

6.2.4.4 Estimating PMP for super large watersheds

PMP for super large watersheds are usually estimated with the method of precipitation depth–duration analyses. Since actual conditions for all super large watersheds are different, there is no unified method of estimation.

6.2.4.5 Temporal distribution of storms

The temporal distribution of PMP is determined through generalizing, evening and smoothing of multiple typical storms.

6.2.4.6 Example application

A water resources project was planned for the Kanhar River in Sone watershed. Its control watershed area was to be 6 020 km². One of the largest storms to happen in the watershed occurred on 29 August 1940. The enveloping curve for Sone watershed was used to find the enveloping value of the precipitation depth for 1-day duration for 6 020 km², which was 360 mm. The watershed grids were 23° 84', 24° 83' and 24° 84' and the MAF for these three grids were 1.04, 1.28 and 1.33, respectively, with a mean of 1.217. Hence, PMP for the watershed was 438 mm.

Table 6.9. MAF for each grid of either Chambal or Betwa watershed

Geographic coordinate of grid		d_3 (°C)	$(W_3)_{h1}$ (mm)	h_2 (m)	$(W_3)_{h2}$ (mm)	LAF	BAF	MAF
Latitude (°)	Longitude (°)							
23	76	29.0	102.0	400	102.0	1.04	1	1.34
23	77	29.0	102.0	400	102.0	1.04	1	1.34
23	78	30.0	109.0	400	109.0	1.11	1	1.43
23	79	30.5	113.0	400	113.0	1.15	1	1.48
24	75	29.5	104.0	400	104.0	1.06	1	1.37
24	76	30.0	109.0	400	109.0	1.11	1	1.43
24	77	30.0	109.0	400	109.0	1.11	1	1.43
24	78	30.5	113.0	400	113.0	1.15	1	1.48
24	79	30.0	109.0	400	109.0	1.11	1	1.43
24	80	29.5	104.0	400	104.0	1.06	1	1.37
25	74	29.0	102.0	400	102.0	1.04	1	1.34
25	75	29.0	102.0	400	102.0	1.04	1	1.34
25	76	29.0	102.0	400	102.0	1.04	1	1.34
25	77	29.0	102.0	400	102.0	1.04	1	1.34
25	78	30.0	109.0	400	109.0	1.11	1	1.43
25	79	30.0	109.0	400	109.0	1.11	1	1.43
25	80	29.5	104.0	400	104.0	1.06	1	1.37
26	75	26.5	81.0	400	81.0	0.83	1	1.07
26	76	28.0	93.0	400	93.0	0.95	1	1.22
26	77	27.0	86.0	400	86.0	0.88	1	1.14
26	78	29.0	102.0	400	102.0	1.04	1	1.34
26	79	29.0	102.0	400	102.0	1.04	1	1.34
27	76	27.0	86.0	400	86.0	0.88	1	1.13

Note: The mean elevation of each grid is equal to or less than 400 m, and there is no barrier elevation between the transposed region and the storm occurrence region, so $h_2 = h_1$ for all grids.