1.82	109.2958	405	94.67093	9.077237	34.88186	0.272744
8	2.08	124.9094	461	101.782	7.111028	27.32615	0.213665
9	2.34	140.5231	516	107.1876	5.405646	20.77273	0.162423
10	2.60	156.1368	572	111.6502	4.462553	17.14863	0.134086
11	2.86	171.7505	628	115.1825	3.532394	13.57423	0.106138
12	3.12	187.3642	683	118.5385	3.355965	12.89625	0.100837
13	3.38	202.9778	739	121.3744	2.83587	10.89764	0.085209
14	3.64	218.5915	794	123.3872	2.012859	7.734982	0.06048
15	3.90	234.2052	850	125.0331	1.645883	6.324771	0.049454
16	4.16	249.8189	905	126.367	1.333865	5.125755	0.040079
17	4.42	265.4326	961	127.1069	0.739939	2.843426	0.022233
18	4.68	281.0462	1016	127.5683	0.461378	1.772976	0.013863
19	4.94	296.6599	1072	127.7978	0.229477	0.88183	0.006895
20	5.20	312.2736	1127	127.8925	0.094719	0.363983	0.002846

Dove dt = T_c/20 = 0.260 ore



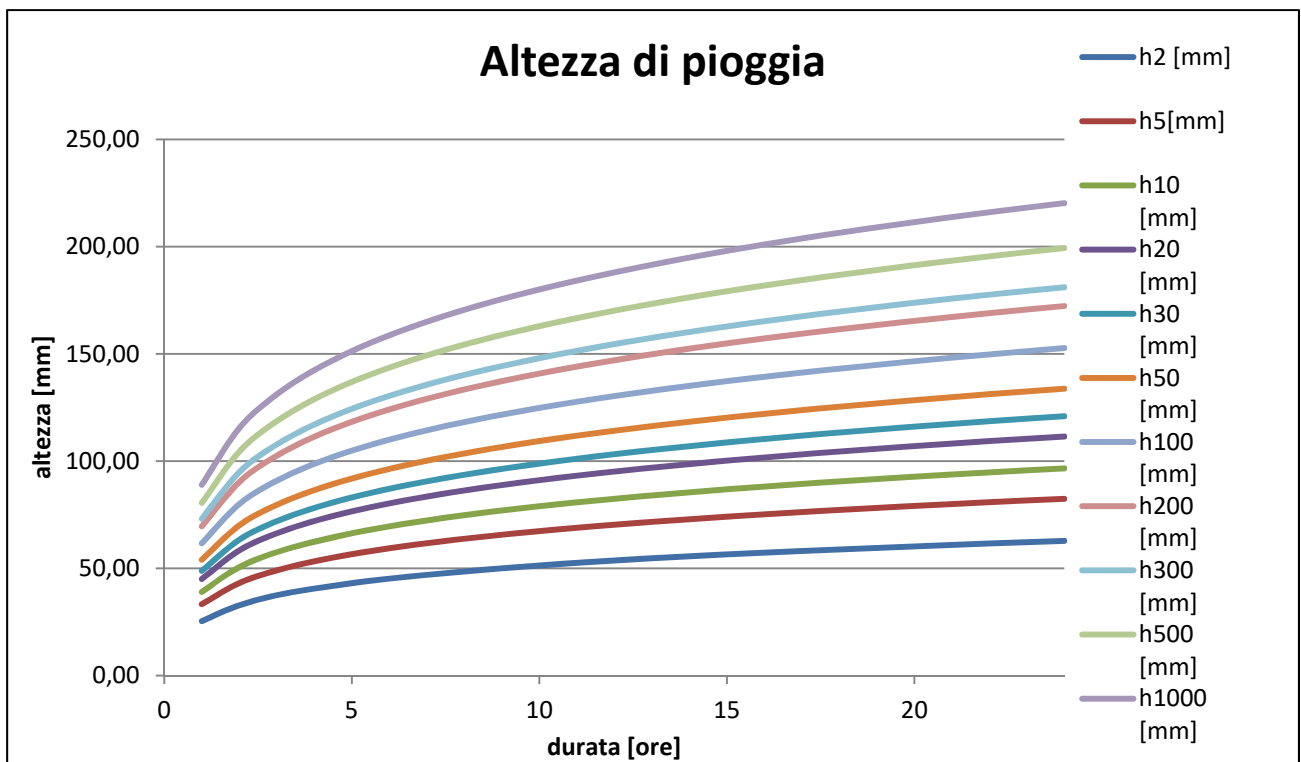
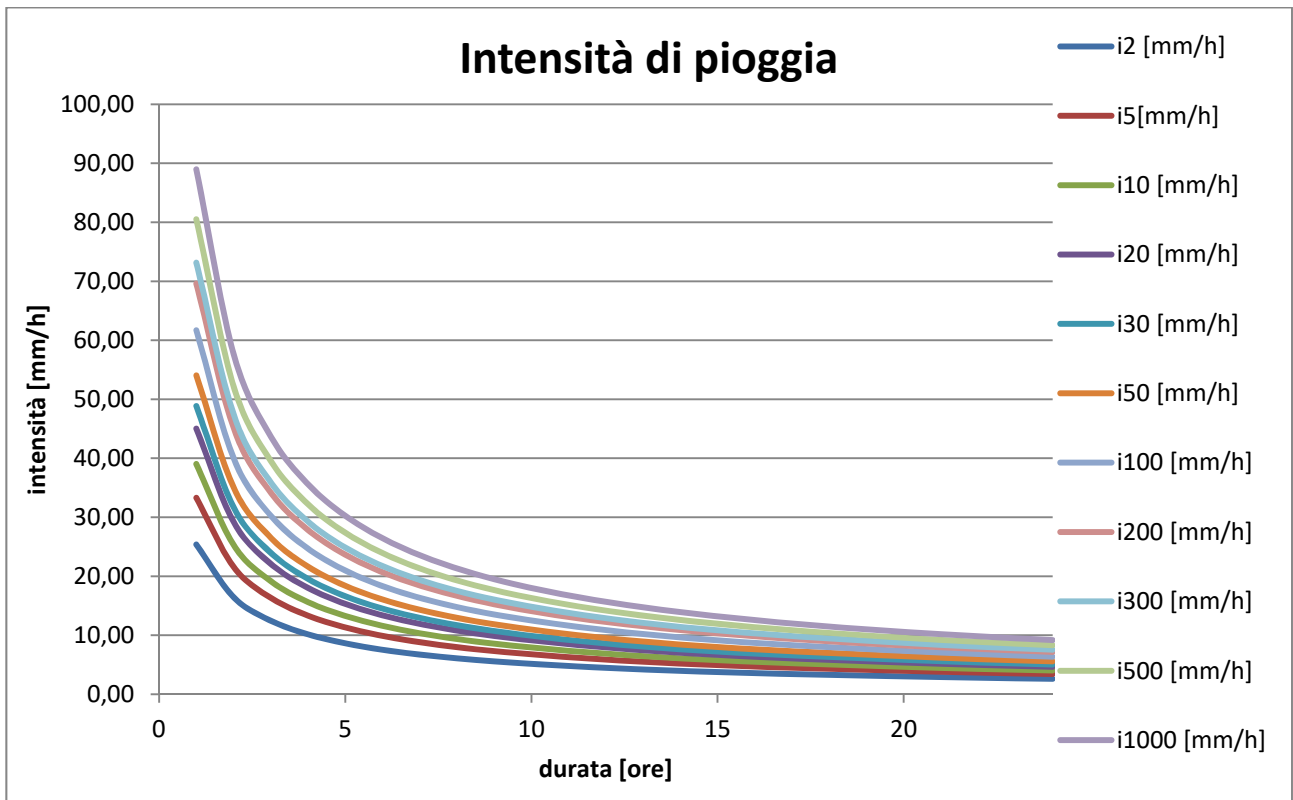
Curva di probabilità pluviometrica

Parametri di distribuzione	
Area omogenea	A1
m(l ₀) (mm/ora)	77.08
d _c (ore)	0.3661
C	0.7995
D*10 ⁵	3.6077
ρ ²	0.9994
Z _{med} [m]	307.94

d	μ(i(d)) [mm/h]	μ(h(d)) [mm]	i ₂ [mm/h]	i ₅ [mm/h]	i ₁₀ [mm/h]	i ₂₀ [mm/h]	i ₃₀ [mm/h]	i ₅₀ [mm/h]	i ₁₀₀ [mm/h]	i ₂₀₀ [mm/h]	i ₃₀₀ [mm/h]	i ₅₀₀ [mm/h]	i ₁₀₀₀ [mm/h]
1	27.29	27.29	25.38	33.30	39.03	45.04	48.86	54.04	61.69	69.60	73.15	80.52	88.98
2	17.70	35.40	16.46	21.60	25.31	29.21	31.69	35.05	40.00	45.14	47.44	52.22	57.71
3	13.41	40.22	12.47	16.36	19.17	22.12	24.00	26.54	30.30	34.19	35.93	39.55	43.70
4	10.92	43.68	10.16	13.32	15.62	18.02	19.55	21.62	24.68	27.85	29.27	32.22	35.60
5	9.28	46.41	8.63	11.32	13.27	15.31	16.61	18.38	20.98	23.67	24.88	27.38	30.26
6	8.11	48.67	7.54	9.90	11.60	13.38	14.52	16.06	18.33	20.69	21.74	23.93	26.44
7	7.23	50.61	6.72	8.82	10.34	11.93	12.94	14.32	16.34	18.44	19.38	21.33	23.57
8	6.54	52.32	6.08	7.98	9.35	10.79	11.71	12.95	14.78	16.68	17.53	19.29	21.32
9	5.98	53.85	5.56	7.30	8.56	9.87	10.71	11.85	13.52	15.26	16.03	17.65	19.50
10	5.52	55.23	5.14	6.74	7.90	9.11	9.89	10.94	12.48	14.08	14.80	16.29	18.01
11	5.14	56.50	4.78	6.27	7.34	8.47	9.19	10.17	11.61	13.10	13.77	15.15	16.74
12	4.81	57.67	4.47	5.86	6.87	7.93	8.60	9.52	10.86	12.26	12.88	14.18	15.67
13	4.52	58.76	4.20	5.51	6.46	7.46	8.09	8.95	10.22	11.53	12.11	13.33	14.74
14	4.27	59.78	3.97	5.21	6.11	7.05	7.64	8.46	9.65	10.89	11.44	12.60	13.92
15	4.05	60.74	3.77	4.94	5.79	6.68	7.25	8.02	9.15	10.33	10.85	11.95	13.20
16	3.85	61.65	3.58	4.70	5.51	6.36	6.90	7.63	8.71	9.83	10.33	11.37	12.56
17	3.68	62.51	3.42	4.49	5.26	6.07	6.58	7.28	8.31	9.38	9.85	10.85	11.99
18	3.52	63.33	3.27	4.29	5.03	5.81	6.30	6.97	7.95	8.97	9.43	10.38	11.47

19	3.37	64.11	3.14	4.12	4.83	5.57	6.04	6.68	7.63	8.60	9.04	9.95	11.00
20	3.24	64.86	3.02	3.96	4.64	5.35	5.81	6.42	7.33	8.27	8.69	9.57	10.57
21	3.12	65.58	2.90	3.81	4.47	5.15	5.59	6.18	7.06	7.96	8.37	9.21	10.18
22	3.01	66.27	2.80	3.67	4.31	4.97	5.39	5.96	6.81	7.68	8.07	8.89	9.82
23	2.91	66.93	2.71	3.55	4.16	4.80	5.21	5.76	6.58	7.42	7.80	8.58	9.49
24	2.82	67.57	2.62	3.43	4.03	4.65	5.04	5.57	6.36	7.18	7.55	8.31	9.18

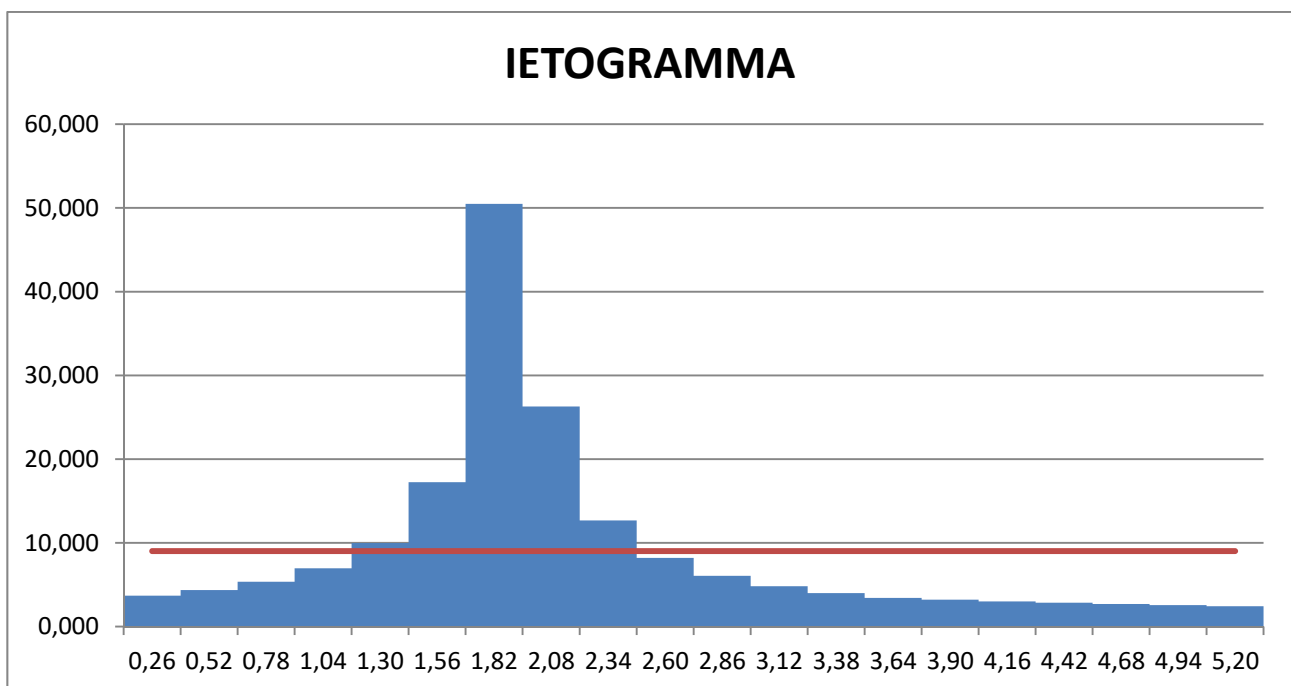
d	$\mu(i(d))$ [mm/h]	$\mu(h(d))$ [mm]	h_2 [mm]	h_5 [mm]	h_{10} [mm]	h_{20} [mm]	h_{30} [mm]	h_{50} [mm]	h_{100} [mm]	h_{200} [mm]	h_{300} [mm]	h_{500} [mm]	h_{1000} [mm]
1	27.29	27.29	25.38	33.30	39.03	45.04	48.86	54.04	61.69	69.60	73.15	80.52	88.98
2	17.70	35.40	32.92	43.19	50.63	58.41	63.37	70.10	80.01	90.28	94.88	104.44	115.41
3	13.41	40.22	37.40	49.07	57.51	66.36	71.99	79.63	90.89	102.56	107.79	118.64	131.11
4	10.92	43.68	40.62	53.29	62.47	72.08	78.19	86.49	98.72	111.39	117.07	128.86	142.40
5	9.28	46.41	43.16	56.62	66.36	76.57	83.07	91.89	104.88	118.34	124.38	136.91	151.29
6	8.11	48.67	45.26	59.38	69.60	80.31	87.12	96.37	110.00	124.11	130.44	143.58	158.67
7	7.23	50.61	47.07	61.75	72.38	83.51	90.60	100.21	114.39	129.06	135.64	149.31	165.00
8	6.54	52.32	48.66	63.83	74.82	86.33	93.65	103.59	118.24	133.42	140.22	154.34	170.56
9	5.98	53.85	50.08	65.69	77.00	88.85	96.39	106.62	121.69	137.31	144.31	158.85	175.54
10	5.52	55.23	51.37	67.38	78.98	91.13	98.86	109.36	124.82	140.84	148.02	162.93	180.05
11	5.14	56.50	52.54	68.93	80.79	93.22	101.13	111.87	127.69	144.07	151.42	166.67	184.19
12	4.81	57.67	53.63	70.36	82.47	95.16	103.23	114.19	130.34	147.06	154.56	170.13	188.01
13	4.52	58.76	54.65	71.69	84.03	96.96	105.18	116.35	132.80	149.84	157.48	173.35	191.57
14	4.27	59.78	55.60	72.94	85.49	98.64	107.01	118.37	135.11	152.45	160.22	176.36	194.89
15	4.05	60.74	56.49	74.11	86.86	100.23	108.73	120.27	137.28	154.90	162.79	179.19	198.03
16	3.85	61.65	57.34	75.22	88.16	101.73	110.36	122.07	139.33	157.21	165.23	181.87	200.98
17	3.68	62.51	58.14	76.27	89.39	103.15	111.90	123.77	141.28	159.41	167.53	184.41	203.79
18	3.52	63.33	58.90	77.26	90.56	104.50	113.36	125.40	143.13	161.50	169.73	186.83	206.46
19	3.37	64.11	59.63	78.22	91.68	105.79	114.76	126.94	144.90	163.49	171.82	189.13	209.01
20	3.24	64.86	60.32	79.13	92.75	107.02	116.10	128.43	146.59	165.40	173.83	191.34	211.45
21	3.12	65.58	60.99	80.01	93.78	108.21	117.39	129.85	148.21	167.23	175.75	193.46	213.79
22	3.01	66.27	61.63	80.85	94.76	109.34	118.62	131.21	149.77	168.98	177.60	195.49	216.03
23	2.91	66.93	62.25	81.66	95.71	110.44	119.81	132.53	151.27	170.68	179.38	197.45	218.20
24	2.82	67.57	62.84	82.44	96.63	111.49	120.95	133.79	152.71	172.31	181.09	199.34	220.29



Ietogramma di progetto - Ietogramma Chicago

d [ore]	$\mu(h(d))$ [mm]	$\Delta \mu(h(d))$ [mm]	i [mm/ora]	Chicago i [mm/ora]	Costante i [mm/ora]
0.26	13.14	13.14	50.48	3.691	9.012
0.52	19.98	6.84	26.29	4.365	9.012
0.78	24.46	4.49	17.24	5.359	9.012
1.04	27.76	3.30	12.67	6.967	9.012
1.30	30.35	2.59	9.97	9.970	9.012

1.56	32.49	2.13	8.20	17.235	9.012
1.82	34.30	1.81	6.97	50.476	9.012
2.08	35.88	1.58	6.06	26.286	9.012
2.34	37.27	1.39	5.36	12.670	9.012
2.60	38.52	1.25	4.81	8.204	9.012
2.86	39.66	1.14	4.36	6.056	9.012
3.12	40.70	1.04	4.00	4.809	9.012
3.38	41.66	0.96	3.69	3.998	9.012
3.64	42.55	0.89	3.43	3.430	9.012
3.90	43.39	0.83	3.21	3.205	9.012
4.16	44.17	0.78	3.01	3.010	9.012
4.42	44.91	0.74	2.84	2.839	9.012
4.68	45.61	0.70	2.69	2.687	9.012
4.94	46.27	0.66	2.55	2.552	9.012
5.20	46.90	0.63	2.43	2.430	9.012



Pioggia efficace (metodo Curve Number)

CODICE	INDICE	AREA	AREA*INDICE
111-A	89	0	0
111-C	94	0	0
112-A	77	271122.9974	20876470.8
112-B	85	859250.1155	73036259.82
112-C	90	503048.8242	45274394.18
112-D	92	0	0
121-A	81	104657.9661	8477295.252
121-B	88	156387.0485	13762060.26
121-C	91	34996.63619	3184693.893
211-A	61	1229125.269	74976641.42
211-B	73	1055.324097	77038.65911
211-C	81	636744.0382	51576267.09

