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Federal Office of Meteorology and Climatology MeteoSwiss

Weissfluhjoch: 2691m, 46.83N, 9.81E

Extreme Value Analysis

5-day precipitation, 5:40-5:40 UTC

1961 - 2010 (number of missing years: 0)

Block Maxima (GEV). **Reliability of results: good**.

Plot of return levels and their uncertainty (ordinate) for a given return period (abscissa).

The best estimate of the return levels is colored blue. The return level 95% confidence intervals are given in green.

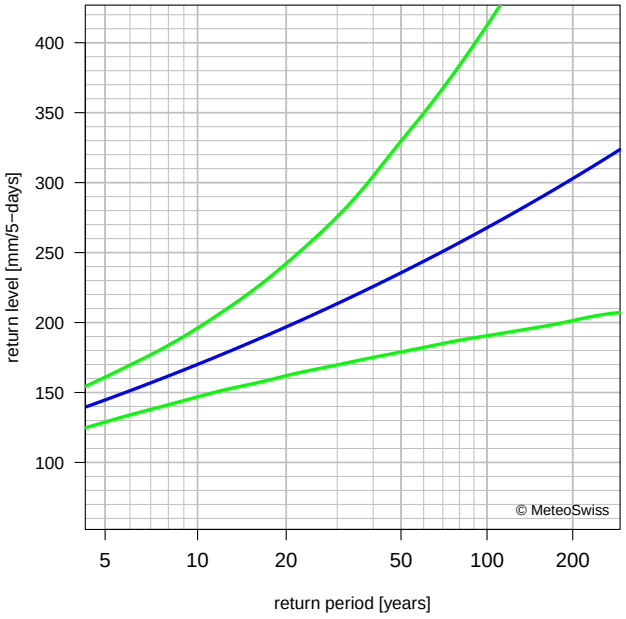

Table of the largest annual extrema in the period analysed.

If two large events occur in the same year, only the largest will appear in this table. The return periods are estimated with the fitted GEV distribution.

date	precipitation [mm/5-days]	estimated return period [years]
1991-12-22	269.0	103
1990-02-15	231.4	46
1981-07-21	203.3	23
2005-08-23	165.2	<10
1999-02-21	164.4	<10

Table of return levels for a selection of return periods.

The 95% confidence intervals are shown in brackets.

return period [years]	return value [mm/5-days]	confidence interval [mm/5-days]
2.33	116.7	(106.6 - 127.5)
5.00	144.7	(128.5 - 160.9)
10.00	170.1	(147.0 - 195.8)
20.00	196.9	(162.3 - 243.1)
30.00	213.5	(169.6 - 275.9)
50.00	235.6	(179.1 - 329.5)
100.00	267.8	(190.5 - 412.4)

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Distribution Function and estimation methods

- The Generalized Extreme Value distribution (GEV) is fitted to the yearly extrema.
- The distribution parameters are estimated with Maximum Likelihood.
- The confidence intervals are estimated with parametric resampling.

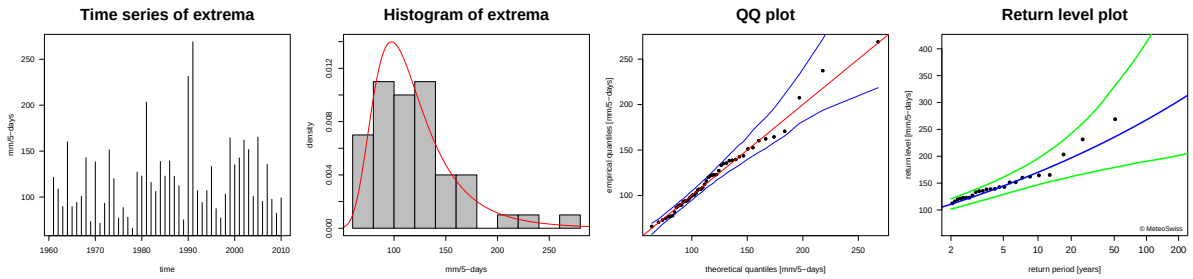
Data and data quality

- The raw data is quality-checked, but not homogenized.
- Missing data: None.

Distribution Parameters (± standard error)

- Location: 100.76 (± 4.33)
- Scale: 26.52 (± 3.35)
- Shape: 0.13 (± 0.12)

Additional information



Left: **Time series of extrema**.

Center left: **Histogram of extrema**. Red line: fitted GEV density distribution.

Center right: **QQ plot**. Plot of empirical vs. theoretical quantiles of the observations. The theoretical quantiles are estimated with the fitted GEV. Should the dots align on the diagonal (red line), the fit would be perfect. The QQ-plots of 1000 samples randomly drawn from the fitted GEV have a 95% chance of being within the blue lines.

Right: **Return level plot** of the estimated GEV (blue and green lines). The black points provide information on the largest observation of each year of the analyzed period. The position of the point on the y-axis corresponds to the measured precipitation sum. The position on the x-axis derives from the number of years within the analyzed period. The return period of the observation can be inferred by extending a horizontal line from the black point to the blue line. The position of the intersection point on the x-axis corresponds to the return period.