

EXTRACTING PEAKS OVER THRESHOLD (POT) DATA FROM DAILY DISCHARGE RECORDS AND PRESENTING THEM IN AN INFORMATIVE MANNER

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Abstract

We suggest methods of extracting POT data from daily discharge records and presenting them in an informative manner; additional work is being done on how to make goodness-of-fit tests for distributions such as the generalized Pareto, and how to construct confidence intervals for flood quantiles calculated by the POT approach.

Table 1. PERCENTILE: This table gives the values of the percentiles of the daily flows (from the 50th to the 99th), in m³/s with the corresponding number of floods exceeding each percentile.

Percentile	Value	Number.Floods
50	136.00	592
51	139.00	590
52	143.00	582
53	147.00	584
54	151.00	586
55	156.00	588
56	160.00	595
57	165.00	603
58	170.00	581
59	175.00	587
60	180.00	594
61	185.00	597
62	190.00	592
63	196.00	598
64	203.00	597
65	210.00	602
66	217.00	594
67	225.00	587
68	232.00	590
69	240.00	595
70	248.00	602
71	257.00	599
72	266.00	588
73	275.00	578
74	286.00	583
75	295.75	553
76	306.00	542
77	317.00	530
78	334.00	506
79	348.00	491
80	365.00	471
81	384.00	450
82	402.00	429
83	425.00	414
84	450.00	395
85	476.00	386
86	504.00	361
87	535.00	352
88	566.00	324
89	612.00	311
90	654.00	297
91	708.00	273
92	779.00	241
93	864.00	213
94	971.00	190
95	1080.00	176
96	1230.00	156
97	1440.00	135
98	1690.00	111
99	2100.00	74

Table 2. FLOODS PERCENTILE (The average number of floods per year has been fixed at 1.5) The percentile chosen is the maximum one for which the corresponding number of floods still averages 1.5 events or more per year of data.

Percentile : 97
Value : 1440 (m³/s)
Number of years of record : 88
Number of floods : 135
Average number of events per year : 1.53

	Date Start	Date End	D	Rise	Fall	Flood Max	Intensity	Date Flood Max	Volume	T.Bet.FL
1	1927-04-21	1927-04-25	5	3.5	1.5	1880	440	1927-04-24	1440	0
2	1927-11-19	1927-11-20	2	0.5	1.5	1670	230	1927-11-19	420	208
3	1928-05-04	1928-05-16	13	4.5	8.5	2550	1110	1928-05-08	8890	166
4	1928-05-25	1928-06-01	8	1.5	6.5	2020	580	1928-05-26	3340	9
5	1929-04-30	1929-05-02	3	1.5	1.5	1850	410	1929-05-01	930	333
...
131	2013-04-21	2013-04-23	3	0.5	2.5	1930	490	2013-04-21	1110	358
132	2013-04-26	2013-04-27	2	0.5	1.5	1570	130	2013-04-26	190	3
133	2013-05-27	2013-05-27	1	0.5	0.5	1540	100	2013-05-27	100	30
134	2014-04-17	2014-04-21	5	1.5	3.5	2340	900	2014-04-18	1830	325
135	2014-04-23	2014-05-08	16	10.5	5.5	2050	610	2014-05-03	4550	2

Table 3. FLOODS – FILTERED: In this table we deleted all events separated by 6 or less days, keeping the ones with the highest intensity, or in case of same intensity, the ones with the longest duration.

Percentile : 97
Value : 1440 (m³/s)
Number of years of record : 88
Initial number of floods: 135
Number of retained events : 116
New average number of events per year: 1.32

	Date Start	Date End	D	Rise	Fall	Flood Max	Intensity	Date Flood Max	Volume	T.Bet.FL
1	1927-04-21	1927-04-25	5	3.5	1.5	1880	440	1927-04-24	1440	0
2	1927-11-19	1927-11-20	2	0.5	1.5	1670	230	1927-11-19	420	208
3	1928-05-04	1928-05-16	13	4.5	8.5	2550	1110	1928-05-08	8890	166
4	1928-05-25	1928-06-01	8	1.5	6.5	2020	580	1928-05-26	3340	9
5	1929-05-04	1929-05-15	12	2.5	9.5	2210	770	1929-05-06	5120	2
...
112	2012-03-22	2012-03-26	5	1.5	3.5	2520	1080	2012-03-23	2910	197
113	2012-04-26	2012-04-28	3	0.5	2.5	1560	120	2012-04-26	230	51
114	2013-04-21	2013-04-23	3	0.5	2.5	1930	490	2013-04-21	1110	358
115	2013-05-27	2013-05-27	1	0.5	0.5	1540	100	2013-05-27	100	30
116	2014-04-17	2014-04-21	5	1.5	3.5	2340	900	2014-04-18	1830	325

Table 4. REARRANGEMENT OF THE TABLE FLOODS - FILTERED: In the following table we arrange the table according to the day of occurrence of the flood during the year (i.e., according to the column: date.max).

	Date Start	Date End	D	Rise	Fall	Flood Max	Intensity	Volume	Date Flood Max
114	1936-03-21	1936-03-26	6	2.5	3.5	2280	840	3350	83
112	2012-03-22	2012-03-26	5	1.5	3.5	2520	1080	2910	83
66	1979-03-28	1979-03-29	2	0.5	1.5	1560	120	230	87
37	1953-04-01	1953-04-07	7	1.5	5.5	1980	540	2390	92
79	1987-04-01	1987-04-09	9	1.5	7.5	3090	1650	5200	92
...
72	1981-09-26	1981-09-26	1	0.5	0.5	1630	190	190	269
101	2005-10-17	2005-10-19	3	1.5	1.5	1960	520	990	291
103	2006-10-22	2006-10-23	2	0.5	1.5	1570	130	180	295
48	1963-11-10	1963-11-11	2	0.5	1.5	1690	250	350	314
2	1927-11-19	1927-11-20	2	0.5	1.5	1670	230	420	323

Work in progress:

- 1) Applying goodness-of-fit tests for the generalized Pareto distribution (GPD) used to model flood intensities
- 2) Construction of confidence intervals for flood quantiles calculated by the POT approach using a GPD.