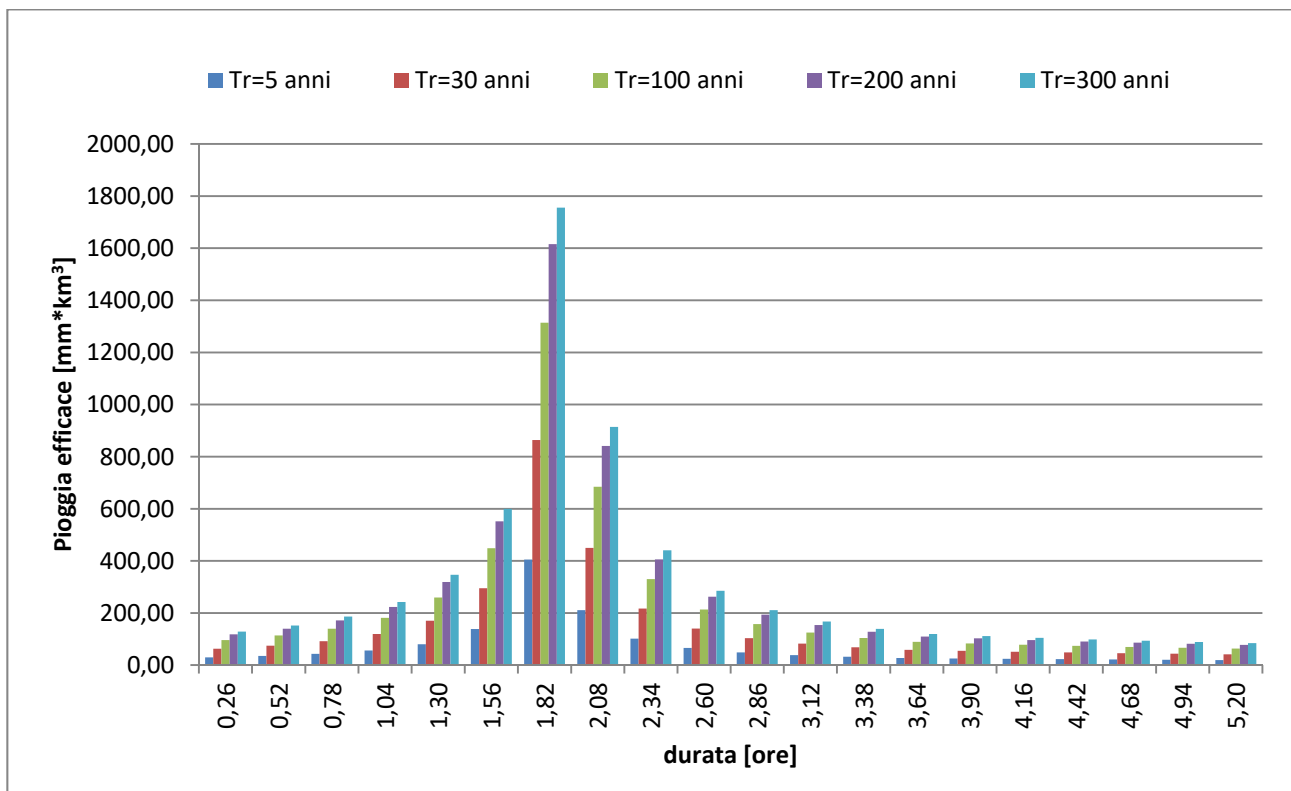
211-D	84	0	0
221-A	76	0	0
221-C	90	0	0
221-D	93	0	0
222-A	43	109293.4835	4699619.792
222-C	76	797224.2526	60589043.2
223-A	43	997312.7318	42884447.47
223-B	65	4484886.01	291517590.7
223-C	76	9487372.933	721040342.9
223-D	82	9191.611829	753712.17
231-A	49	0	0
231-C	79	0	0
231-D	84	0	0
241-A	61	195830.7966	11945678.59
241-B	73	925871.4005	67588612.24
241-C	81	164522.5815	13326329.1
241-D	84	0	0
242-A	61	4147740.011	253012140.6
242-B	73	1458344.299	106459133.8
242-C	81	6833015.152	553474227.3
242-D	84	0	0
243-A	61	1803609.218	110020162.3
243-B	73	7660912.197	559246590.3
243-C	81	10520858.03	852189500.3
243-D	84	0	0
311-A	36	7281327.399	262127786.4
311-B	60	14920598.31	895235898.7
311-C	73	43205201.08	3153979679
311-D	79	2922.52795	230879.7081
312-A	36	82748.26991	2978937.717
312-B	60	0	0
312-C	73	796895.6123	58173379.7
312-D	79	0	0
313-A	36	22.06225956	794.2413443
313-B	60	0	0
313-C	73	146.9124591	10724.60951
313-D	79	0	0
321-A	49	280466.1515	13742841.42
321-B	69	116275.3975	8023002.426
321-C	79	1133549.494	89550410.01
321-D	84	0	0
323-A	35	295068.1211	10327384.24
323-B	56	304154.656	17032660.74
323-C	70	1733251.449	121327601.5
323-D	77	0	0
324-A	35	624840.4121	21869414.42
324-B	56	1144139.986	64071839.22
324-C	70	1378949.805	96526486.35

324-D	77	0	0
331-A	46	795426.8736	36589636.19
331-C	77	81828.96165	6300830.047
331-D	82	0	0
333-A	63	213423.4523	13445677.5
333-C	85	108890.2214	9255668.823
333-D	88	0	0
511-A	98	0	0
511-C	98	0	0
511-D	98	0	0
Somma		127892500.1	8820789785

Asciutto	CN I	48.28	S I	272.09	IA I	54.42
Medio	CN II	68.97	S II	114.28	IA II	9.14
Umido	CN III	83.64	S III	49.69	IA III	9.94

Si determina la pioggia totale media e quella efficace.

		Tr=5	Tr=30	Tr=100	Tr=200	Tr=300	Tr=5	Tr=30	Tr=100	Tr=200	Tr=300
d	Chicago	Pioggia Totale media	Pioggia Totale media	Pioggia Totale media	Pioggia Totale media	Pioggia Totale media	Pioggia efficace	Pioggia efficace	Pioggia efficace	Pioggia efficace	Pioggia efficace
[h]	[mm/h]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm*kmq]	[mm*kmq]	[mm*kmq]	[mm*kmq]	[mm*kmq]
0.26	3.69	1.05	1.54	1.94	2.19	2.30	29.60	63.18	96.10	118.15	128.39
0.52	4.36	1.24	1.82	2.30	2.59	2.72	35.00	74.71	113.63	139.70	151.81
0.78	5.36	1.52	2.23	2.82	3.18	3.34	42.97	91.73	139.52	171.53	186.39
1.04	6.97	1.98	2.90	3.66	4.13	4.35	55.87	119.26	181.39	223.01	242.33
1.30	9.97	2.83	4.15	5.24	5.92	6.22	79.94	170.66	259.56	319.11	346.76
1.56	17.24	4.89	7.18	9.06	10.23	10.75	138.20	295.02	448.72	551.66	599.46
1.82	50.48	14.33	21.03	26.55	29.95	31.48	404.74	864.03	1314.15	1615.62	1755.64
2.08	26.29	7.46	10.95	13.82	15.60	16.39	210.77	449.94	684.35	841.34	914.25
2.34	12.67	3.60	5.28	6.66	7.52	7.90	101.60	216.88	329.87	405.54	440.69
2.60	8.20	2.33	3.42	4.31	4.87	5.12	65.78	140.43	213.59	262.59	285.35
2.86	6.06	1.72	2.52	3.19	3.59	3.78	48.56	103.67	157.68	193.85	210.65
3.12	4.81	1.37	2.00	2.53	2.85	3.00	38.56	82.32	125.20	153.93	167.27
3.38	4.00	1.14	1.67	2.10	2.37	2.49	32.06	68.44	104.10	127.98	139.07
3.64	3.43	0.97	1.43	1.80	2.04	2.14	27.50	58.72	89.30	109.79	119.30
3.90	3.21	0.91	1.34	1.69	1.90	2.00	25.70	54.87	83.45	102.60	111.49
4.16	3.01	0.85	1.25	1.58	1.79	1.88	24.14	51.53	78.37	96.35	104.70
4.42	2.84	0.81	1.18	1.49	1.68	1.77	22.76	48.59	73.90	90.86	98.73
4.68	2.69	0.76	1.12	1.41	1.59	1.68	21.55	45.99	69.95	86.00	93.46
4.94	2.55	0.72	1.06	1.34	1.51	1.59	20.46	43.68	66.43	81.67	88.75
5.20	2.43	0.69	1.01	1.28	1.44	1.52	19.49	41.60	63.28	77.79	84.54
	Totale	51.17	75.08	94.79	106.95	112.41					
	netta	11.30	24.12	36.69	45.11	49.02					
	Φ	0.22	0.32	0.39	0.42	0.44					



Gli stessi calcoli sono stati eseguiti per lo ietogramma costante.

d	costante	Tr=5	Tr=30	Tr=100	Tr=5	Tr=30	Tr=100
		Pioggia Totale media	Pioggia Totale media	Pioggia Totale media	Pioggia efficace	Pioggia efficace	Pioggia efficace
[h]	[mm/h]	[mm]	[mm]	[mm]	[mm*kmq]	[mm*kmq]	[mm*kmq]
0.26	9.01	2.56	3.75	4.74	72.26	154.26	234.63
0.52	9.01	2.56	3.75	4.74	72.26	154.26	234.63
0.78	9.01	2.56	3.75	4.74	72.26	154.26	234.63
1.04	9.01	2.56	3.75	4.74	72.26	154.26	234.63
1.30	9.01	2.56	3.75	4.74	72.26	154.26	234.63
1.56	9.01	2.56	3.75	4.74	72.26	154.26	234.63
1.82	9.01	2.56	3.75	4.74	72.26	154.26	234.63
2.08	9.01	2.56	3.75	4.74	72.26	154.26	234.63
2.34	9.01	2.56	3.75	4.74	72.26	154.26	234.63
2.60	9.01	2.56	3.75	4.74	72.26	154.26	234.63
2.86	9.01	2.56	3.75	4.74	72.26	154.26	234.63
3.12	9.01	2.56	3.75	4.74	72.26	154.26	234.63
3.38	9.01	2.56	3.75	4.74	72.26	154.26	234.63
3.64	9.01	2.56	3.75	4.74	72.26	154.26	234.63
3.90	9.01	2.56	3.75	4.74	72.26	154.26	234.63
4.16	9.01	2.56	3.75	4.74	72.26	154.26	234.63
4.42	9.01	2.56	3.75	4.74	72.26	154.26	234.63
4.68	9.01	2.56	3.75	4.74	72.26	154.26	234.63
4.94	9.01	2.56	3.75	4.74	72.26	154.26	234.63
5.20	9.01	2.56	3.75	4.74	72.26	154.26	234.63
	Totale	51.17	75.08	94.79			
	netta	11.30	24.12	36.69			
	Φ	0.22	0.32	0.39			

Sviluppo integrali di convoluzione

Segue lo sviluppo degli integrali di convoluzione in forma discreta organizzati in maniera da formare la cosiddetta "matrice di convoluzione".

Le tabelle che seguono riportano i risultati per i diversi periodi di ritorno.

Tempo di ritorno = 5 anni

Pioggia Efficace [mm*km ²]	29.60	35.00	42.97	55.87	79.94	138.20	404.74	210.77	101.60	65.78	48.56	38.56	32.06	27.50	25.70	24.14	22.76	21.55	20.46	19.49	Totale [m ³ /s]	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0.26	9.00																					2.50
0.52	12.17	10.64																				6.34
0.78	15.74	14.39	13.06																			12.00
1.04	16.26	18.61	17.67	16.98																		19.31
1.30	12.67	19.22	22.85	22.97	24.30																	28.34
1.56	10.29	14.98	23.60	29.71	32.87	42.01																42.63
1.82	8.07	12.17	18.40	30.69	42.51	56.82	123.03															81.02
2.08	6.32	9.55	14.94	23.92	43.91	73.48	166.40	64.07														111.83
2.34	4.81	7.48	11.72	19.42	34.23	75.91	215.21	86.65	30.88													135.08
2.60	3.97	5.68	9.18	15.24	27.79	59.17	222.31	112.07	41.77	20.00												143.66
2.86	3.14	4.69	6.98	11.94	21.80	48.04	173.29	115.77	54.02	27.05	14.76											133.74
3.12	2.98	3.71	5.76	9.07	17.08	37.69	140.70	90.24	55.80	34.98	19.97	11.72										119.37
3.38	2.52	3.53	4.56	7.49	12.98	29.53	110.39	73.27	43.50	36.13	25.82	15.85	9.74									104.26
3.64	1.79	2.98	4.33	5.93	10.72	22.45	86.48	57.49	35.32	28.16	26.67	20.50	13.18	8.36								90.10
3.90	1.46	2.12	3.66	5.63	8.48	18.53	65.74	45.03	27.71	22.87	20.79	21.18	17.05	11.31	7.81							77.61
4.16	1.19	1.73	2.60	4.76	8.06	14.67	54.27	34.23	21.71	17.94	16.88	16.51	17.61	14.62	10.57	7.34						67.97
4.42	0.66	1.40	2.13	3.38	6.81	13.94	42.96	28.26	16.50	14.06	13.24	13.41	13.73	15.11	13.67	9.92	6.92					60.02
4.68	0.41	0.78	1.72	2.76	4.83	11.78	40.81	22.37	13.62	10.68	10.38	10.52	11.15	11.78	14.12	12.83	9.36	6.55				54.57
4.94	0.20	0.49	0.96	2.24	3.95	8.36	34.49	21.25	10.78	8.82	7.89	8.24	8.74	9.56	11.00	13.26	12.10	8.86	6.22			49.28
5.20	0.08	0.24	0.60	1.24	3.20	6.83	24.48	17.96	10.24	6.98	6.51	6.26	6.85	7.50	8.94	10.33	12.50	11.46	8.41	5.92		43.49
5.46		0.10	0.30	0.77	1.78	5.54	20.02	12.75	8.66	6.63	5.15	5.17	5.21	5.88	7.01	8.39	9.75	11.83	10.88	8.01		37.17
5.73			0.12	0.39	1.11	3.07	16.22	10.42	6.14	5.61	4.90	4.09	4.30	4.47	5.49	6.58	7.91	9.22	11.24	10.36		31.01
5.99				0.16	0.55	1.92	9.00	8.45	5.02	3.98	4.14	3.89	3.40	3.69	4.17	5.16	6.21	7.49	8.76	10.70		24.08
6.25					0.23	0.95	5.61	4.69	4.07	3.25	2.94	3.29	3.23	2.92	3.45	3.92	4.86	5.88	7.11	8.34		17.98
6.51						0.39	2.79	2.92	2.26	2.64	2.40	2.33	2.73	2.77	2.73	3.24	3.70	4.60	5.58	6.77		13.29
6.77							1.15	1.45	1.41	1.46	1.95	1.91	1.94	2.34	2.59	2.56	3.05	3.50	4.37	5.32		9.72

3.12	6.37	7.93	12.30	19.37	36.46	80.47	300.36	192.64	119.13	74.67	42.62	25.02									254.82
3.38	5.38	7.53	9.74	15.99	27.72	63.04	235.66	156.42	92.86	77.14	55.12	33.84	20.80								222.56
3.64	3.82	6.37	9.25	12.66	22.88	47.92	184.61	122.72	75.40	60.13	56.94	43.77	28.14	17.85							192.35
3.90	3.12	4.52	7.82	12.03	18.11	39.56	140.34	96.14	59.15	48.82	44.38	45.21	36.39	24.14	16.68						165.67
4.16	2.53	3.69	5.55	10.16	17.21	31.31	115.85	73.08	46.34	38.30	36.04	35.24	37.59	31.22	22.56	15.66					145.10
4.42	1.40	2.99	4.54	7.21	14.54	29.75	91.71	60.33	35.23	30.01	28.27	28.62	29.30	32.25	29.17	21.18	14.77				128.13
4.68	0.88	1.66	3.68	5.90	10.32	25.14	87.13	47.76	29.08	22.81	22.15	22.45	23.79	25.14	30.14	27.40	19.98	13.98			116.49
4.94	0.44	1.04	2.04	4.78	8.44	17.84	73.62	45.37	23.02	18.83	16.84	17.59	18.67	20.41	23.49	28.30	25.84	18.91	13.28		105.20
5.20	0.18	0.52	1.27	2.65	6.84	14.59	52.26	38.34	21.87	14.91	13.90	13.37	14.62	16.01	19.07	22.06	26.69	24.46	17.96	12.65	92.84
5.46		0.21	0.63	1.65	3.79	11.82	42.73	27.21	18.48	14.16	11.00	11.04	11.12	12.55	14.97	17.91	20.80	25.26	23.22	17.10	79.35
5.73			0.26	0.82	2.37	6.56	34.63	22.25	13.12	11.97	10.45	8.74	9.18	9.54	11.72	14.05	16.89	19.69	23.99	22.12	66.21
5.99				0.34	1.18	4.09	19.21	18.03	10.73	8.49	8.83	8.30	7.26	7.87	8.91	11.01	13.25	15.99	18.70	22.85	51.40
6.25					0.49	2.03	11.98	10.00	8.69	6.94	6.27	7.01	6.90	6.23	7.36	8.37	10.38	12.54	15.18	17.81	38.39
6.51						0.84	5.96	6.24	4.82	5.63	5.13	4.98	5.83	5.92	5.82	6.91	7.89	9.83	11.91	14.46	28.38
6.77							2.46	3.10	3.01	3.12	4.15	4.07	4.14	5.00	5.53	5.47	6.52	7.47	9.33	11.35	20.76
7.03								1.28	1.50	1.95	2.30	3.30	3.38	3.55	4.68	5.20	5.16	6.17	7.09	8.89	15.12
7.29									0.62	0.97	1.44	1.83	2.74	2.90	3.32	4.39	4.90	4.88	5.86	6.76	11.28
7.55										0.40	0.71	1.14	1.52	2.35	2.71	3.12	4.14	4.64	4.64	5.58	8.60
7.81											0.30	0.57	0.95	1.31	2.20	2.55	2.94	3.92	4.40	4.42	6.54
8.07												0.23	0.47	0.81	1.22	2.07	2.40	2.78	3.72	4.20	4.97
8.33													0.19	0.40	0.76	1.15	1.95	2.27	2.64	3.55	3.59
8.59														0.17	0.38	0.71	1.08	1.84	2.16	2.52	2.46
8.85															0.16	0.36	0.67	1.02	1.75	2.06	1.67
9.11																0.15	0.34	0.64	0.97	1.67	1.04
9.37																	0.14	0.32	0.61	0.92	0.55
9.63																		0.13	0.30	0.58	0.28
9.89																			0.12	0.29	0.11
10.15																				0.12	0.03
10.41																					0.00

