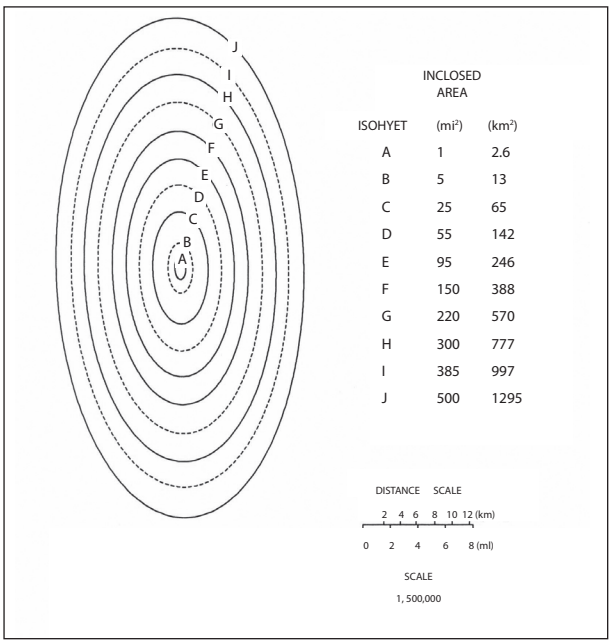

Figure 5.58. Generalized isohyetal map of PMP

is, it does not possess the 2 : 1 ratio of major axis to minor axis of the elliptical isohyet. Therefore, when the isohyet is placed onto the Wash watershed (which is irregularly shaped), the areal mean PMP calculated based on it is smaller than the areal PMP obtained in (d), however it is placed.

5.3.9 Topographic adjustment

For storms with durations of 24 hours and more, the effect of the different terrain between the storm and target locations will produce different effects on the rainfall at the two sites. A storm that occurred over a hilly area would produce more rainfall if it had occurred over a more elevated region. A topographic adjustment is factored in to take into account the different topographic influences on the rainfall. In regions where rainfall intensity–duration–frequency (IDF) data is available, the index rainfalls with average recurrence intervals and durations similar to the observed events can be used to objectively determine the effect of different terrain between the storm and target locations on the rainfall. This technique involves evaluating the ratio of the index rainfalls at the target and storm locations. The following example illustrating this technique is taken from Wang B.H. (1986), and describes how the rainfall IDF field can be used in transposing a storm from Montana to the Cheesman basin. Figure 5.59 shows isohyets of a storm over Montana transposed to the Cheesman basin. Figures 5.60 and 5.61 show the grids of 100-year 24-hour rainfall over the Montana and Cheesman catchments respectively.

In Figure 5.60, the Cheesman catchment outline has been shown to locate the grid points where computations are required.

The transposed storm rainfall at each grid point (as shown in Figure 5.62) is calculated by multiplying the grid point values from (a) by the ratio of the 100-year 24-hour rainfall grid over Cheesman to the 100-year 24-hour rainfall grid over Montana.

Therefore,

$$R_c = R_s \# \frac{\mathrm{IDF}_c}{\mathrm{IDF}_s}$$

where R_c denotes the rainfall grid over the target catchment; R_s denotes the rainfall grid over the storm location; IDF_c denotes the rainfall intensity–duration–frequency grid over the target catchment; and IDF_s is the rainfall intensity–duration–frequency grid over the storm location.

In this case the maximum storm rainfall isohyet of 406 mm near the north-eastern portion of the catchment has been reduced to 330 mm because

Table 5.21. Percentages of isohyets corresponding to type-C correction

Isohyet	*Duration (hours)*								
	0.25	*0.50*	*0.75*	*1*	*2*	*3*	*4*	*5*	*6*
A	55	79	91	100	114	120	125	128	130
B	44	66	77.6	86	100	106	111	114	116
C	26	44	53.6	61	74	81	86	89	91
D	17	31	40.2	46.5	58	65	70	73	75
E	11	20	26.8	32.5	42	49	54	57	59
F	6.6	13	19	24	32	38	43	46	48
G	6.5	11	14	16	23	28	33	36	38
H	5.0	8.0	10.5	12	17.5	21.5	25.5	29	31
I	3.0	6.0	8.5	10.5	16	20	24	27.5	30
J	2.5	5.5	8.0	10	15	19	23	26.5	29

Table 5.22. Isohyet values for the Wash watershed

	Isohyet						
	A	*B*	*C*	*D*	*E*	*F*	*G*
Precipitation depth (mm)	376	336	263	217	171	139	376