Tempo di ritorno = 100 anni

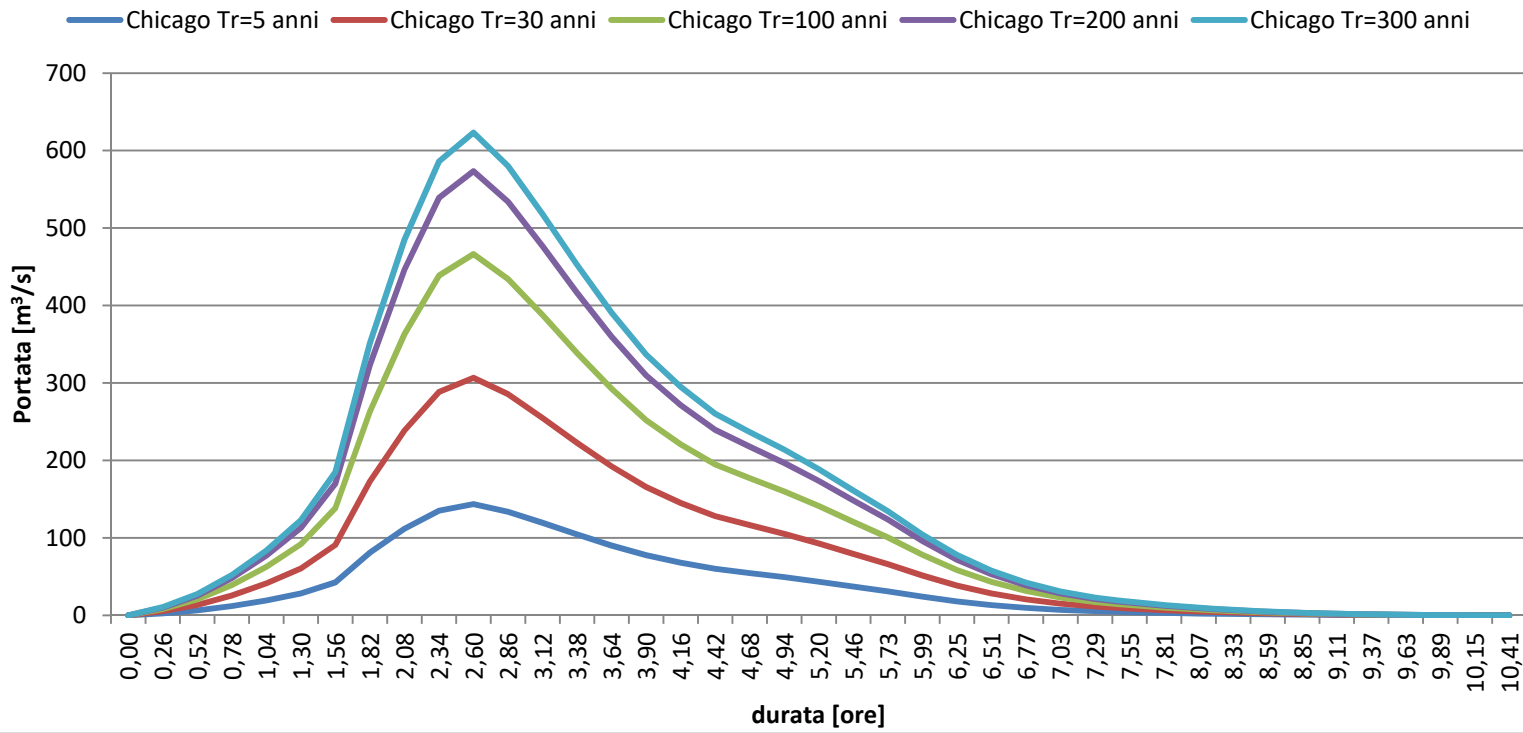
Pioggia Efficace [mm*km²]	96.10	113.63	139.52	181.39	259.56	448.72	1314.15	684.35	329.87	213.59	157.68	125.20	104.10	89.30	83.45	78.37	73.90	69.95	66.43	63.28	Totale [m³/s]
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.26	29.21																				8.11
0.52	39.51	34.54																			20.57
0.78	51.10	46.72	42.41																		38.95
1.04	52.78	60.42	57.36	55.14																	62.70
1.30	41.14	62.42	74.19	74.58	78.90																92.00
1.56	33.41	48.65	76.63	96.45	106.71	136.39															138.40
1.82	26.21	39.50	59.73	99.63	138.01	184.48	399.45														263.06
2.08	20.53	30.99	48.50	77.66	142.57	238.59	540.28	208.01													363.10
2.34	15.61	24.28	38.05	63.06	111.13	246.47	698.75	281.35	100.27												438.60
2.60	12.89	18.46	29.81	49.47	90.23	192.11	721.82	363.88	135.62	64.92											466.45
2.86	10.20	15.24	22.66	38.76	70.79	155.99	562.64	375.89	175.40	87.81	47.93										434.25
3.12	9.69	12.06	18.71	29.46	55.46	122.39	456.84	293.00	181.19	113.57	64.82	38.06									387.57
3.38	8.19	11.46	14.81	24.32	42.16	95.88	358.43	237.90	141.23	117.32	83.84	51.47	31.64								338.51
3.64	5.81	9.68	14.07	19.25	34.80	72.88	280.79	186.65	114.67	91.45	86.61	66.57	42.80	27.14							292.55
3.90	4.75	6.87	11.89	18.29	27.55	60.17	213.45	146.22	89.97	74.25	67.51	68.77	55.35	36.71	25.37						251.98
4.16	3.85	5.62	8.44	15.46	26.17	47.63	176.21	111.15	70.48	58.26	54.81	53.60	57.18	47.48	34.31	23.82					220.69
4.42	2.14	4.55	6.90	10.97	22.12	45.25	139.48	91.76	53.58	45.64	43.00	43.53	44.57	49.05	44.37	32.22	22.46				194.89
4.68	1.33	2.53	5.59	8.97	15.70	38.24	132.51	72.64	44.23	34.69	33.69	34.15	36.19	38.23	45.84	41.67	30.38	21.26			177.18
4.94	0.66	1.58	3.10	7.27	12.84	27.14	111.98	69.01	35.01	28.64	25.61	26.75	28.39	31.04	35.73	43.04	39.30	28.76	20.19		160.01
5.20	0.27	0.78	1.93	4.03	10.40	22.19	79.48	58.31	33.26	22.67	21.14	20.34	22.24	24.36	29.01	33.55	40.59	37.20	27.31	19.23	141.20
5.46		0.32	0.96	2.51	5.77	17.98	64.99	41.39	28.11	21.54	16.74	16.79	16.91	19.08	22.76	27.24	31.64	38.42	35.32	26.02	120.69
5.73			0.40	1.25	3.60	9.98	52.67	33.84	19.95	18.20	15.90	13.29	13.96	14.50	17.83	21.37	25.69	29.95	36.49	33.65	100.70
5.99				0.52	1.79	6.22	29.22	27.43	16.31	12.92	13.44	12.63	11.05	11.97	13.55	16.74	20.16	24.32	28.44	34.76	78.18
6.25					0.74	3.09	18.22	15.22	13.22	10.56	9.54	10.67	10.50	9.48	11.19	12.73	15.79	19.08	23.09	27.09	58.39
6.51						1.28	9.06	9.49	7.33	8.56	7.80	7.57	8.87	9.01	8.86	10.51	12.00	14.95	18.12	22.00	43.17
6.77							3.74	4.72	4.57	4.75	6.32	6.19	6.30	7.61	8.42	8.32	9.91	11.36	14.19	17.26	31.57
7.03								1.95	2.27	2.96	3.51	5.02	5.15	5.40	7.11	7.90	7.84	9.38	10.79	13.52	23.00

10.41																					0.00
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Tempo di ritorno = 300 anni

Pioggia Efficace [mm*km ²]	128.39	151.81	186.39	242.33	346.76	599.46	1755.64	914.25	440.69	285.35	210.65	167.27	139.07	119.30	111.49	104.70	98.73	93.46	88.75	84.54	Totale [m ³ /s]
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.26	39.02																				10.84
0.52	52.78	46.14																			27.48
0.78	68.26	62.41	56.66																		52.04
1.04	70.52	80.72	76.63	73.66																	83.76
1.30	54.97	83.38	99.11	99.63	105.40																122.91
1.56	44.63	65.00	102.38	128.85	142.56	182.21															184.90
1.82	35.02	52.77	79.80	133.11	184.38	246.45	533.64														351.44
2.08	27.43	41.40	64.80	103.75	190.47	318.74	721.78	277.90													485.08
2.34	20.85	32.44	50.84	84.24	148.46	329.26	933.49	375.87	133.95												585.95
2.60	17.21	24.66	39.83	66.09	120.55	256.65	964.31	486.12	181.18	86.73											623.15
2.86	13.63	20.36	30.27	51.78	94.58	208.39	751.66	502.17	234.32	117.31	64.03										580.14
3.12	12.95	16.11	24.99	39.36	74.09	163.50	610.32	391.43	242.05	151.72	86.60	50.84									517.77
3.38	10.94	15.31	19.78	32.49	56.32	128.08	478.84	317.82	188.68	156.73	112.00	68.77	42.27								452.23
3.64	7.76	12.94	18.80	25.72	46.50	97.37	375.12	249.36	153.20	122.17	115.70	88.94	57.17	36.26							390.83
3.90	6.35	9.18	15.88	24.44	36.80	80.38	285.16	195.34	120.19	99.20	90.19	91.87	73.94	49.05	33.89						336.63
4.16	5.15	7.51	11.27	20.65	34.97	63.63	235.41	148.50	94.16	77.83	73.23	71.61	76.38	63.44	45.84	31.82					294.83
4.42	2.85	6.08	9.22	14.66	29.55	60.45	186.34	122.59	71.58	60.97	57.45	58.15	59.54	65.53	59.28	43.04	30.01				260.36
4.68	1.78	3.38	7.47	11.98	20.97	51.08	177.03	97.04	59.09	46.35	45.01	45.62	48.34	51.08	61.24	55.67	40.59	28.41			236.70
4.94	0.89	2.10	4.14	9.71	17.15	36.26	149.60	92.19	46.77	38.26	34.21	35.74	37.93	41.47	47.73	57.51	52.50	38.42	26.98		213.77
5.20	0.37	1.05	2.58	5.39	13.90	29.65	106.18	77.90	44.44	30.29	28.24	27.17	29.71	32.54	38.76	44.82	54.23	49.69	36.49	25.70	188.64
5.46		0.43	1.29	3.36	7.71	24.03	86.82	55.29	37.55	28.77	22.36	22.43	22.59	25.49	30.41	36.40	42.27	51.33	47.19	34.75	161.24
5.73			0.53	1.67	4.81	13.33	70.36	45.21	26.65	24.31	21.24	17.75	18.65	19.38	23.82	28.56	34.32	40.01	48.75	44.95	134.53
5.99				0.69	2.39	8.31	39.03	36.64	21.79	17.26	17.95	16.87	14.76	16.00	18.11	22.37	26.93	32.49	38.00	46.43	104.45
6.25					0.99	4.13	24.34	20.33	17.66	14.11	12.74	14.25	14.02	12.66	14.95	17.00	21.10	25.49	30.85	36.19	78.01

Idrogrammi di piena



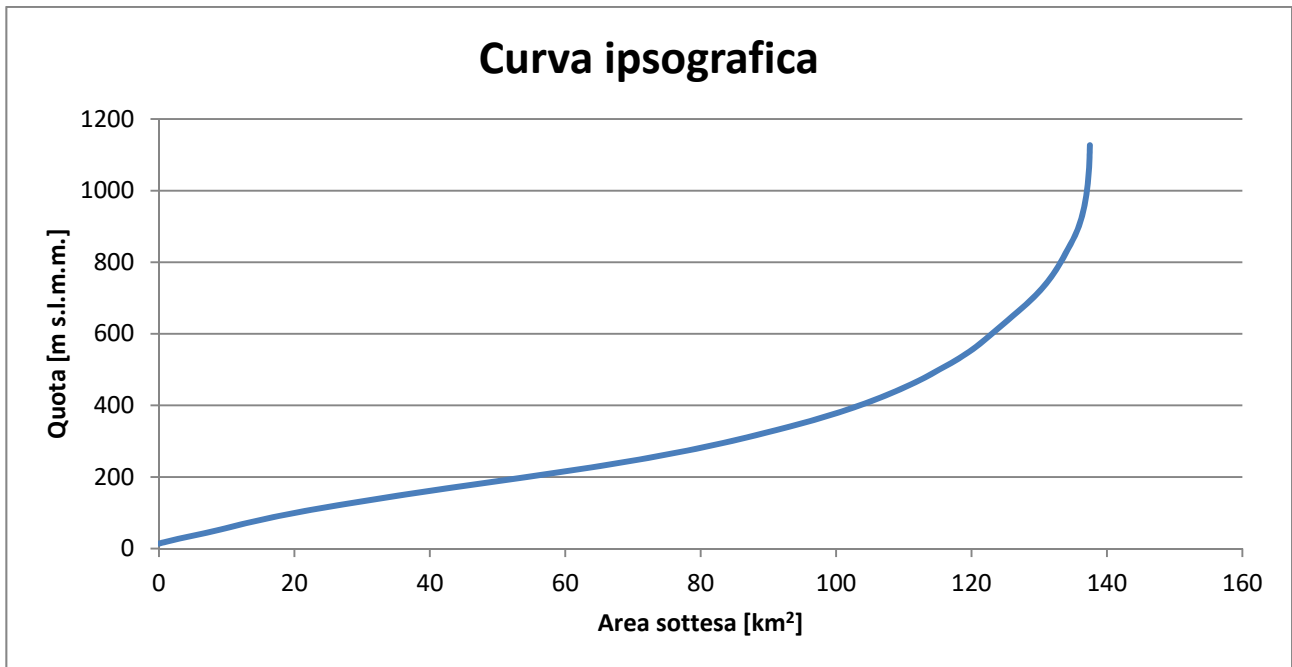
Bacino 5**Dati input e tempo di corrivazione bacino**

DATI DI INPUT	
Area Bacino [m ²]	137488676.29
Area Bacino [ha]	137488.68
Area Bacino [km ²]	137.49
Lunghezza Asta [m]	19088.69
Lunghezza Asta [km]	19.08869
Zmax [m s.l.m.m]	1127
Zmed [m s.l.m.m]	295.90
Zmin [m s.l.m.m]	14
Tc (Giandotti) [ore]	5.62
Tc (Giandotti) [min]	337.41

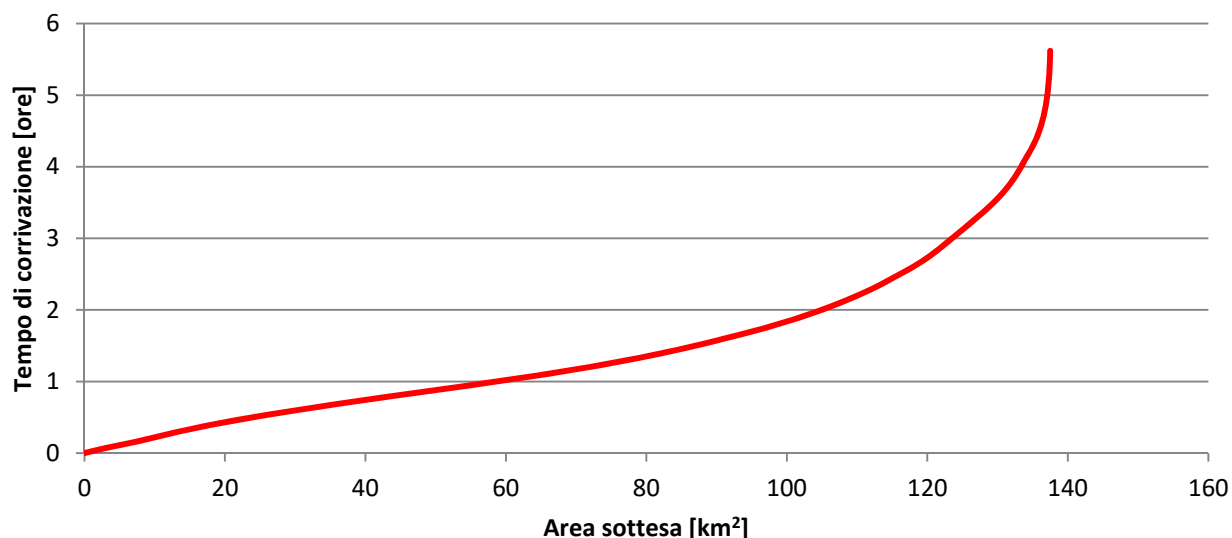
Curva ipsografica e curva aree-tempi

Quota [m]	Area Sottesa [km²]	Tempo Corrivazione [ore]
14	0	0
25	2.360226297	0.055543576
50	8.373251037	0.181778976
75	13.8311001	0.308014376
100	20.10365564	0.434249775
125	27.74234489	0.560485175
150	36.10630865	0.686720575
175	45.1342099	0.812955975
200	54.24217193	0.939191375
225	63.1738063	1.065426774
250	71.38176065	1.191662174
275	78.38001965	1.317897574
300	84.42569904	1.444132974
325	89.90227184	1.570368374
350	94.97087597	1.696603774
375	99.49477592	1.822839173
400	103.4923224	1.949074573
425	106.9678328	2.075309973
450	110.056131	2.201545373
475	112.8438329	2.327780773
500	115.2325924	2.454016173
525	117.6013787	2.580251572
550	119.6648785	2.706486972
575	121.4431396	2.832722372
600	123.0006694	2.958957772
625	124.5753285	3.085193172
650	126.1133607	3.211428571
675	127.6262632	3.337663971
700	129.0542281	3.463899371
725	130.3376901	3.590134771
750	131.4425866	3.716370171

775	132.365253	3.842605571
800	133.1702433	3.96884097
825	133.9001055	4.09507637
850	134.6297439	4.22131177
875	135.2889818	4.34754717
900	135.8689888	4.47378257
925	136.264761	4.600017969
950	136.5878387	4.726253369
975	136.8484325	4.852488769
1000	137.0547107	4.978724169
1025	137.2163149	5.104959569
1050	137.3288531	5.231194969
1075	137.401389	5.357430368
1100	137.45204	5.483665768
1127	137.4886763	5.62



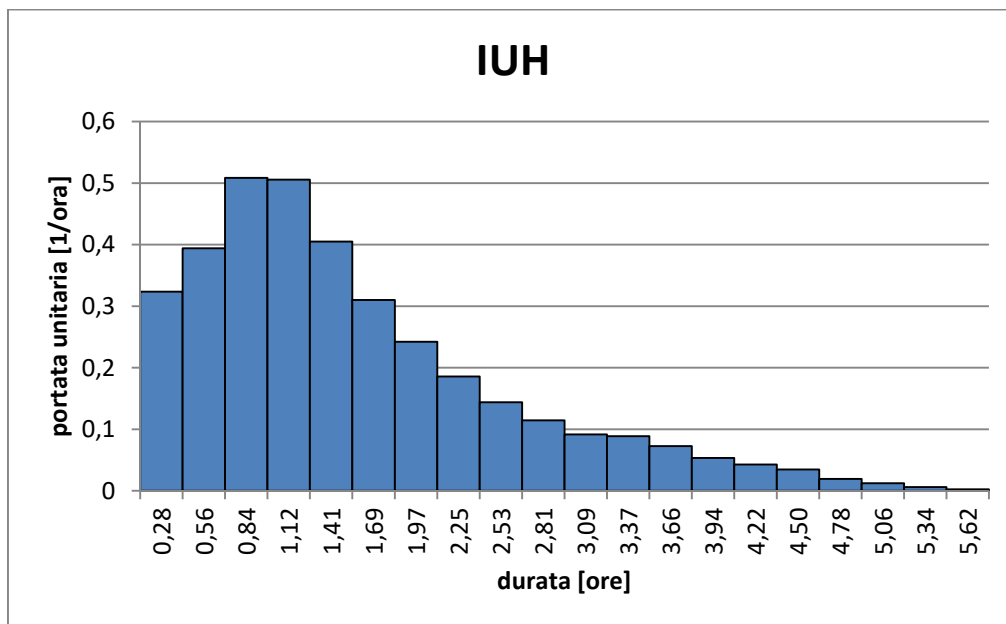
Curva aree - tempi di corrivazione



Idrogramma unitario istantaneo

Step	T _c [ore]	T _c [min]	Quota [m]	A [km²]	ΔA [km²]	ΔA/dt	IUH
0	0.00	0	14	0			
1	0.28	16.87071	69	12.51048	12.51048	44.49301	0.323612
2	0.56	33.74143	125	27.74234	15.23187	54.1715	0.394007
3	0.84	50.61214	181	47.39793	19.65558	69.90427	0.508437
4	1.12	67.48286	236	66.94158	19.54365	69.50619	0.505541
5	1.41	84.35357	292	82.5947	15.65312	55.66968	0.404904
6	1.69	101.2243	348	94.58367	11.98897	42.6383	0.310122
7	1.97	118.095	403	103.9446	9.36091	33.29169	0.242141
8	2.25	134.9657	459	111.1234	7.178829	25.53121	0.185697
9	2.53	151.8364	515	116.6844	5.560942	19.77726	0.143846
10	2.81	168.7071	570	121.1105	4.42616	15.74146	0.114493
11	3.09	185.5779	626	124.6499	3.539402	12.58774	0.091555
12	3.37	202.4486	682	128.0774	3.427452	12.18959	0.088659
13	3.66	219.3193	737	130.8896	2.812216	10.00153	0.072744
14	3.94	236.19	793	132.9535	2.063882	7.340112	0.053387
15	4.22	253.0607	849	134.6028	1.64933	5.865775	0.042664
16	4.50	269.9314	904	135.9451	1.342272	4.773736	0.034721
17	4.78	286.8021	960	136.6928	0.7477	2.659165	0.019341
18	5.06	303.6729	1016	137.1649	0.472168	1.679247	0.012214
19	5.34	320.5436	1072	137.3944	0.229478	0.816128	0.005936
20	5.62	337.4143	1127	137.4887	0.094262	0.335239	0.002438

Dove $dt = T_c/20 = 0.281$ ore



Curva di probabilità pluviometrica

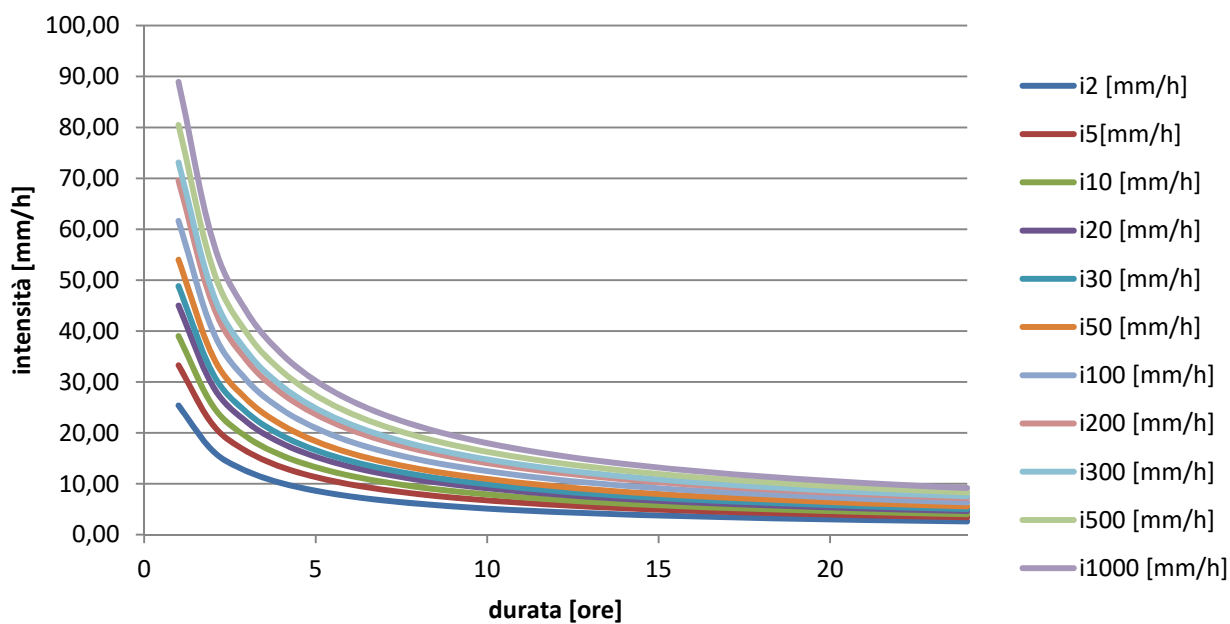
Parametri di distribuzione	
Area omogenea	A1
$m(l_0)$ (mm/ora)	77.08
d_c (ore)	0.3661
C	0.7995
$D \cdot 10^5$	3.6077
ρ^2	0.9994
Z_{med} [m]	295.9

d	$\mu(i(d))$ [mm/h]	$\mu(h(d))$ [mm]	i_2 [mm/h]	i_5 [mm/h]	i_{10} [mm/h]	i_{20} [mm/h]	i_{30} [mm/h]	i_{50} [mm/h]	i_{100} [mm/h]	i_{200} [mm/h]	i_{300} [mm/h]	i_{500} [mm/h]	i_{1000} [mm/h]
1	27.28	27.28	25.37	33.28	39.01	45.01	48.83	54.01	61.65	69.56	73.11	80.47	88.93
2	17.69	35.37	16.45	21.58	25.29	29.18	31.66	35.02	39.97	45.10	47.40	52.18	57.66
3	13.39	40.18	12.46	16.34	19.15	22.10	23.97	26.52	30.27	34.15	35.89	39.51	43.66
4	10.91	43.64	10.15	13.31	15.60	18.00	19.53	21.60	24.65	27.82	29.24	32.18	35.56
5	9.27	46.35	8.62	11.31	13.26	15.30	16.60	18.36	20.95	23.64	24.85	27.35	30.22
6	8.10	48.61	7.53	9.88	11.59	13.37	14.50	16.04	18.31	20.66	21.71	23.90	26.41
7	7.22	50.55	6.72	8.81	10.33	11.91	12.93	14.30	16.32	18.41	19.35	21.30	23.54
8	6.53	52.25	6.07	7.97	9.34	10.78	11.69	12.93	14.76	16.65	17.50	19.27	21.29
9	5.97	53.77	5.56	7.29	8.54	9.86	10.69	11.83	13.50	15.24	16.01	17.63	19.48
10	5.52	55.15	5.13	6.73	7.89	9.10	9.87	10.92	12.46	14.06	14.78	16.27	17.98
11	5.13	56.42	4.77	6.26	7.33	8.46	9.18	10.15	11.59	13.08	13.74	15.13	16.72
12	4.80	57.58	4.46	5.85	6.86	7.92	8.59	9.50	10.84	12.24	12.86	14.16	15.64
13	4.51	58.67	4.20	5.51	6.45	7.45	8.08	8.94	10.20	11.51	12.10	13.31	14.71
14	4.26	59.69	3.97	5.20	6.10	7.03	7.63	8.44	9.64	10.87	11.43	12.58	13.90
15	4.04	60.65	3.76	4.93	5.78	6.67	7.24	8.01	9.14	10.31	10.84	11.93	13.18
16	3.85	61.55	3.58	4.69	5.50	6.35	6.89	7.62	8.69	9.81	10.31	11.35	12.54
17	3.67	62.41	3.41	4.48	5.25	6.06	6.57	7.27	8.30	9.36	9.84	10.83	11.97
18	3.51	63.22	3.27	4.29	5.02	5.80	6.29	6.95	7.94	8.96	9.41	10.36	11.45
19	3.37	64.00	3.13	4.11	4.82	5.56	6.03	6.67	7.61	8.59	9.03	9.94	10.98
20	3.24	64.75	3.01	3.95	4.63	5.34	5.79	6.41	7.32	8.26	8.68	9.55	10.55

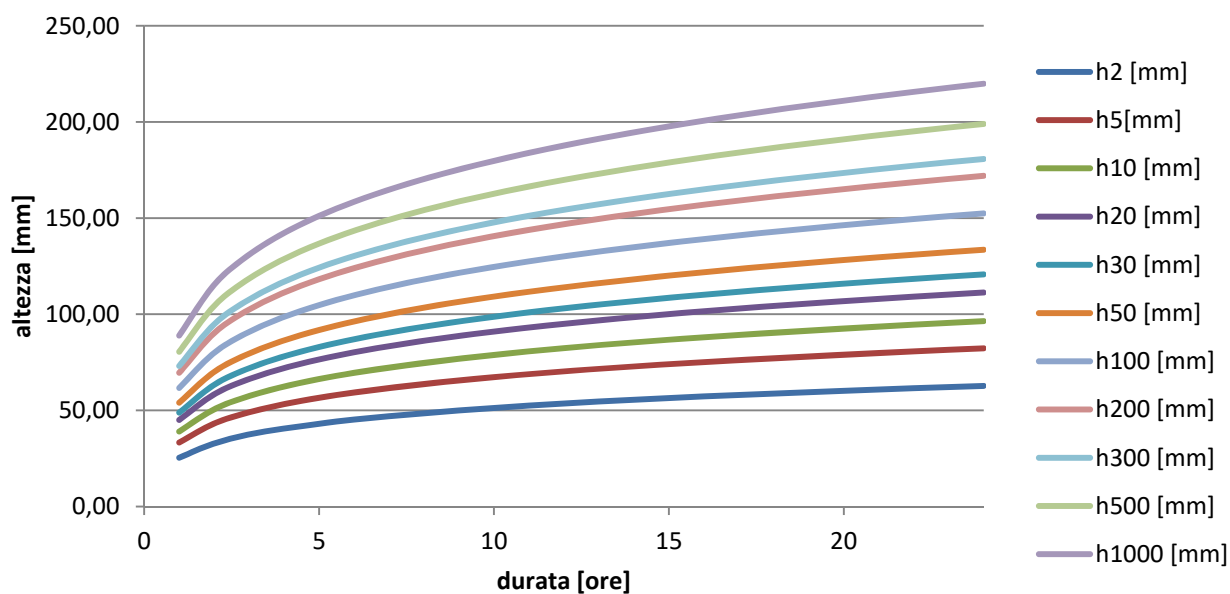
21	3.12	65.46	2.90	3.80	4.46	5.14	5.58	6.17	7.05	7.95	8.35	9.20	10.16
22	3.01	66.15	2.80	3.67	4.30	4.96	5.38	5.95	6.80	7.67	8.06	8.87	9.80
23	2.90	66.81	2.70	3.54	4.15	4.79	5.20	5.75	6.56	7.41	7.78	8.57	9.47
24	2.81	67.45	2.61	3.43	4.02	4.64	5.03	5.56	6.35	7.17	7.53	8.29	9.16

d	$\mu(i(d))$ [mm/h]	$\mu(h(d))$ [mm]	h_2 [mm]	h_5 [mm]	h_{10} [mm]	h_{20} [mm]	h_{30} [mm]	h_{50} [mm]	h_{100} [mm]	h_{200} [mm]	h_{300} [mm]	h_{500} [mm]	h_{1000} [mm]
1	27.28	27.28	25.37	33.28	39.01	45.01	48.83	54.01	61.65	69.56	73.11	80.47	88.93
2	17.69	35.37	32.90	43.16	50.58	58.37	63.32	70.04	79.94	90.20	94.80	104.35	115.32
3	13.39	40.18	37.37	49.02	57.46	66.30	71.92	79.56	90.81	102.46	107.68	118.53	130.99
4	10.91	43.64	40.58	53.23	62.40	72.00	78.11	86.40	98.62	111.27	116.94	128.72	142.25
5	9.27	46.35	43.11	56.55	66.29	76.49	82.98	91.78	104.76	118.20	124.23	136.75	151.12
6	8.10	48.61	45.21	59.31	69.51	80.21	87.01	96.25	109.86	123.96	130.28	143.40	158.47
7	7.22	50.55	47.01	61.67	72.28	83.40	90.48	100.08	114.24	128.90	135.47	149.11	164.78
8	6.53	52.25	48.59	63.74	74.72	86.21	93.53	103.45	118.08	133.24	140.03	154.14	170.33
9	5.97	53.77	50.01	65.60	76.89	88.72	96.25	106.47	121.52	137.12	144.11	158.63	175.29
10	5.52	55.15	51.29	67.28	78.87	91.00	98.72	109.20	124.64	140.64	147.81	162.70	179.79
11	5.13	56.42	52.47	68.83	80.67	93.09	100.98	111.70	127.50	143.86	151.19	166.43	183.91
12	4.80	57.58	53.55	70.25	82.34	95.01	103.07	114.02	130.14	146.84	154.32	169.87	187.72
13	4.51	58.67	54.56	71.58	83.90	96.81	105.02	116.17	132.60	149.61	157.24	173.08	191.27
14	4.26	59.69	55.51	72.82	85.35	98.49	106.84	118.18	134.90	152.21	159.96	176.08	194.58
15	4.04	60.65	56.40	73.99	86.72	100.07	108.56	120.08	137.06	154.65	162.53	178.90	197.70
16	3.85	61.55	57.24	75.09	88.02	101.56	110.17	121.87	139.10	156.95	164.95	181.57	200.65
17	3.67	62.41	58.04	76.14	89.24	102.97	111.71	123.57	141.04	159.14	167.25	184.10	203.45
18	3.51	63.22	58.80	77.13	90.41	104.32	113.17	125.18	142.89	161.22	169.44	186.51	206.11
19	3.37	64.00	59.52	78.08	91.52	105.61	114.57	126.73	144.65	163.21	171.53	188.81	208.65
20	3.24	64.75	60.22	78.99	92.59	106.83	115.90	128.20	146.33	165.11	173.53	191.01	211.08
21	3.12	65.46	60.88	79.87	93.61	108.01	117.18	129.62	147.95	166.93	175.44	193.12	213.41
22	3.01	66.15	61.52	80.70	94.59	109.15	118.41	130.98	149.50	168.68	177.28	195.14	215.65
23	2.90	66.81	62.13	81.51	95.54	110.24	119.59	132.29	150.99	170.37	179.05	197.09	217.81
24	2.81	67.45	62.73	82.29	96.45	111.29	120.73	133.55	152.44	172.00	180.76	198.98	219.89

Intensità di pioggia



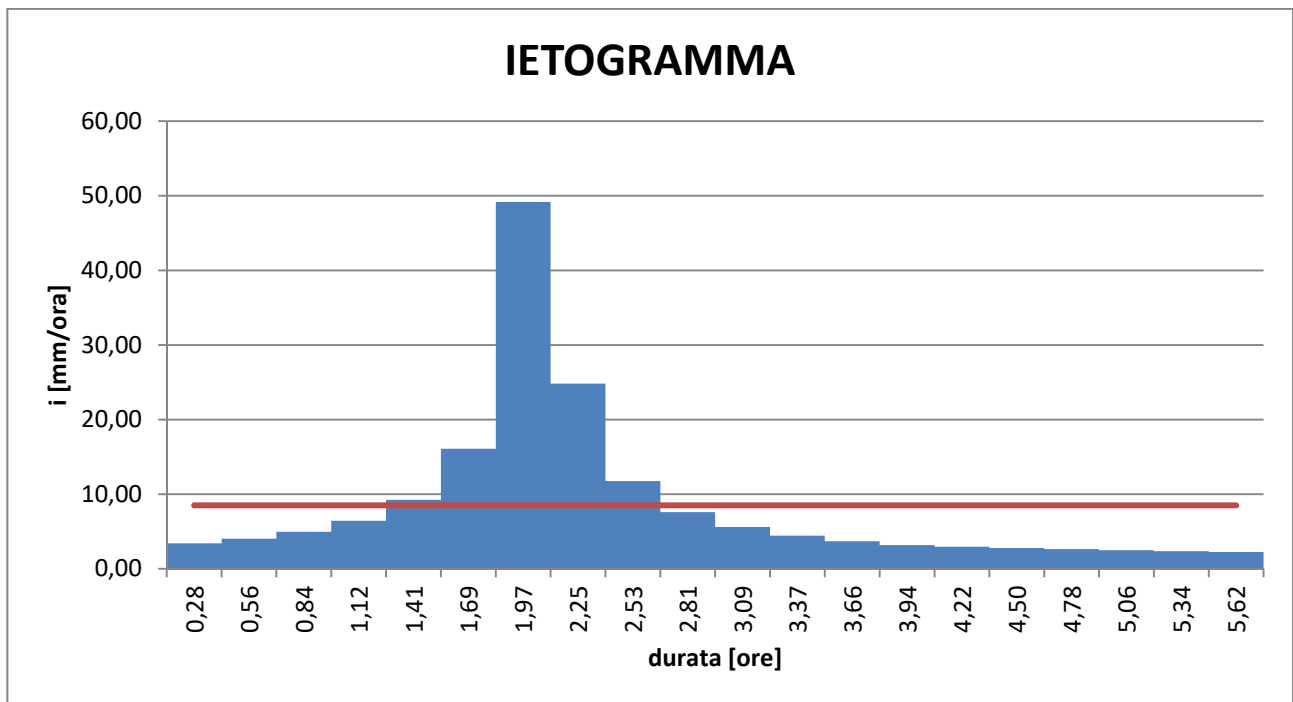
Altezza di pioggia



Ietogramma di progetto - Ietogramma Chicago

d [ore]	$\mu(h(d))$ [mm]	$\Delta \mu(h(d))$ [mm]	i [mm/ora]	Chicago i [mm/ora]	Costante i [mm/ora]
0.28	13.83	13.83	49.17	3.42	8.50
0.56	20.80	6.98	24.82	4.04	8.50
0.84	25.33	4.52	16.09	4.96	8.50
1.12	28.64	3.31	11.77	6.45	8.50
1.41	31.24	2.60	9.24	9.24	8.50
1.69	33.37	2.14	7.60	16.09	8.50
1.97	35.19	1.81	6.45	49.17	8.50
2.25	36.76	1.58	5.60	24.82	8.50

2.53	38.16	1.39	4.96	11.77	8.50
2.81	39.41	1.25	4.45	7.60	8.50
3.09	40.54	1.14	4.04	5.60	8.50
3.37	41.59	1.04	3.70	4.45	8.50
3.66	42.55	0.96	3.42	3.70	8.50
3.94	43.44	0.89	3.18	3.18	8.50
4.22	44.28	0.84	2.97	2.97	8.50
4.50	45.06	0.79	2.79	2.79	8.50
4.78	45.80	0.74	2.63	2.63	8.50
5.06	46.50	0.70	2.49	2.49	8.50
5.34	47.17	0.67	2.37	2.37	8.50
5.62	47.81	0.63	2.26	2.26	8.50



Pioggia efficace (metodo Curve Number)

CODICE	INDICE	AREA	AREA*INDICE
111-A	89	0	0
111-C	94	0	0
112-A	77	381141.8	29347919.19
112-B	85	859301.4	73040620.23
112-C	90	529542.3	47658811.48
112-D	92	0	0
121-A	81	104664.2	8477801.363
121-B	88	156396.4	13762881.89
121-C	91	34998.73	3184884.026
211-A	61	2415850	147366858.3
211-B	73	1055.387	77043.25847
211-C	81	823477	66701635.48
211-D	84	222341.3	18676667.34
221-A	76	0	0
221-C	90	0	0

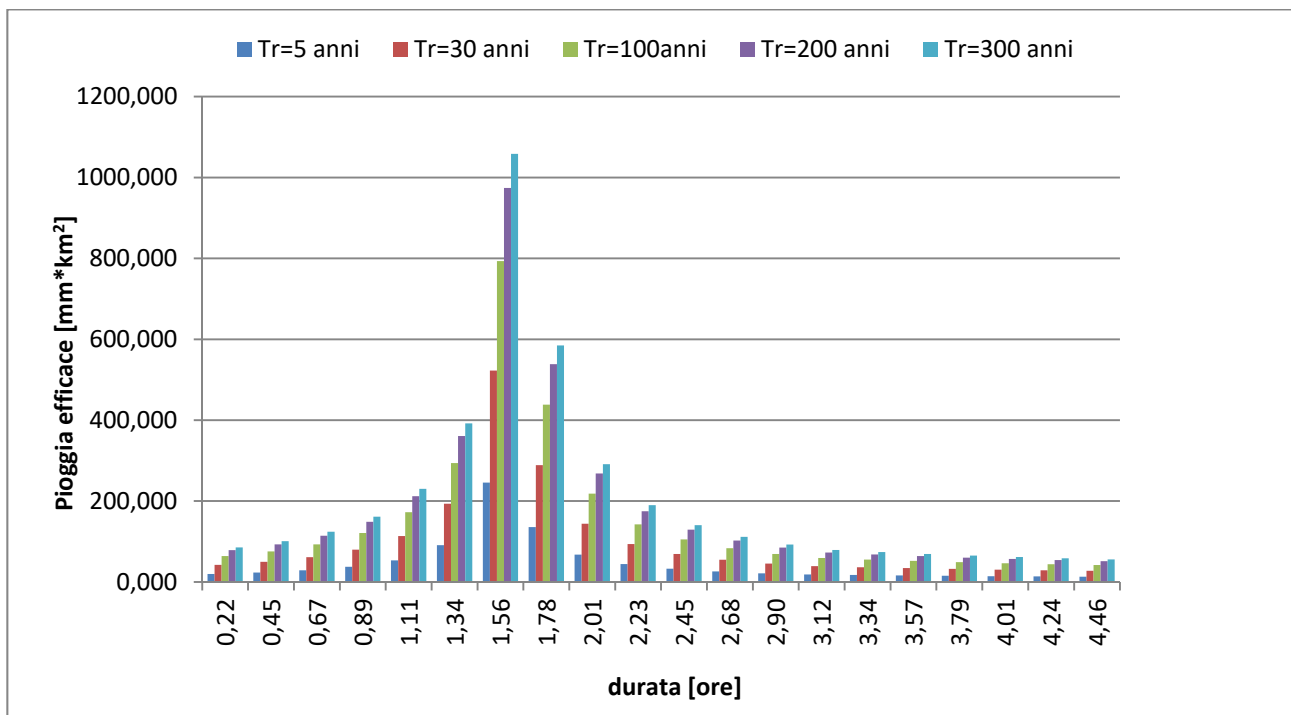
221-D	93	0	0
222-A	43	109300	4699900.369
222-C	76	797271.8	60592660.49
223-A	43	1102228	47395818.26
223-B	65	4485154	291534994.8
223-C	76	11189973	850437969
223-D	82	101439.2	8318017.227
231-A	49	0	0
231-C	79	0	0
231-D	84	0	0
241-A	61	195842.5	11946391.78
241-B	73	925926.7	67592647.42
241-C	81	164532.4	13327124.71
241-D	84	0	0
242-A	61	4549625	277527123.2
242-B	73	1458431	106465489.6
242-C	81	7183473	581861314.3
242-D	84	194914.2	16372793.15
243-A	61	1803717	110026730.7
243-B	73	7661370	559279978.5
243-C	81	10521486	852240377.8
243-D	84	0	0
311-A	36	7540857	271470866.4
311-B	60	14921489	895289346.1
311-C	73	45262684	3304175965
311-D	79	63718.07	5033727.791
312-A	36	84569.14	3044488.876
312-B	60	0	0
312-C	73	817466.7	59675066.04
312-D	79	13277.91	1048954.875
313-A	36	22.06358	794.2887621
313-B	60	0	0
313-C	73	25578.6	1867237.6
313-D	79	0	0
321-A	49	280482.9	13743661.9
321-B	69	116282.3	8023481.415
321-C	79	1153989	91165137.85
321-D	84	0	0
323-A	35	340506.5	11917728.62
323-B	56	304172.8	17033677.62
323-C	70	1993305	139531352.2
323-D	77	0	0
324-A	35	830931.4	29082600.46
324-B	56	1144208	64075664.43
324-C	70	2908634	203604389.6
324-D	77	513406.3	39532286.19
331-A	46	795474.4	36591820.66
331-C	77	81833.85	6301206.219

331-D	82	0	0
333-A	63	213436.2	13446480.23
333-C	85	108896.7	9256221.405
333-D	88	0	0
511-A	98	0	0
511-C	98	0	0
511-D	98	0	0
Somma		137488676.3	9492826610

Asciutto	CN I	48.36	S I	271.20	IA I	21.70
Medio	CN II	69.04	S II	113.90	IA II	9.11
Umido	CN III	83.68	S III	49.52	IA III	3.96

Si determina la pioggia totale media e quella efficace.

		Tr=5	Tr=30	Tr=100	Tr=200	Tr=300	Tr=5	Tr=30	Tr=100	Tr=200	Tr=300
d	Chicago	Pioggia Totale media	Pioggia Totale media	Pioggia Totale media	Pioggia Totale media	Pioggia Totale media	Pioggia efficace	Pioggia efficace	Pioggia efficace	Pioggia efficace	Pioggia efficace
[h]	[mm/h]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm*kmq]	[mm*kmq]	[mm*kmq]	[mm*kmq]	[mm*kmq]
0.28	3.421	1.043	1.531	1.933	2.181	2.292	32.263	68.593	104.119	127.884	138.915
0.56	4.042	1.233	1.809	2.284	2.577	2.708	38.123	81.053	123.032	151.115	164.150
0.84	4.960	1.513	2.220	2.803	3.162	3.323	46.784	99.465	150.981	185.442	201.439
1.12	6.448	1.967	2.886	3.643	4.111	4.320	60.820	129.308	196.279	241.080	261.876
1.41	9.241	2.819	4.135	5.221	5.891	6.191	87.159	185.306	281.280	345.483	375.285
1.69	16.091	4.908	7.201	9.091	10.258	10.781	151.764	322.662	489.776	601.568	653.460
1.97	49.172	14.997	22.004	27.782	31.347	32.945	463.778	986.028	1496.711	1838.338	1996.916
2.25	24.816	7.569	11.105	14.021	15.820	16.627	234.060	497.629	755.361	927.774	1007.805
2.53	11.771	3.590	5.268	6.651	7.504	7.887	111.022	236.042	358.292	440.073	478.034
2.81	7.596	2.317	3.399	4.292	4.843	5.090	71.647	152.326	231.219	283.995	308.493
3.09	5.605	1.709	2.508	3.167	3.573	3.755	52.864	112.392	170.603	209.543	227.618
3.37	4.452	1.358	1.992	2.516	2.838	2.983	41.993	89.280	135.519	166.452	180.810
3.66	3.704	1.130	1.658	2.093	2.361	2.482	34.935	74.274	112.742	138.476	150.421
3.94	3.180	0.970	1.423	1.797	2.027	2.130	29.991	63.763	96.787	118.879	129.134
4.22	2.973	0.907	1.330	1.679	1.895	1.992	28.036	59.607	90.479	111.130	120.717
4.50	2.792	0.852	1.250	1.578	1.780	1.871	26.336	55.992	84.992	104.391	113.396
4.78	2.634	0.803	1.179	1.488	1.679	1.765	24.844	52.819	80.176	98.476	106.971
5.06	2.494	0.761	1.116	1.409	1.590	1.671	23.523	50.012	75.914	93.241	101.284
5.34	2.369	0.723	1.060	1.339	1.510	1.587	22.346	47.509	72.115	88.575	96.216
5.62	2.257	0.688	1.010	1.275	1.439	1.512	21.290	45.264	68.707	84.389	91.669
	Totale	51.856	76.084	96.061	108.387	113.913					
	netta	11.663	24.797	37.640	46.231	50.219					
	Φ	0.225	0.326	0.392	0.427	0.441					



Gli stessi calcoli sono stati eseguiti per lo ietogramma costante.

d	costante	Tr=5	Tr=30	Tr=100	Tr=5	Tr=30	Tr=100
		Pioggia Totale media	Pioggia Totale media	Pioggia Totale media	Pioggia efficace	Pioggia efficace	Pioggia efficace
[h]	[mm/h]	[mm]	[mm]	[mm]	[mm*kmq]	[mm*kmq]	[mm*kmq]
0.28	8.50	2.593	3.804	4.803	80.179	170.466	258.754
0.56	8.50	2.593	3.804	4.803	80.179	170.466	258.754
0.84	8.50	2.593	3.804	4.803	80.179	170.466	258.754
1.12	8.50	2.593	3.804	4.803	80.179	170.466	258.754
1.41	8.50	2.593	3.804	4.803	80.179	170.466	258.754
1.69	8.50	2.593	3.804	4.803	80.179	170.466	258.754
1.97	8.50	2.593	3.804	4.803	80.179	170.466	258.754
2.25	8.50	2.593	3.804	4.803	80.179	170.466	258.754
2.53	8.50	2.593	3.804	4.803	80.179	170.466	258.754
2.81	8.50	2.593	3.804	4.803	80.179	170.466	258.754
3.09	8.50	2.593	3.804	4.803	80.179	170.466	258.754
3.37	8.50	2.593	3.804	4.803	80.179	170.466	258.754
3.66	8.50	2.593	3.804	4.803	80.179	170.466	258.754
3.94	8.50	2.593	3.804	4.803	80.179	170.466	258.754
4.22	8.50	2.593	3.804	4.803	80.179	170.466	258.754
4.50	8.50	2.593	3.804	4.803	80.179	170.466	258.754
4.78	8.50	2.593	3.804	4.803	80.179	170.466	258.754
5.06	8.50	2.593	3.804	4.803	80.179	170.466	258.754
5.34	8.50	2.593	3.804	4.803	80.179	170.466	258.754
5.62	8.50	2.593	3.804	4.803	80.179	170.466	258.754
	Totale	51.856	76.084	96.061			
	netta	11.663	24.797	37.640			
	Φ	0.225	0.326	0.392			

Sviluppo integrali di convoluzione

Segue lo sviluppo degli integrali di convoluzione in forma discreta organizzati in maniera da formare la cosiddetta "matrice di convoluzione".

Le tabelle che seguono riportano i risultati per i diversi periodi di ritorno.

Tempo di ritorno = 5 anni

Pioggia Efficace [mm*km ²] T [ore]	32.26	38.12	46.78	60.82	87.16	151.76	463.78	234.06	111.02	71.65	52.86	41.99	34.93	29.99	28.04	26.34	24.84	23.52	22.35	21.29	Totale [m ³ /s]	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.28	10.44																					2.90
0.56	12.71	12.34																				6.96
0.84	16.40	15.02	15.14																			12.93
1.12	16.31	19.38	18.43	19.68																		20.50
1.41	13.06	19.27	23.79	23.96	28.21																	30.08
1.69	10.01	15.44	23.65	30.92	34.34	49.11																45.41
1.97	7.81	11.82	18.94	30.75	44.31	59.80	150.08															89.87
2.25	5.99	9.23	14.51	24.63	44.06	77.16	182.73	75.74														120.57
2.53	4.64	7.08	11.33	18.86	35.29	76.72	235.80	92.22	35.93													143.85
2.81	3.69	5.48	8.69	14.73	27.03	61.45	234.46	119.00	43.74	23.19												150.41
3.09	2.95	4.36	6.73	11.29	21.10	47.07	187.79	118.33	56.45	28.23	17.11											139.28
3.37	2.86	3.49	5.36	8.75	16.19	36.75	143.83	94.77	56.13	36.43	20.83	13.59										121.93
3.66	2.35	3.38	4.28	6.96	12.54	28.18	112.30	72.59	44.95	36.22	26.88	16.55	11.31									105.13
3.94	1.72	2.77	4.15	5.57	9.98	21.83	86.12	56.68	34.43	29.01	26.72	21.35	13.76	9.71								89.95
4.22	1.38	2.04	3.40	5.39	7.98	17.38	66.71	43.46	26.88	22.22	21.40	21.23	17.76	11.82	9.07							77.26
4.50	1.12	1.63	2.50	4.42	7.73	13.89	53.10	33.67	20.62	17.35	16.39	17.00	17.66	15.25	11.05	8.52						67.19
4.78	0.62	1.32	2.00	3.25	6.34	13.46	42.46	26.80	15.97	13.30	12.80	13.02	14.15	15.16	14.25	10.38	8.04					59.26
5.06	0.39	0.74	1.62	2.59	4.65	11.04	41.12	21.43	12.71	10.31	9.82	10.17	10.83	12.14	14.17	13.39	9.79	7.61				54.04
5.34	0.19	0.47	0.90	2.11	3.72	8.10	33.74	20.75	10.16	8.20	7.60	7.80	8.46	9.30	11.35	13.31	12.63	9.27	7.23			48.70
5.62	0.08	0.23	0.57	1.18	3.03	6.47	24.76	17.03	9.84	6.56	6.05	6.04	6.49	7.26	8.69	10.66	12.56	11.96	8.80	6.89		43.10
5.90		0.09	0.28	0.74	1.69	5.27	19.79	12.50	8.08	6.35	4.84	4.81	5.03	5.57	6.79	8.17	10.06	11.89	11.36	8.39		36.58
6.19			0.11	0.36	1.06	2.94	16.10	9.99	5.93	5.21	4.69	3.84	4.00	4.31	5.21	6.38	7.70	9.52	11.30	10.82		30.41
6.47				0.15	0.52	1.85	8.97	8.13	4.74	3.82	3.85	3.72	3.20	3.43	4.03	4.89	6.02	7.29	9.05	10.76		23.45
6.75					0.21	0.90	5.66	4.53	3.85	3.06	2.82	3.05	3.10	2.75	3.21	3.79	4.61	5.70	6.93	8.62		17.44
7.03						0.37	2.75	2.86	2.15	2.49	2.26	2.24	2.54	2.66	2.57	3.02	3.57	4.37	5.41	6.60		12.74

2.81	7.85	11.66	18.47	31.31	57.47	130.65	498.48	253.01	93.00	49.29												319.78
3.09	6.28	9.28	14.31	24.01	44.87	100.06	399.25	251.57	120.01	60.02	36.37											296.12
3.37	6.08	7.42	11.39	18.60	34.41	78.13	305.79	201.49	119.33	77.45	44.28	28.89										259.24
3.66	4.99	7.19	9.11	14.80	26.66	59.92	238.76	154.33	95.57	77.01	57.14	35.18	24.04									223.52
3.94	3.66	5.90	8.82	11.84	21.22	46.41	183.10	120.50	73.20	61.68	56.82	45.39	29.26	20.63								191.23
4.22	2.93	4.33	7.24	11.46	16.97	36.94	141.84	92.41	57.16	47.24	45.51	45.13	37.76	25.12	19.29							164.26
4.50	2.38	3.46	5.31	9.41	16.43	29.54	112.89	71.58	43.83	36.88	34.86	36.15	37.55	32.42	23.49	18.12						142.86
4.78	1.33	2.81	4.24	6.90	13.48	28.61	90.28	56.97	33.95	28.29	27.21	27.69	30.07	32.23	30.31	22.06	17.09					125.98
5.06	0.84	1.57	3.45	5.52	9.89	23.47	87.42	45.56	27.03	21.91	20.87	21.62	23.03	25.82	30.13	28.47	20.81	16.18				114.89
5.34	0.41	0.99	1.92	4.49	7.91	17.23	71.73	44.12	21.61	17.44	16.17	16.58	17.98	19.77	24.14	28.31	26.86	19.70	15.37			103.53
5.62	0.17	0.48	1.21	2.50	6.43	13.77	52.64	36.20	20.93	13.95	12.87	12.84	13.79	15.44	18.49	22.67	26.70	25.43	18.72	14.65		91.63
5.90		0.20	0.59	1.58	3.58	11.20	42.07	26.57	17.17	13.51	10.29	10.22	10.68	11.84	14.43	17.36	21.39	25.28	24.16	17.83		77.77
6.19			0.24	0.77	2.26	6.24	34.24	21.23	12.60	11.08	9.96	8.17	8.50	9.17	11.07	13.56	16.38	20.25	24.02	23.01		64.66
6.47				0.32	1.10	3.94	19.07	17.28	10.07	8.13	8.18	7.92	6.80	7.30	8.57	10.40	12.79	15.51	19.24	22.88		49.86
6.75					0.45	1.92	12.04	9.62	8.20	6.50	6.00	6.49	6.59	5.84	6.82	8.05	9.81	12.11	14.73	18.33		37.08
7.03						0.79	5.85	6.08	4.57	5.29	4.80	4.77	5.40	5.65	5.46	6.41	7.60	9.29	11.50	14.04		27.08
7.31							2.40	2.95	2.88	2.95	3.90	3.81	3.97	4.64	5.28	5.13	6.05	7.19	8.82	10.96		19.70
7.59								1.21	1.40	1.86	2.17	3.10	3.17	3.40	4.34	4.96	4.84	5.73	6.83	8.41		14.28
7.87									0.58	0.90	1.37	1.73	2.58	2.72	3.18	4.07	4.68	4.58	5.44	6.51		10.65
8.15										0.37	0.67	1.09	1.44	2.21	2.54	2.99	3.84	4.43	4.35	5.18		8.09
8.44											0.27	0.53	0.91	1.23	2.07	2.39	2.82	3.64	4.21	4.14		6.17
8.72												0.22	0.44	0.78	1.15	1.94	2.25	2.67	3.46	4.01		4.70
9.00													0.18	0.38	0.73	1.08	1.83	2.13	2.54	3.29		3.38
9.28														0.16	0.35	0.68	1.02	1.74	2.03	2.42		2.33
9.56															0.15	0.33	0.65	0.97	1.65	1.93		1.58
9.84																0.14	0.31	0.61	0.92	1.57		0.99
10.12																	0.13	0.30	0.58	0.88		0.52
10.40																		0.12	0.28	0.55		0.27
10.68																			0.12	0.27		0.11
10.97																				0.11		0.03

11.25																						0.00
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Tempo di ritorno = 100 anni

Pioggia Efficace [mm*km ²] T [ore]	104.12	123.03	150.98	196.28	281.28	489.78	1496.71	755.36	358.29	231.22	170.60	135.52	112.74	96.79	90.48	84.99	80.18	75.91	72.11	68.71	Totale [m ³ /s]	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.28	33.69																					9.36
0.56	41.02	39.81																				22.46
0.84	52.94	48.48	48.86																			41.74
1.12	52.64	62.55	59.49	63.52																		66.17
1.41	42.16	62.20	76.76	77.34	91.03																	97.08
1.69	32.29	49.82	76.33	99.80	110.83	158.50																146.54
1.97	25.21	38.16	61.13	99.23	143.01	192.97	484.35															290.02
2.25	19.33	29.79	46.82	79.47	142.20	249.02	589.71	244.44														389.11
2.53	14.98	22.85	36.56	60.87	113.89	247.60	760.98	297.62	115.95													464.25
2.81	11.92	17.70	28.04	47.53	87.23	198.31	756.65	384.05	141.17	74.83												485.40
3.09	9.53	14.09	21.72	36.45	68.11	151.89	606.02	381.87	182.17	91.10	55.21											449.49
3.37	9.23	11.26	17.29	28.23	52.23	118.59	464.16	305.85	181.13	117.56	67.22	43.86										393.51
3.66	7.57	10.91	13.82	22.47	40.46	90.95	362.42	234.25	145.07	116.89	86.74	53.40	36.48									339.29
3.94	5.56	8.95	13.39	17.97	32.20	70.45	277.93	182.90	111.11	93.62	86.25	68.90	44.42	31.32								290.27
4.22	4.44	6.57	10.98	17.40	25.75	56.08	215.30	140.27	86.76	71.71	69.08	68.51	57.32	38.13	29.28							249.33
4.50	3.62	5.25	8.06	14.28	24.94	44.84	171.36	108.66	66.53	55.99	52.91	54.87	57.00	49.21	35.65	27.50						216.85
4.78	2.01	4.27	6.44	10.48	20.46	43.42	137.03	86.48	51.54	42.94	41.31	42.03	45.65	48.93	46.00	33.49	25.95					191.23
5.06	1.27	2.38	5.24	8.37	15.02	35.63	132.70	69.16	41.02	33.26	31.68	32.81	34.96	39.19	45.74	43.21	31.59	24.57				174.39
5.34	0.62	1.50	2.92	6.82	12.00	26.15	108.88	66.97	32.80	26.47	24.54	25.17	27.30	30.02	36.64	42.97	40.76	29.91	23.34			157.16
5.62	0.25	0.73	1.84	3.80	9.77	20.90	79.90	54.95	31.77	21.17	19.53	19.49	20.94	23.44	28.06	34.41	40.53	38.60	28.41	22.23		139.09
5.90		0.30	0.90	2.40	5.44	17.01	63.86	40.33	26.06	20.50	15.62	15.52	16.22	17.97	21.91	26.36	32.46	38.38	36.67	27.07		118.04
6.19			0.37	1.17	3.44	9.47	51.97	32.23	19.13	16.82	15.13	12.41	12.91	13.92	16.80	20.58	24.86	30.74	36.46	34.93		98.14
6.47				0.48	1.67	5.98	28.95	26.23	15.29	12.34	12.41	12.01	10.32	11.08	13.02	15.78	19.41	23.54	29.20	34.73		75.68

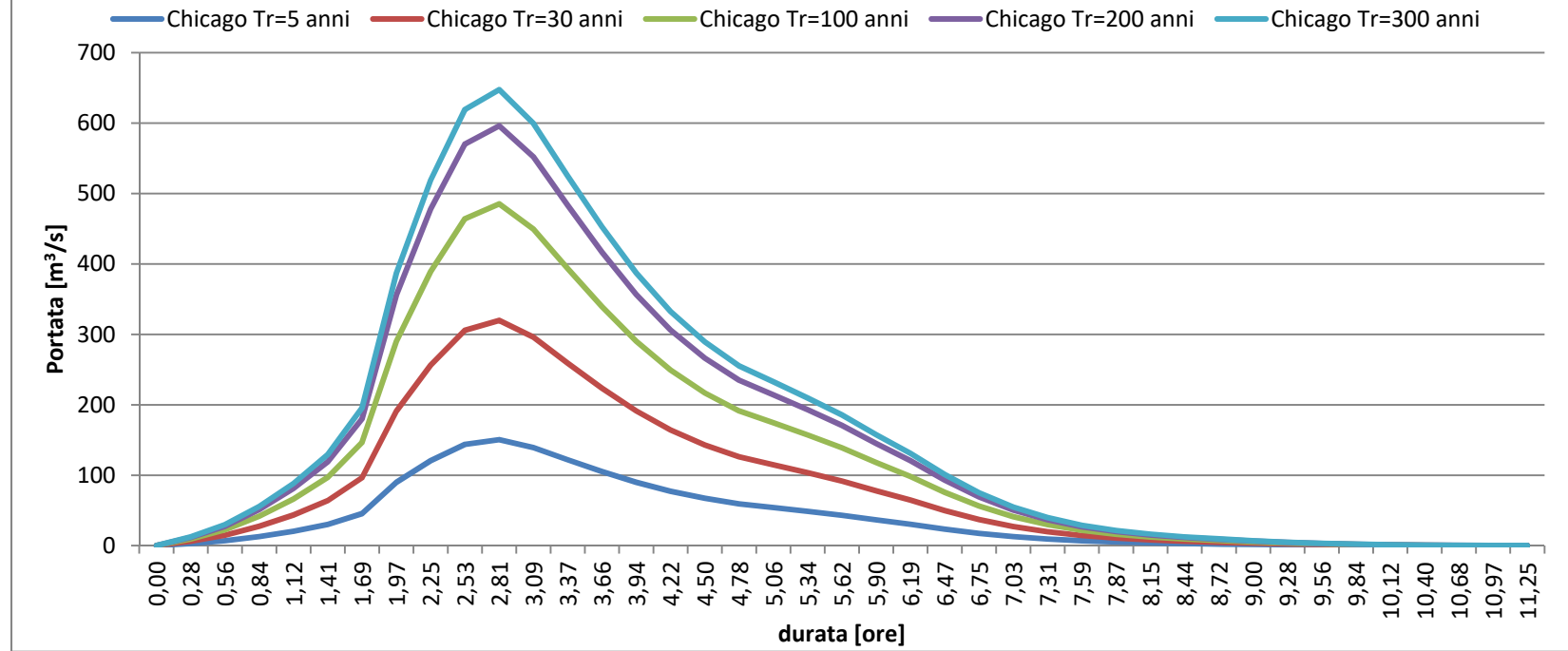
1.69	39.66	61.19	93.75	122.57	136.12	194.67																179.99	
1.97	30.97	46.86	75.09	121.88	175.66	237.02	594.91																356.22
2.25	23.75	36.59	57.51	97.61	174.66	305.86	724.32	300.24															477.93
2.53	18.40	28.06	44.90	74.76	139.89	304.12	934.68	365.55	142.41														570.21
2.81	14.64	21.74	34.44	58.38	107.14	243.58	929.36	471.71	173.39	91.90													596.19
3.09	11.71	17.30	26.68	44.77	83.66	186.56	744.35	469.03	223.75	111.90	67.81												552.08
3.37	11.34	13.84	21.23	34.68	64.16	145.66	570.11	375.66	222.47	144.39	82.56	53.87											483.32
3.66	9.30	13.40	16.98	27.60	49.70	111.71	445.14	287.72	178.19	143.57	106.54	65.58	44.81										416.73
3.94	6.83	10.99	16.44	22.07	39.56	86.53	341.37	224.65	136.48	114.99	105.93	84.63	54.56	38.47									356.53
4.22	5.46	8.07	13.49	21.37	31.63	68.88	264.44	172.28	106.56	88.07	84.84	84.15	70.41	46.84	35.96								306.24
4.50	4.44	6.45	9.90	17.54	30.63	55.08	210.48	133.46	81.72	68.77	64.98	67.40	70.01	60.44	43.79	33.78							266.35
4.78	2.47	5.25	7.91	12.87	25.13	53.33	168.31	106.22	63.30	52.74	50.74	51.62	56.07	60.10	56.50	41.13	31.87						234.88
5.06	1.56	2.92	6.44	10.29	18.44	43.76	162.98	84.94	50.39	40.85	38.91	40.30	42.94	48.13	56.18	53.08	38.80	30.17					214.20
5.34	0.76	1.85	3.59	8.37	14.74	32.12	133.73	82.26	40.29	32.52	30.14	30.91	33.53	36.87	45.00	52.77	50.07	36.74	28.66				193.03
5.62	0.31	0.90	2.26	4.66	12.00	25.67	98.14	67.49	39.02	26.00	23.99	23.94	25.71	28.79	34.46	42.27	49.78	47.41	34.90	27.31			170.84
5.90		0.37	1.10	2.94	6.68	20.89	78.43	49.53	32.01	25.18	19.18	19.06	19.92	22.08	26.91	32.37	39.87	47.14	45.03	33.25			144.99
6.19			0.45	1.43	4.22	11.63	63.83	39.58	23.49	20.66	18.58	15.24	15.85	17.10	20.64	25.28	30.54	37.75	44.78	42.91			120.55
6.47				0.59	2.05	7.35	35.56	32.21	18.78	15.16	15.24	14.76	12.68	13.61	15.99	19.39	23.85	28.92	35.86	42.66			92.96
6.75					0.84	3.57	22.45	17.94	15.28	12.12	11.19	12.11	12.28	10.88	12.72	15.02	18.29	22.58	27.47	34.17			69.14
7.03						1.47	10.91	11.33	8.51	9.86	8.94	8.89	10.07	10.54	10.17	11.95	14.17	17.31	21.45	26.17			50.49
7.31							4.48	5.51	5.37	5.49	7.28	7.10	7.39	8.65	9.85	9.56	11.27	13.41	16.45	20.43			36.74
7.59								2.26	2.61	3.47	4.05	5.78	5.91	6.35	8.08	9.26	9.02	10.68	12.74	15.67			26.63
7.87									1.07	1.69	2.56	3.22	4.81	5.07	5.93	7.59	8.73	8.54	10.14	12.14			19.86
8.15										0.69	1.24	2.03	2.68	4.13	4.74	5.57	7.16	8.27	8.11	9.66			15.08
8.44											0.51	0.99	1.69	2.30	3.86	4.45	5.26	6.78	7.85	7.73			11.51
8.72												0.41	0.82	1.45	2.15	3.62	4.20	4.98	6.44	7.48			8.77
9.00													0.34	0.71	1.36	2.02	3.42	3.98	4.73	6.14			6.30
9.28														0.29	0.66	1.28	1.90	3.24	3.78	4.51			4.35
9.56															0.27	0.62	1.20	1.80	3.08	3.60			2.94
9.84																0.25	0.58	1.14	1.71	2.93			1.84
10.12																	0.24	0.55	1.08	1.63			0.97

10.40																		0.23	0.53	1.03	0.50
10.68																			0.22	0.50	0.20
10.97																				0.21	0.06
11.25																					0.00

Tempo di ritorno = 300 anni

Pioggia Efficace [mm*km²] T [ore]	138.92	164.15	201.44	261.88	375.28	653.46	1996.92	1007.80	478.03	308.49	227.62	180.81	150.42	129.13	120.72	113.40	106.97	101.28	96.22	91.67	Totale [m³/s]	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.28	44.95																					12.49
0.56	54.73	53.12																				29.96
0.84	70.63	64.68	65.19																			55.69
1.12	70.23	83.46	79.37	84.75																		88.28
1.41	56.25	82.98	102.42	103.18	121.45																	129.52
1.69	43.08	66.46	101.84	133.15	147.86	211.47																195.52
1.97	33.64	50.91	81.56	132.39	190.81	257.47	646.23															386.94
2.25	25.80	39.75	62.47	106.03	189.72	332.24	786.80	326.14														519.15
2.53	19.98	30.48	48.78	81.21	151.95	330.35	1015.31	397.08	154.70													619.40
2.81	15.90	23.61	37.41	63.41	116.38	264.59	1009.52	512.40	188.35	99.83												647.62
3.09	12.72	18.79	28.98	48.63	90.87	202.65	808.56	509.49	243.05	121.55	73.66											599.71
3.37	12.32	15.03	23.06	37.67	69.69	158.23	619.29	408.06	241.67	156.85	89.68	58.51										525.02
3.66	10.11	14.55	18.44	29.98	53.98	121.35	483.54	312.54	193.56	155.96	115.73	71.24	48.68									452.68
3.94	7.42	11.94	17.86	23.98	42.97	94.00	370.82	244.03	148.25	124.91	115.07	91.93	59.27	41.79								387.29
4.22	5.93	8.76	14.65	23.22	34.36	74.82	287.25	187.15	115.75	95.67	92.16	91.41	76.48	50.88	39.07							332.65
4.50	4.82	7.00	10.75	19.05	33.27	59.83	228.63	144.97	88.77	74.70	70.59	73.21	76.04	65.66	47.56	36.70						289.32
4.78	2.69	5.70	8.59	13.98	27.30	57.93	182.83	115.39	68.76	57.29	55.12	56.07	60.91	65.28	61.38	44.68	34.62					255.14
5.06	1.70	3.17	6.99	11.17	20.04	47.54	177.04	92.27	54.73	44.38	42.27	43.78	46.65	52.29	61.03	57.65	42.15	32.78				232.67
5.34	0.82	2.00	3.90	9.09	16.01	34.89	145.26	89.35	43.77	35.32	32.74	33.58	36.42	40.05	48.88	57.33	54.39	39.91	31.14			209.68
5.62	0.34	0.97	2.46	5.06	13.03	27.88	106.61	73.31	42.38	28.24	26.06	26.01	27.93	31.27	37.44	45.91	54.08	51.50	37.91	29.67		185.57

Idrogrammi di piena



Bacino 6**Dati input e tempo di corrivazione bacino**

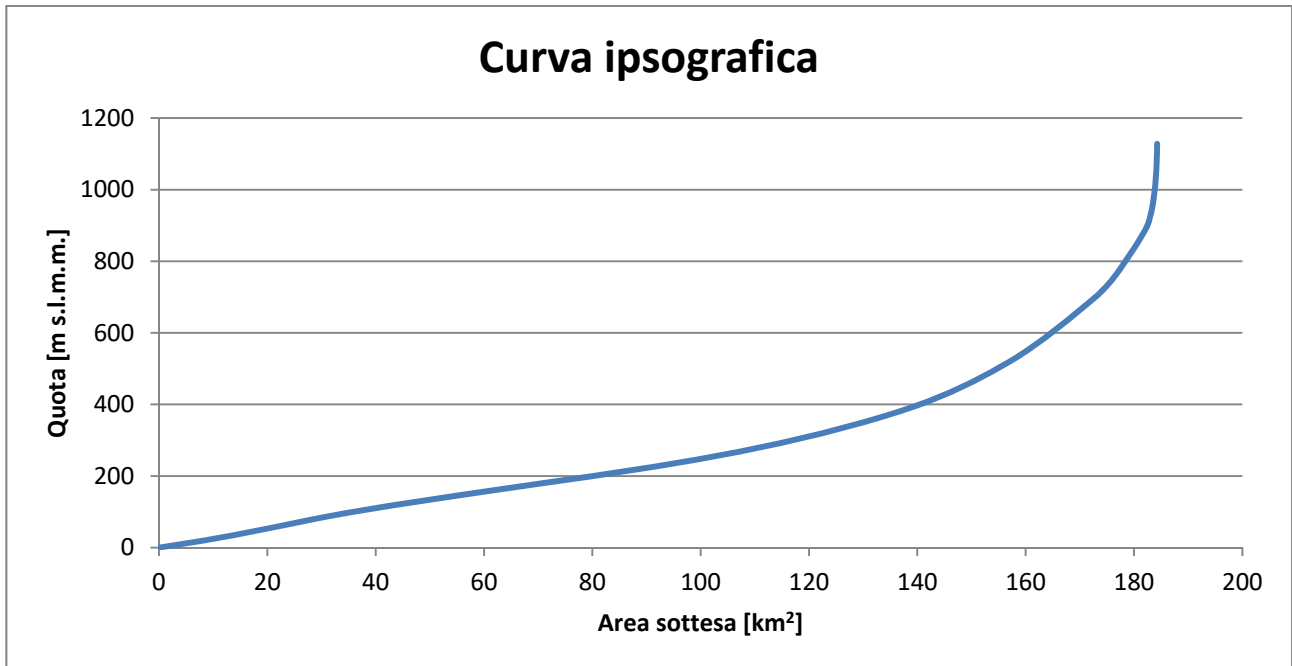
DATI DI INPUT	
Area Bacino [m ²]	184274112.71
Area Bacino [ha]	184274.11
Area Bacino [km ²]	184.27
Lunghezza Asta [m]	26342
Lunghezza Asta [km]	26.342
Zmax [m s.l.m.m]	1128
Zmed [m s.l.m.m]	282.44
Zmin [m s.l.m.m]	0
Tc (Giandotti) [ore]	6.98
Tc (Giandotti) [min]	418.66

Curva ipsografica e curva aree-tempi

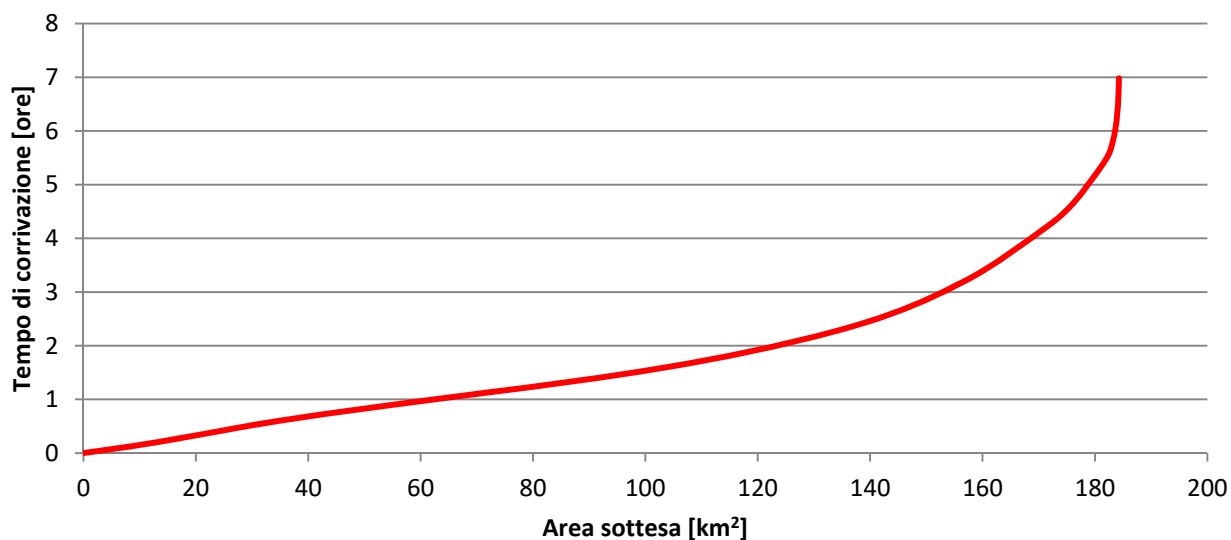
Il tempo di corrivazione è stato determinato pesandolo rispetto alle aree sottese tra due quote successive.

Quota [m]	Area Sottesa [km ²]	Tempo Corrivazione [ore]
0	0	0
25	10.24976947	0.154698582
50	19.02392886	0.309397163
75	27.08261551	0.464095745
100	35.83876919	0.618794326
125	46.11727693	0.773492908
150	57.10901952	0.928191489
175	68.5745798	1.082890071
200	79.97159532	1.237588652
225	90.95684802	1.392287234
250	100.8893963	1.546985816
275	109.4905107	1.701684397
300	116.9531348	1.856382979
325	123.7753954	2.01108156
350	129.9868513	2.165780142
375	135.5468102	2.320478723
400	140.4619858	2.475177305
425	144.6975789	2.629875887
450	148.4058406	2.784574468
475	151.7401413	2.93927305
500	154.7050779	3.093971631
525	157.6270842	3.248670213
550	160.2346668	3.403368794
575	162.5548946	3.558067376
600	164.7015273	3.712765957
625	166.8094072	3.867464539
650	168.8841942	4.022163121
675	170.9423463	4.176861702
700	172.9094068	4.331560284

725	174.5967681	4.486258865
750	176.0453276	4.640957447
775	177.2828446	4.795656028
800	178.4206915	4.95035461
825	179.5270401	5.105053191
850	180.6035315	5.259751773
875	181.6056316	5.414450355
900	182.486298	5.569148936
925	182.9974885	5.723847518
950	183.3723075	5.878546099
975	183.6334135	6.033244681
1000	183.8396819	6.187943262
1025	184.001295	6.342641844
1050	184.1138423	6.497340426
1075	184.1863687	6.652039007
1100	184.2370196	6.806737589
1125	184.2713806	6.96143617
1128	184.2741127	6.98



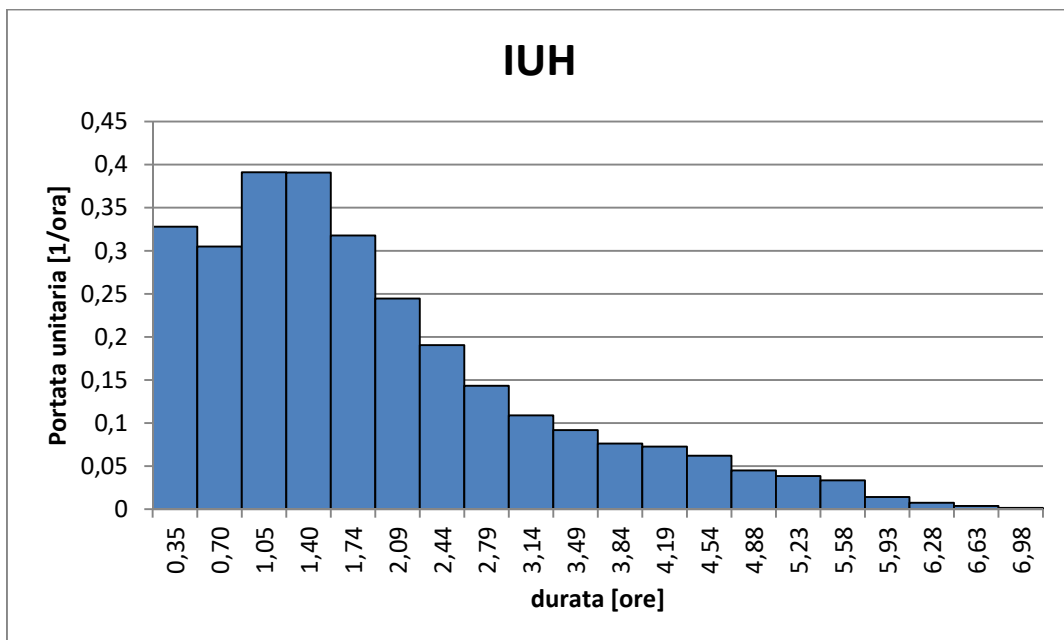
Curva aree - tempi di corrivazione



Idrogramma unitario istantaneo

Step	T _c [ore]	T _c [min]	Quota [m]	A [km²]	ΔA [km²]	ΔA/dt	IUH
0	0.00	0	0	0			
1	0.35	20.93277	56	21.08003	21.08003	60.42209	0.327892
2	0.70	41.86554	112	40.68544	19.60541	56.19535	0.304955
3	1.05	62.79832	169	65.8308	25.14537	72.07464	0.391127
4	1.40	83.73109	225	90.95685	25.12605	72.01926	0.390827
5	1.74	104.6639	281	111.3864	20.42954	58.55757	0.317774
6	2.09	125.5966	338	127.1088	15.72241	45.06545	0.244557
7	2.44	146.5294	394	139.3541	12.2453	35.09893	0.190471
8	2.79	167.4622	451	148.5629	9.208795	26.39534	0.14324
9	3.14	188.395	507	155.5615	6.998616	20.06026	0.108861
10	3.49	209.3277	563	161.4683	5.906823	16.93084	0.091879
11	3.84	230.2605	620	166.3733	4.904928	14.05909	0.076294
12	4.19	251.1933	676	171.041	4.667739	13.37923	0.072605
13	4.54	272.126	732	175.0307	3.989686	11.43571	0.062058
14	4.88	293.0588	789	177.9181	2.887431	8.276298	0.044913
15	5.23	313.9916	845	180.3947	2.476554	7.098593	0.038522
16	5.58	334.9244	902	182.542	2.147304	6.154858	0.033401
17	5.93	355.8571	958	183.4574	0.915456	2.62399	0.01424
18	6.28	376.7899	1014	183.9373	0.479888	1.375512	0.007464
19	6.63	397.7227	1071	184.177	0.239678	0.686994	0.003728
20	6.98	418.6554	1127	184.2737	0.096658	0.277053	0.001503

Dove $dt = T_c/20 = 0.349$ ore



Curva di probabilità pluviometrica

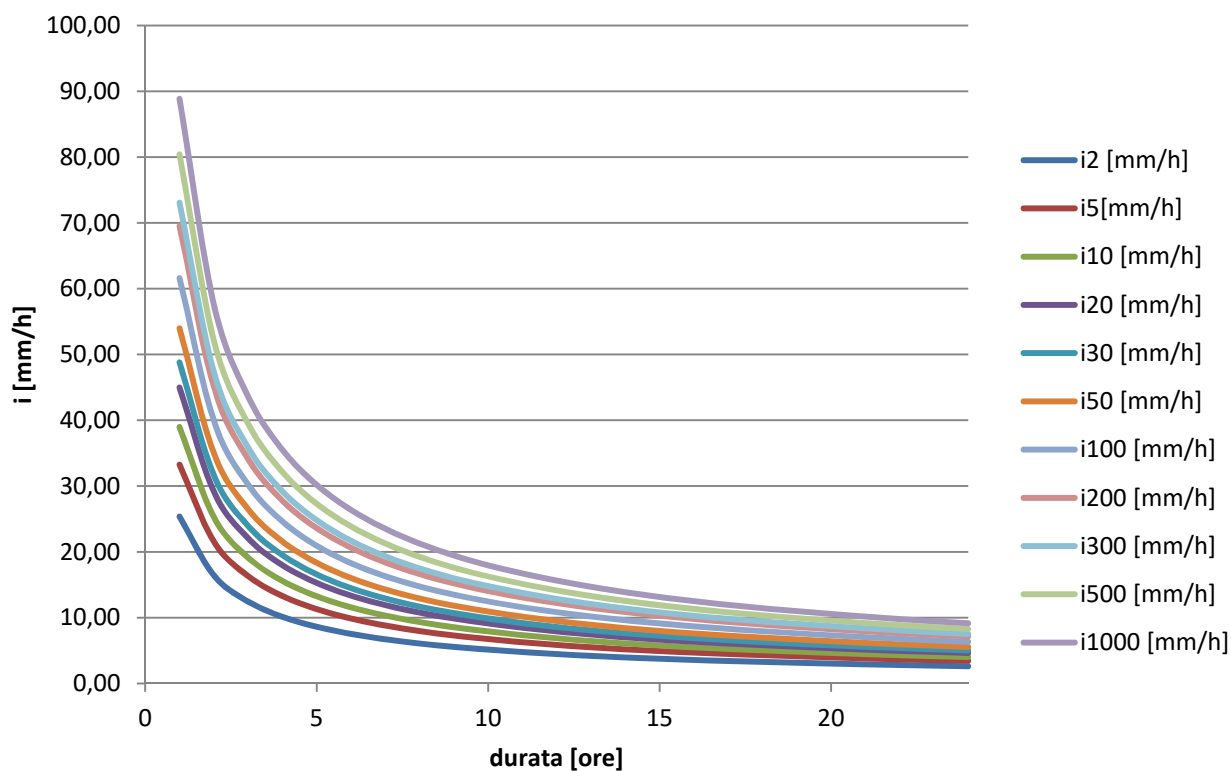
Parametri di distribuzione	
Area omogenea	A1
$m(l_0)$ (mm/ora)	77.08
d_c (ore)	0.3661
C	0.7995
$D \cdot 10^5$	3.6077
ρ^2	0.9994
Z_{med} [m]	282.44

d	$\mu(i(d))$ [mm/h]	$\mu(h(d))$ [mm]	i_2 [mm/h]	i_5 [mm/h]	i_{10} [mm/h]	i_{20} [mm/h]	i_{30} [mm/h]	i_{50} [mm/h]	i_{100} [mm/h]	i_{200} [mm/h]	i_{300} [mm/h]	i_{500} [mm/h]	i_{1000} [mm/h]
1	27.26	27.26	25.35	33.26	38.98	44.98	48.80	53.98	61.61	69.52	73.06	80.42	88.87
2	17.67	35.34	16.43	21.56	25.27	29.16	31.63	34.99	39.94	45.06	47.36	52.13	57.61
3	13.38	40.14	12.44	16.32	19.13	22.08	23.95	26.49	30.24	34.12	35.86	39.47	43.62
4	10.90	43.58	10.13	13.29	15.58	17.98	19.50	21.57	24.62	27.78	29.20	32.14	35.52
5	9.26	46.29	8.61	11.30	13.24	15.28	16.57	18.33	20.93	23.61	24.81	27.31	30.18
6	8.09	48.54	7.52	9.87	11.57	13.35	14.48	16.02	18.28	20.63	21.68	23.87	26.38
7	7.21	50.47	6.71	8.80	10.31	11.90	12.91	14.28	16.30	18.39	19.32	21.27	23.51
8	6.52	52.17	6.06	7.96	9.33	10.76	11.67	12.91	14.74	16.63	17.48	19.24	21.26
9	5.97	53.69	5.55	7.28	8.53	9.84	10.68	11.81	13.48	15.21	15.99	17.60	19.45
10	5.51	55.06	5.12	6.72	7.87	9.09	9.86	10.90	12.44	14.04	14.76	16.24	17.95
11	5.12	56.32	4.76	6.25	7.32	8.45	9.17	10.14	11.57	13.06	13.72	15.10	16.69
12	4.79	57.49	4.46	5.84	6.85	7.90	8.57	9.49	10.83	12.22	12.84	14.13	15.62
13	4.51	58.57	4.19	5.50	6.44	7.43	8.06	8.92	10.18	11.49	12.07	13.29	14.69
14	4.26	59.58	3.96	5.19	6.09	7.02	7.62	8.43	9.62	10.85	11.41	12.55	13.87
15	4.04	60.54	3.75	4.92	5.77	6.66	7.22	7.99	9.12	10.29	10.82	11.91	13.16
16	3.84	61.44	3.57	4.68	5.49	6.34	6.87	7.60	8.68	9.79	10.29	11.33	12.52
17	3.66	62.29	3.41	4.47	5.24	6.05	6.56	7.26	8.28	9.34	9.82	10.81	11.95
18	3.51	63.10	3.26	4.28	5.01	5.78	6.28	6.94	7.92	8.94	9.40	10.34	11.43
19	3.36	63.88	3.13	4.10	4.81	5.55	6.02	6.66	7.60	8.57	9.01	9.92	10.96

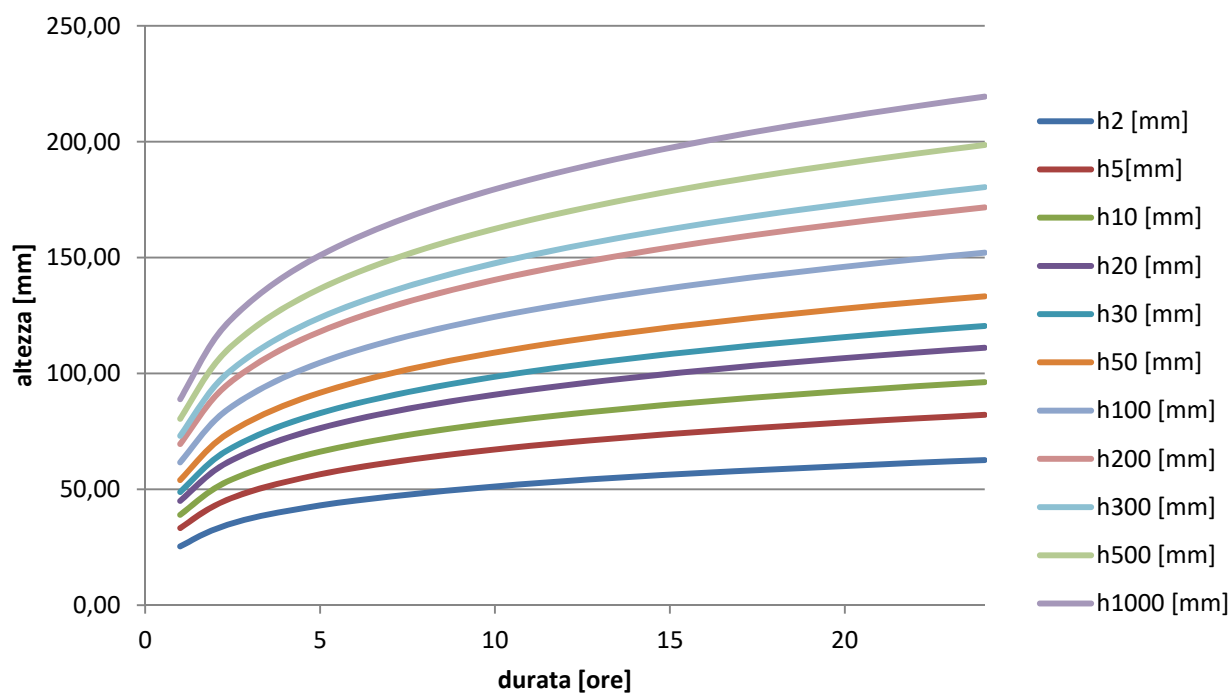
20	3.23	64.62	3.00	3.94	4.62	5.33	5.78	6.40	7.30	8.24	8.66	9.53	10.53
21	3.11	65.33	2.89	3.80	4.45	5.13	5.57	6.16	7.03	7.93	8.34	9.18	10.14
22	3.00	66.02	2.79	3.66	4.29	4.95	5.37	5.94	6.78	7.65	8.04	8.85	9.78
23	2.90	66.68	2.70	3.54	4.15	4.78	5.19	5.74	6.55	7.39	7.77	8.55	9.45
24	2.80	67.31	2.61	3.42	4.01	4.63	5.02	5.55	6.34	7.15	7.52	8.27	9.14

d	$\mu(i(d))$ [mm/h]	$\mu(h(d))$ [mm]	h_2 [mm]	h_5 [mm]	h_{10} [mm]	h_{20} [mm]	h_{30} [mm]	h_{50} [mm]	h_{100} [mm]	h_{200} [mm]	h_{300} [mm]	h_{500} [mm]	h_{1000} [mm]
1	27.26	27.26	25.35	33.26	38.98	44.98	48.80	53.98	61.61	69.52	73.06	80.42	88.87
2	17.67	35.34	32.87	43.12	50.54	58.31	63.26	69.98	79.87	90.12	94.72	104.26	115.21
3	13.38	40.14	37.33	48.97	57.40	66.23	71.84	79.47	90.71	102.35	107.57	118.40	130.85
4	10.90	43.58	40.53	53.17	62.32	71.91	78.01	86.29	98.50	111.14	116.80	128.57	142.08
5	9.26	46.29	43.05	56.48	66.20	76.39	82.87	91.66	104.63	118.05	124.07	136.57	150.92
6	8.09	48.54	45.15	59.22	69.42	80.10	86.89	96.12	109.71	123.79	130.10	143.20	158.25
7	7.21	50.47	46.94	61.58	72.18	83.28	90.35	99.94	114.07	128.71	135.27	148.90	164.54
8	6.52	52.17	48.52	63.65	74.60	86.08	93.38	103.30	117.90	133.03	139.82	153.90	170.07
9	5.97	53.69	49.93	65.50	76.77	88.58	96.10	106.30	121.33	136.90	143.88	158.38	175.02
10	5.51	55.06	51.21	67.18	78.74	90.85	98.56	109.02	124.44	140.41	147.57	162.43	179.50
11	5.12	56.32	52.38	68.71	80.54	92.93	100.82	111.52	127.29	143.62	150.94	166.15	183.61
12	4.79	57.49	53.46	70.13	82.20	94.85	102.90	113.82	129.92	146.59	154.06	169.58	187.40
13	4.51	58.57	54.47	71.45	83.75	96.64	104.84	115.97	132.36	149.35	156.96	172.78	190.93
14	4.26	59.58	55.41	72.69	85.20	98.31	106.65	117.97	134.66	151.93	159.68	175.77	194.24
15	4.04	60.54	56.30	73.85	86.57	99.88	108.36	119.86	136.81	154.37	162.24	178.58	197.35
16	3.84	61.44	57.14	74.95	87.85	101.37	109.97	121.64	138.85	156.66	164.65	181.24	200.28
17	3.66	62.29	57.93	76.00	89.08	102.78	111.50	123.34	140.78	158.84	166.94	183.76	203.07
18	3.51	63.10	58.69	76.99	90.24	104.12	112.96	124.95	142.62	160.92	169.12	186.16	205.72
19	3.36	63.88	59.41	77.93	91.35	105.40	114.35	126.48	144.37	162.89	171.20	188.45	208.25
20	3.23	64.62	60.10	78.84	92.41	106.63	115.67	127.95	146.05	164.79	173.19	190.64	210.67
21	3.11	65.33	60.76	79.71	93.43	107.80	116.95	129.36	147.66	166.60	175.10	192.74	212.99
22	3.00	66.02	61.40	80.54	94.41	108.93	118.17	130.72	149.20	168.35	176.93	194.75	215.22
23	2.90	66.68	62.01	81.35	95.35	110.02	119.35	132.02	150.69	170.03	178.69	196.70	217.37
24	2.80	67.31	62.60	82.12	96.26	111.06	120.49	133.28	152.13	171.65	180.40	198.57	219.44

Intensità di pioggia



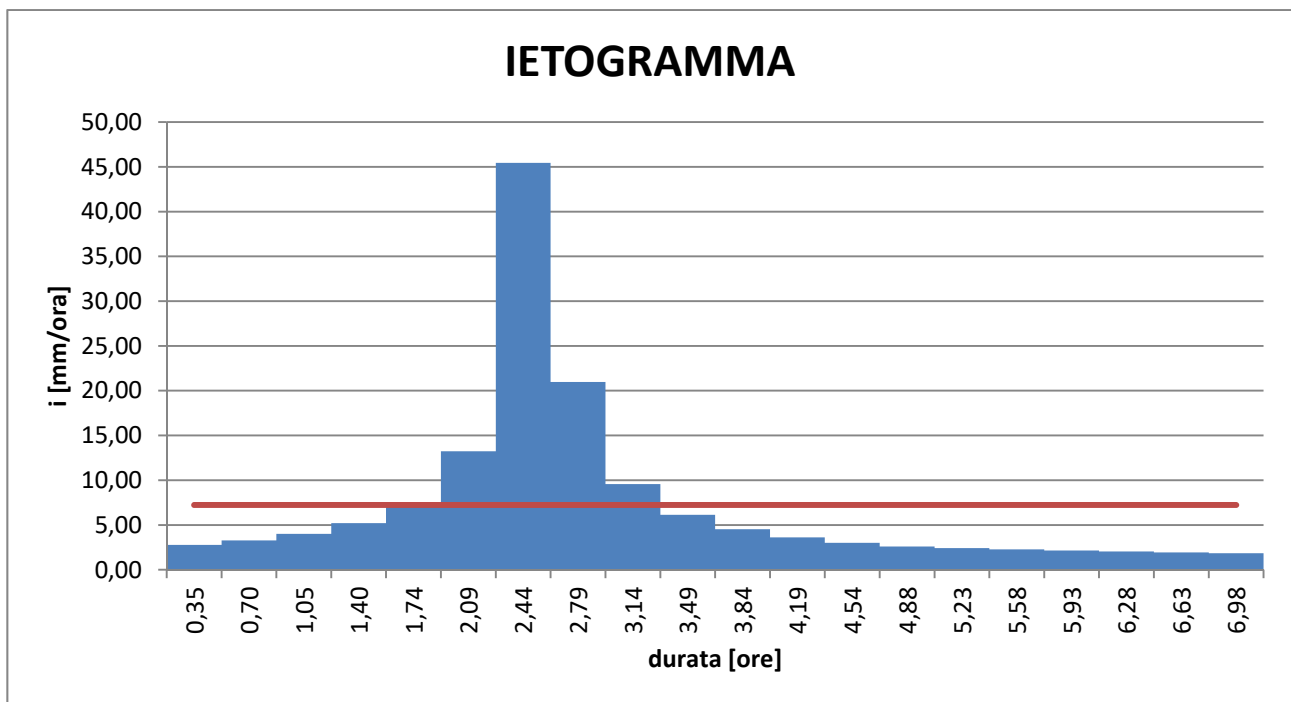
Altezza di pioggia



Ietogramma di progetto - Ietogramma Chicago

d [ore]	$\mu(h(d))$ [mm]	$\Delta \mu(h(d))$ [mm]	i [mm/ora]	Chicago i [mm/ora]	Costante i [mm/ora]
0.35	15.86	15.86	45.45	2.78	7.23
0.70	23.17	7.32	20.97	3.28	7.23

1.05	27.79	4.61	13.23	4.02	7.23
1.40	31.13	3.34	9.57	5.21	7.23
1.74	33.74	2.61	7.48	7.48	7.23
2.09	35.88	2.14	6.14	13.23	7.23
2.44	37.70	1.82	5.21	45.45	7.23
2.79	39.28	1.58	4.53	20.97	7.23
3.14	40.68	1.40	4.02	9.57	7.23
3.49	41.94	1.26	3.61	6.14	7.23
3.84	43.08	1.14	3.28	4.53	7.23
4.19	44.13	1.05	3.01	3.61	7.23
4.54	45.10	0.97	2.78	3.01	7.23
4.88	46.01	0.90	2.59	2.59	7.23
5.23	46.85	0.85	2.42	2.42	7.23
5.58	47.65	0.80	2.28	2.28	7.23
5.93	48.40	0.75	2.15	2.15	7.23
6.28	49.11	0.71	2.04	2.04	7.23
6.63	49.79	0.68	1.94	1.94	7.23
6.98	50.43	0.65	1.85	1.85	7.23



Pioggia efficace (metodo Curve Number)

CODICE	INDICE	AREA	AREA*INDICE
111-A	89	0	0
111-C	94	0	0
112-A	77	1155965	89009288.33
112-B	85	891097.9	75743325.38
112-C	90	853949.8	76855484.89
112-D	92	418405.1	38493269.39
121-A	81	105106.7	8513644.744
121-B	88	157057.6	13821070.11

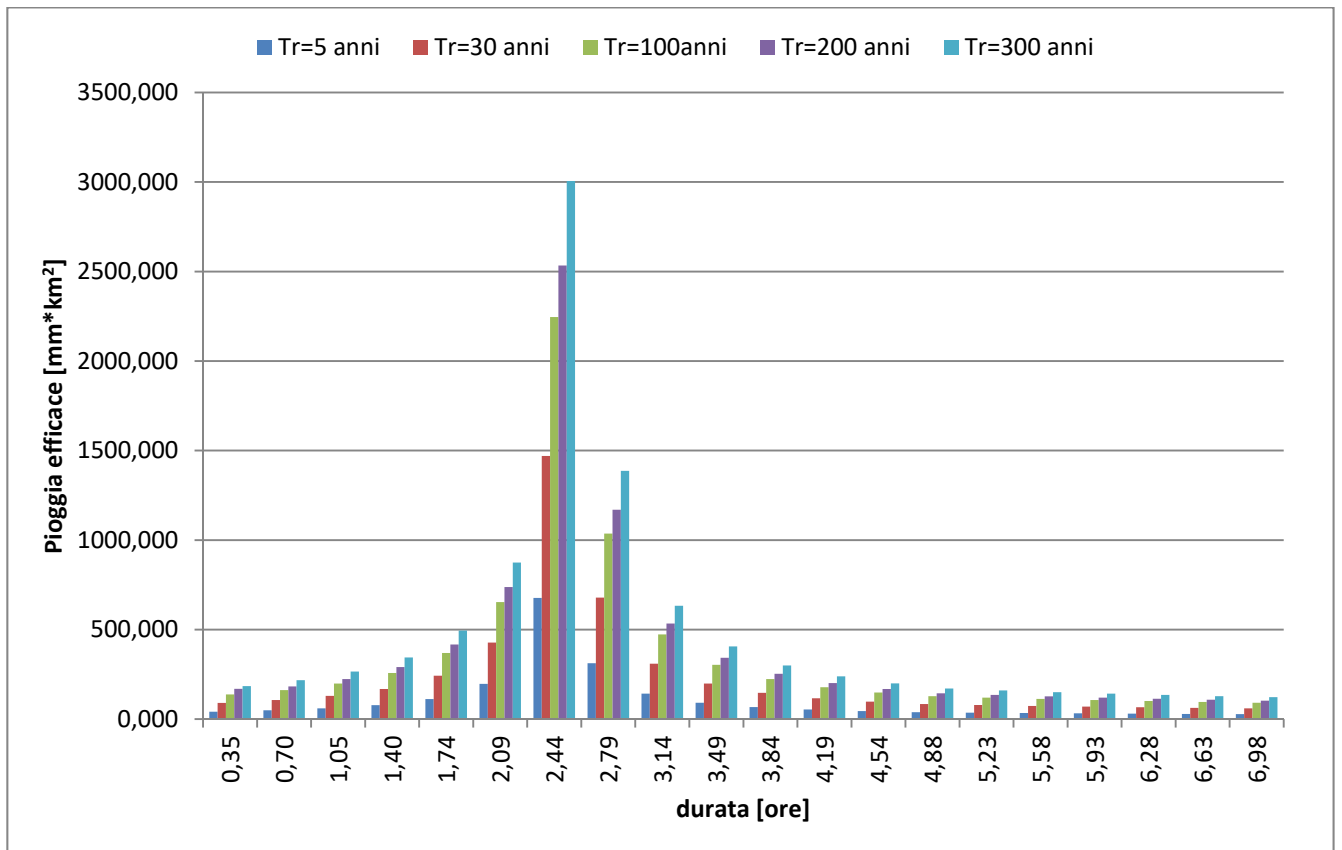
121-C	91	35146.7	3198349.429
211-A	61	7317125	446344600.2
211-B	73	1059.849	77368.99043
211-C	81	1143563	92628613.6
211-D	84	485658.8	40795338.22
221-A	76	0	0
221-C	90	0	0
221-D	93	0	0
222-A	43	109762.1	4719771.124
222-C	76	800642.6	60848840.8
223-A	43	1561217	67132344.56
223-B	65	4509505	293117849.5
223-C	76	16901873	1284542351
223-D	82	1857267	152295901.6
231-A	49	0	0
231-C	79	8711.293	688192.1132
231-D	84	5320.212	446897.8017
241-A	61	568414.8	34673303.63
241-B	73	929841.4	67878423.04
241-C	81	197445.9	15993120.19
241-D	84	121350.8	10193471.05
242-A	61	5850250	356865227.3
242-B	73	1464597	106915616.1
242-C	81	7684259	622424982.8
242-D	84	1576188	132399785.7
243-A	61	1979190	120730591.5
243-B	73	7772401	567385259.9
243-C	81	12266715	993603942.7
243-D	84	318155.2	26725034.68
311-A	36	8464994	304739792.1
311-B	60	15091181	905470844.1
311-C	73	51352522	3748734089
311-D	79	2144100	169383863.5
312-A	36	141452.7	5092297.964
312-B	60	0	0
312-C	73	1495413	109165176.3
312-D	79	330119.2	26079417.13
313-A	36	210669	7584085.321
313-B	60	0	0
313-C	73	2083159	152070622.4
313-D	79	1042008	82318662.72
321-A	49	478627.9	23452767.12
321-B	69	117805.6	8128584.226
321-C	79	2964749	234215144.3
321-D	84	421674.6	35420665.84
323-A	35	424287.7	14850068.7
323-B	56	305458.8	17105694.47
323-C	70	2935821	205507495.4

323-D	77	123693.3	9524386.444
324-A	35	1274557	44609482.7
324-B	56	2014941	112836679.4
324-C	70	5141536	359907493.7
324-D	77	3993202	307476530.4
331-A	46	1200380	55217485.5
331-C	77	173437.2	13354662.02
331-D	82	51726.44	4241567.969
333-A	63	713460.6	44948020.23
333-C	85	112400.9	9554078.019
333-D	88	31046.72	2732111.17
511-A	98	92274.99	9042949.038
511-C	98	77206.21	7566208.889
511-D	98	222966.2	21850685.26
Somma		184274112.8	12857242871

Asciutto	CN I	49.22	S I	262.03	IA I	26.20
Medio	CN II	69.77	S II	110.05	IA II	11.01
Umido	CN III	84.15	S III	47.85	IA III	4.78

Si determina la pioggia totale media e quella efficace.

		Tr=5	Tr=30	Tr=100	Tr=200	Tr=300	Tr=5	Tr=30	Tr=100	Tr=200	Tr=300
d	Chicago	Pioggia Totale media	Pioggia Totale media	Pioggia Totale media	Pioggia Totale media	Pioggia Totale media	Pioggia efficace	Pioggia efficace	Pioggia efficace	Pioggia efficace	Pioggia efficace
[h]	[mm/h]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm*kmq]	[mm*kmq]	[mm*kmq]	[mm*kmq]	[mm*kmq]
0.35	2.78	1.024	1.502	1.897	2.140	2.249	41.462	90.010	137.536	169.308	184.047
0.70	3.28	1.207	1.771	2.236	2.523	2.651	48.875	106.103	162.126	182.930	216.953
1.05	4.02	1.478	2.168	2.737	3.089	3.246	59.834	129.894	198.479	223.948	265.600
1.40	5.21	1.918	2.814	3.553	4.008	4.213	77.656	168.586	257.600	290.655	344.714
1.74	7.48	2.752	4.038	5.099	5.753	6.046	111.452	241.955	369.708	417.149	494.735
2.09	13.23	4.866	7.140	9.014	10.171	10.689	197.040	427.761	653.620	737.492	874.659
2.44	45.45	16.720	24.532	30.974	34.948	36.730	677.047	1469.822	2245.894	2534.084	3005.399
2.79	20.97	7.717	11.322	14.295	16.129	16.951	312.466	678.341	1036.508	1169.511	1387.029
3.14	9.57	3.521	5.166	6.523	7.360	7.735	142.586	309.545	472.986	533.679	632.938
3.49	6.14	2.259	3.315	4.185	4.722	4.963	91.484	198.605	303.469	342.410	406.095
3.84	4.53	1.668	2.447	3.090	3.486	3.664	67.542	146.628	224.049	252.798	299.816
4.19	3.61	1.328	1.948	2.460	2.775	2.917	53.769	116.728	178.361	201.249	238.679
4.54	3.01	1.107	1.625	2.051	2.315	2.433	44.842	97.349	148.749	167.836	199.052
4.88	2.59	0.953	1.398	1.765	1.992	2.093	38.587	83.769	128.000	144.424	171.286
5.23	2.42	0.892	1.308	1.652	1.864	1.959	36.111	78.395	119.788	135.159	160.298
5.58	2.28	0.839	1.230	1.553	1.753	1.842	33.957	73.718	112.642	127.096	150.734
5.93	2.15	0.792	1.162	1.467	1.655	1.739	32.064	69.610	106.364	120.012	142.333
6.28	2.04	0.750	1.101	1.390	1.569	1.649	30.388	65.971	100.804	113.739	134.893
6.63	1.94	0.714	1.047	1.322	1.491	1.567	28.893	62.725	95.844	108.142	128.256
6.98	1.85	0.680	0.998	1.260	1.422	1.495	27.550	59.810	91.390	103.117	122.296
	Totale	53.185	78.034	98.523	111.166	116.833					
	netta	11.687	25.372	38.768	47.723	51.878					
	Φ	0.220	0.325	0.393	0.429	0.444					



Gli stessi calcoli sono stati eseguiti per lo ietogramma costante.

d	costante	Tr=5	Tr=30	Tr=100	Tr=5	Tr=30	Tr=100
		Pioggia Totale media	Pioggia Totale media	Pioggia Totale media	Pioggia efficace	Pioggia efficace	Pioggia efficace
[h]	[mm/h]	[mm]	[mm]	[mm]	[mm*kmq]	[mm*kmq]	[mm*kmq]
0.35	7.23	2.659	3.902	4.926	107.680	233.766	357.196
0.70	7.23	2.659	3.902	4.926	107.680	233.766	357.196
1.05	7.23	2.659	3.902	4.926	107.680	233.766	357.196
1.40	7.23	2.659	3.902	4.926	107.680	233.766	357.196
1.74	7.23	2.659	3.902	4.926	107.680	233.766	357.196
2.09	7.23	2.659	3.902	4.926	107.680	233.766	357.196
2.44	7.23	2.659	3.902	4.926	107.680	233.766	357.196
2.79	7.23	2.659	3.902	4.926	107.680	233.766	357.196
3.14	7.23	2.659	3.902	4.926	107.680	233.766	357.196
3.49	7.23	2.659	3.902	4.926	107.680	233.766	357.196
3.84	7.23	2.659	3.902	4.926	107.680	233.766	357.196
4.19	7.23	2.659	3.902	4.926	107.680	233.766	357.196
4.54	7.23	2.659	3.902	4.926	107.680	233.766	357.196
4.88	7.23	2.659	3.902	4.926	107.680	233.766	357.196
5.23	7.23	2.659	3.902	4.926	107.680	233.766	357.196
5.58	7.23	2.659	3.902	4.926	107.680	233.766	357.196
5.93	7.23	2.659	3.902	4.926	107.680	233.766	357.196
6.28	7.23	2.659	3.902	4.926	107.680	233.766	357.196
6.63	7.23	2.659	3.902	4.926	107.680	233.766	357.196
6.98	7.23	2.659	3.902	4.926	107.680	233.766	357.196
	Totale	53.185	78.034	98.523			

	netta	11.687	25.372	38.768			
	Φ	0.220	0.325	0.393			

Sviluppo integrali di convoluzione

Segue lo sviluppo degli integrali di convoluzione in forma discreta organizzati in maniera da formare la cosiddetta "matrice di convoluzione".

Le tabelle che seguono riportano i risultati per i diversi periodi di ritorno.

Tempo di ritorno = 5 anni

Pioggia Efficace [mm*km ²] T [ore]	41.46	48.87	59.83	77.66	111.45	197.04	677.05	312.47	142.59	91.48	67.54	53.77	44.84	38.59	36.11	33.96	32.06	30.39	28.89	27.55	Totale [m ³ /s]	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.35	13.59																					3.78
0.70	12.64	16.03																				7.96
1.05	16.22	14.90	19.62																			14.09
1.40	16.20	19.12	18.25	25.46																		21.95
1.74	13.18	19.10	23.40	23.68	36.54																	32.20
2.09	10.14	15.53	23.38	30.37	33.99	64.61																49.45
2.44	7.90	11.95	19.01	30.35	43.59	60.09	222.00															109.69
2.79	5.94	9.31	14.63	24.68	43.56	77.07	206.47	102.46														134.47
3.14	4.51	7.00	11.40	18.99	35.42	77.01	264.81	95.29	46.75													155.88
3.49	3.81	5.32	8.57	14.79	27.26	62.61	264.61	122.21	43.48	30.00												161.85
3.84	3.16	4.49	6.51	11.12	21.23	48.19	215.15	122.12	55.77	27.90	22.15											149.39
4.19	3.01	3.73	5.50	8.45	15.96	37.53	165.58	99.29	55.73	35.78	20.60	17.63										130.22
4.54	2.57	3.55	4.56	7.13	12.13	28.22	128.96	76.42	45.31	35.75	26.42	16.40	14.70									111.70
4.88	1.86	3.03	4.34	5.92	10.24	21.45	96.98	59.52	34.87	29.07	26.40	21.03	13.67	12.65								94.74
5.23	1.60	2.20	3.71	5.64	8.50	18.10	73.70	44.76	27.16	22.37	21.46	21.01	17.54	11.77	11.84							80.94
5.58	1.38	1.88	2.69	4.82	8.09	15.03	62.21	34.02	20.42	17.43	16.52	17.09	17.53	15.09	11.01	11.13						71.21
5.93	0.59	1.63	2.30	3.49	6.92	14.31	51.65	28.71	15.52	13.10	12.86	13.15	14.25	15.08	14.12	10.36	10.51					63.49
6.28	0.31	0.70	2.00	2.99	5.01	12.23	49.16	23.84	13.10	9.96	9.67	10.24	10.97	12.26	14.11	13.28	9.78	9.96				58.21
6.63	0.15	0.36	0.85	2.59	4.29	8.85	42.02	22.69	10.88	8.41	7.35	7.70	8.54	9.44	11.48	13.27	12.54	9.27	9.47			52.82
6.98	0.06	0.18	0.45	1.11	3.72	7.59	30.41	19.39	10.35	6.98	6.21	5.85	6.42	7.35	8.83	10.79	12.53	11.89	8.81	9.03		46.65
7.33		0.07	0.22	0.58	1.59	6.58	26.08	14.03	8.85	6.64	5.15	4.94	4.88	5.53	6.88	8.30	10.19	11.88	11.30	8.40		39.47
7.68			0.09	0.29	0.83	2.81	22.61	12.04	6.40	5.68	4.90	4.10	4.12	4.20	5.17	6.47	7.84	9.66	11.29	10.78		33.13
8.02				0.12	0.42	1.47	9.64	10.44	5.49	4.11	4.19	3.90	3.42	3.55	3.93	4.86	6.11	7.43	9.18	10.77		24.73
8.37					0.17	0.73	5.05	4.45	4.76	3.52	3.03	3.34	3.26	2.94	3.32	3.70	4.59	5.79	7.07	8.75		17.91
8.72						0.30	2.52	2.33	2.03	3.06	2.60	2.41	2.78	2.80	2.76	3.12	3.49	4.35	5.50	6.74		13.00

3.49	8.27	11.55	18.61	32.11	59.17	135.93	574.45	265.32	94.40	65.12												351.37	
3.84	6.87	9.75	14.14	24.15	46.09	104.61	467.07	265.11	121.07	60.57	48.08											324.31	
4.19	6.54	8.10	11.93	18.35	34.66	81.48	359.45	215.56	120.98	77.68	44.72	38.27										282.70	
4.54	5.59	7.70	9.91	15.49	26.34	61.27	279.96	165.89	98.37	77.62	57.35	35.60	31.92									242.50	
4.88	4.04	6.58	9.43	12.86	22.23	46.57	210.54	129.20	75.70	63.11	57.31	45.66	29.69	27.47								205.66	
5.23	3.47	4.77	8.06	12.24	18.46	39.30	160.01	97.17	58.96	48.57	46.59	45.62	38.08	25.55	25.71							175.71	
5.58	3.01	4.09	5.83	10.46	17.57	32.64	135.05	73.84	44.34	37.83	35.86	37.09	38.05	32.76	23.91	24.17						154.58	
5.93	1.28	3.54	5.00	7.57	15.02	31.06	112.14	62.33	33.70	28.45	27.93	28.55	30.93	32.74	30.66	22.48	22.82					137.83	
6.28	0.67	1.51	4.34	6.49	10.87	26.55	106.72	51.75	28.44	21.62	21.00	22.23	23.81	26.62	30.64	28.83	21.23	21.63				126.38	
6.63	0.34	0.79	1.85	5.63	9.32	19.21	91.21	49.25	23.62	18.25	15.96	16.72	18.54	20.49	24.91	28.81	27.23	20.12	20.57			114.67	
6.98	0.14	0.40	0.97	2.40	8.08	16.48	66.01	42.10	22.47	15.15	13.47	12.71	13.94	15.96	19.17	23.43	27.21	25.80	19.13	19.61		101.28	
7.33		0.16	0.48	1.26	3.45	14.29	56.62	30.47	19.21	14.42	11.19	10.72	10.60	12.00	14.93	18.03	22.12	25.78	24.53	18.24		85.69	
7.68			0.20	0.63	1.81	6.09	49.09	26.13	13.90	12.33	10.65	8.91	8.94	9.12	11.23	14.04	17.02	20.96	24.51	23.39		71.93	
8.02				0.25	0.90	3.19	20.93	22.66	11.92	8.92	9.10	8.48	7.43	7.70	8.53	10.56	13.26	16.13	19.93	23.38		53.69	
8.37					0.36	1.59	10.97	9.66	10.34	7.65	6.59	7.24	7.07	6.39	7.20	8.03	9.97	12.57	15.34	19.01		38.88	
8.72						0.64	5.48	5.06	4.41	6.63	5.65	5.24	6.04	6.08	5.98	6.77	7.58	9.45	11.95	14.63		28.22	
9.07							2.21	2.53	2.31	2.83	4.90	4.50	4.37	5.20	5.69	5.62	6.40	7.18	8.98	11.39		20.59	
9.42								1.02	1.15	1.48	2.09	3.90	3.75	3.76	4.87	5.35	5.31	6.06	6.83	8.57		15.04	
9.77									0.47	0.74	1.09	1.66	3.25	3.23	3.52	4.57	5.05	5.03	5.76	6.51		11.36	
10.12										0.30	0.55	0.87	1.39	2.80	3.02	3.31	4.32	4.79	4.79	5.50		8.78	
10.47											0.22	0.44	0.73	1.19	2.62	2.84	3.13	4.09	4.55	4.56		6.77	
10.82												0.18	0.36	0.63	1.12	2.46	2.68	2.96	3.89	4.34		5.17	
11.16													0.15	0.31	0.59	1.05	2.33	2.54	2.82	3.71		3.75	
11.51														0.13	0.29	0.55	0.99	2.20	2.42	2.69		2.57	
11.86															0.12	0.27	0.52	0.94	2.10	2.30		1.74	
12.21																0.11	0.26	0.49	0.89	2.00		1.04	
12.56																	0.10	0.25	0.47	0.85		0.46	
12.91																		0.10	0.23	0.45		0.22	
13.26																				0.09	0.22		0.09
13.61																					0.09		0.02

13.96																					0.00
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Tempo di ritorno = 100 anni

Pioggia Efficace [mm*km ²] T [ore]	137.54	162.13	198.48	257.60	369.71	653.62	2245.89	1036.51	472.99	303.47	224.05	178.36	148.75	128.00	119.79	112.64	106.36	100.80	95.84	91.39	Totale [m ³ /s]	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.35	45.10																					12.53
0.70	41.94	53.16																				26.42
1.05	53.79	49.44	65.08																			46.75
1.40	53.75	63.41	60.53	84.47																		72.82
1.74	43.71	63.36	77.63	78.56	121.22																	106.80
2.09	33.64	51.52	77.57	100.75	112.74	214.32																164.04
2.44	26.20	39.65	63.07	100.68	144.60	199.32	736.41															363.87
2.79	19.70	30.88	48.54	81.86	144.49	255.65	684.90	339.86														446.08
3.14	14.97	23.22	37.80	63.00	117.48	255.45	878.43	316.09	155.09													517.09
3.49	12.64	17.65	28.43	49.07	90.41	207.70	877.76	405.41	144.24	99.51												536.89
3.84	10.49	14.90	21.61	36.90	70.42	159.85	713.69	405.10	185.00	92.54	73.46											495.54
4.19	9.99	12.37	18.24	28.04	52.96	124.50	549.25	329.38	184.86	118.70	68.32	58.48										431.96
4.54	8.54	11.77	15.14	23.67	40.25	93.62	427.78	253.48	150.30	118.60	87.63	54.39	48.77									370.54
4.88	6.18	10.06	14.41	19.65	33.97	71.15	321.70	197.43	115.67	96.43	87.56	69.76	45.36	41.97								314.25
5.23	5.30	7.28	12.32	18.70	28.21	60.05	244.49	148.47	90.09	74.22	71.20	69.71	58.18	39.03	39.28							268.48
5.58	4.59	6.25	8.91	15.99	26.84	49.87	206.35	112.84	67.75	57.80	54.79	56.68	58.14	50.06	36.53	36.93						236.20
5.93	1.96	5.42	7.65	11.57	22.94	47.46	171.35	95.23	51.49	43.47	42.67	43.62	47.27	50.03	46.85	34.35	34.88					210.61
6.28	1.03	2.31	6.63	9.92	16.60	40.56	163.06	79.08	43.46	33.04	32.09	33.97	36.38	40.68	46.82	44.06	32.44	33.05				193.10
6.63	0.51	1.21	2.83	8.60	14.24	29.36	139.38	75.26	36.09	27.88	24.39	25.55	28.33	31.30	38.07	44.02	41.60	30.74	31.43			175.22
6.98	0.21	0.60	1.48	3.67	12.35	25.18	100.87	64.32	34.34	23.15	20.59	19.42	21.31	24.38	29.30	35.79	41.57	39.43	29.23	29.97		154.76
7.33		0.24	0.74	1.92	5.26	21.83	86.52	46.55	29.35	22.03	17.09	16.39	16.19	18.33	22.82	27.55	33.80	39.40	37.49	27.87		130.94
7.68			0.30	0.96	2.76	9.31	75.01	39.93	21.24	18.83	16.27	13.61	13.67	13.93	17.16	21.46	26.01	32.03	37.46	35.75		109.91
8.02				0.39	1.38	4.88	31.98	34.62	18.22	13.63	13.90	12.95	11.35	11.76	13.04	16.13	20.26	24.65	30.46	35.72		82.03

2.09	41.41	58.13	87.52	113.68	127.21	241.82																186.05
2.44	32.25	44.74	71.16	113.60	163.16	224.90	830.91															411.31
2.79	24.25	34.84	54.77	92.36	163.03	288.45	772.78	383.47														503.88
3.14	18.43	26.20	42.66	71.08	132.56	288.23	991.15	356.65	174.99													583.87
3.49	15.56	19.91	32.08	55.36	102.02	234.36	990.39	457.43	162.75	112.27												606.14
3.84	12.92	16.81	24.38	41.63	79.45	180.36	805.27	457.08	208.74	104.42	82.89											559.43
4.19	12.29	13.96	20.58	31.64	59.75	140.47	619.73	371.64	208.58	133.93	77.09	65.99										487.68
4.54	10.51	13.28	17.09	26.70	45.41	105.64	482.67	286.01	169.59	133.82	98.88	61.37	55.03									418.33
4.88	7.60	11.35	16.26	22.18	38.33	80.28	362.98	222.76	130.51	108.81	98.80	78.71	51.18	47.36								354.76
5.23	6.52	8.22	13.90	21.10	31.83	67.76	275.86	167.52	101.65	83.74	80.33	78.65	65.65	44.04	44.32							303.08
5.58	5.65	7.05	10.06	18.04	30.29	56.27	232.83	127.31	76.44	65.22	61.82	63.95	65.59	56.49	41.22	41.67						266.64
5.93	2.41	6.11	8.63	13.05	25.89	53.55	193.34	107.45	58.10	49.05	48.15	49.22	53.33	56.44	52.86	38.76	39.35					237.69
6.28	1.26	2.60	7.48	11.20	18.74	45.77	183.99	89.23	49.03	37.28	36.21	38.33	41.05	45.89	52.82	49.71	36.60	37.29				217.91
6.63	0.63	1.37	3.19	9.71	16.07	33.12	157.26	84.91	40.72	31.46	27.52	28.83	31.97	35.32	42.95	49.67	46.94	34.69	35.46			197.72
6.98	0.25	0.68	1.67	4.14	13.93	28.41	113.81	72.58	38.75	26.12	23.23	21.91	24.04	27.51	33.05	40.39	46.90	44.49	32.98	33.81		174.63
7.33		0.28	0.83	2.17	5.94	24.63	97.62	52.53	33.12	24.86	19.29	18.49	18.27	20.69	25.74	31.08	38.14	44.45	42.30	31.45		147.74
7.68			0.34	1.08	3.11	10.50	84.64	45.05	23.97	21.25	18.35	15.35	15.42	15.72	19.36	24.21	29.35	36.14	42.26	40.33		124.02
8.02				0.44	1.56	5.51	36.08	39.06	20.56	15.38	15.69	14.61	12.80	13.27	14.71	18.21	22.86	27.82	34.36	40.30		92.56
8.37					0.63	2.75	18.92	16.65	17.83	13.19	11.35	12.49	12.19	11.02	12.42	13.84	17.19	21.66	26.45	32.77		67.04
8.72						1.11	9.45	8.73	7.60	11.44	9.74	9.04	10.42	10.49	10.31	11.68	13.06	16.29	20.60	25.22		48.66
9.07							3.81	4.36	3.98	4.88	8.44	7.75	7.54	8.96	9.81	9.70	11.03	12.38	15.49	19.64		35.49
9.42								1.76	1.99	2.56	3.60	6.72	6.47	6.49	8.39	9.23	9.16	10.45	11.77	14.77		25.93
9.77									0.80	1.28	1.89	2.87	5.61	5.56	6.07	7.89	8.71	8.68	9.94	11.23		19.59
10.12										0.51	0.94	1.50	2.39	4.82	5.21	5.71	7.45	8.26	8.25	9.47		15.14
10.47											0.38	0.75	1.25	2.06	4.51	4.90	5.39	7.06	7.85	7.87		11.67
10.82												0.30	0.63	1.08	1.92	4.25	4.62	5.11	6.71	7.49		8.92
11.16													0.25	0.54	1.01	1.81	4.01	4.38	4.86	6.40		6.46
11.51														0.22	0.50	0.95	1.71	3.80	4.17	4.63		4.44
11.86															0.20	0.47	0.90	1.62	3.61	3.97		2.99
12.21																0.19	0.45	0.85	1.54	3.44		1.80
12.56																	0.18	0.42	0.81	1.47		0.80

12.91																		0.17	0.40	0.77	0.37
13.26																			0.16	0.38	0.15
13.61																				0.16	0.04
13.96																					0.00

Tempo di ritorno = 300 anni

Pioggia Efficace [mm*km²]	138.92	164.15	201.44	261.88	375.28	653.46	1996.92	1007.80	478.03	308.49	227.62	180.81	150.42	129.13	120.72	113.40	106.97	101.28	96.22	91.67	Totale [m³/s]	
T [ore]																						
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.35	60.35																					16.76
0.70	56.13	71.14																				35.35
1.05	71.99	66.16	87.09																			62.57
1.40	71.93	84.86	81.00	113.03																		97.45
1.74	58.49	84.79	103.88	105.12	162.22																	142.92
2.09	45.01	68.94	103.80	134.83	150.87	286.79																219.51
2.44	35.06	53.06	84.40	134.72	193.50	266.73	985.45															486.92
2.79	26.36	41.32	64.95	109.54	193.36	342.10	916.51	454.80														596.93
3.14	20.04	31.08	50.59	84.30	157.21	341.84	1175.49	422.98	207.54													691.96
3.49	16.91	23.62	38.04	65.66	120.99	277.94	1174.59	542.51	193.02	133.16												718.45
3.84	14.04	19.93	28.91	49.38	94.23	213.90	955.04	542.09	247.56	123.84	98.31											663.12
4.19	13.36	16.55	24.40	37.53	70.87	166.60	734.99	440.76	247.37	158.83	91.43	78.26										578.04
4.54	11.42	15.75	20.26	31.67	53.86	125.29	572.44	339.21	201.13	158.71	117.27	72.79	65.27									495.85
4.88	8.27	13.46	19.28	26.30	45.46	95.22	430.49	264.19	154.79	129.05	117.18	93.35	60.70	56.16								420.53
5.23	7.09	9.74	16.48	25.03	37.75	80.36	327.17	198.68	120.56	99.31	95.27	93.28	77.85	52.23	52.56							359.27
5.58	6.15	8.36	11.93	21.39	35.92	66.73	276.13	150.99	90.66	77.35	73.32	75.85	77.79	66.99	48.88	49.42						316.08
5.93	2.62	7.25	10.23	15.48	30.70	63.50	229.30	127.44	68.90	58.17	57.11	58.37	63.25	66.94	62.70	45.97	46.67					281.83
6.28	1.37	3.09	8.87	13.28	22.22	54.28	218.21	105.82	58.15	44.21	42.95	45.46	48.68	54.43	62.65	58.96	43.41	44.23				258.41
6.63	0.69	1.62	3.78	11.51	19.06	39.28	186.51	100.71	48.29	37.31	32.64	34.19	37.91	41.89	50.94	58.91	55.67	41.14	42.05			234.47
6.98	0.28	0.81	1.98	4.91	16.52	33.69	134.98	86.08	45.95	30.98	27.55	25.98	28.51	32.63	39.20	47.90	55.63	52.76	39.11	40.10		207.10

Idrogrammi di piena

