

Table 4.1. (Continued)

Adjustment of standard deviations for maximum observed amount and record length			
	1 hour	6 hours	24 hours
From Figure 4.3	1.04	0.93	0.49
From Figure 4.4	1.05	1.05	1.05
Adjusted S_n	8.6	23.4	26.7
K_m (Figure 4.1)	14	14	16
Unadjusted point values of PMP from Equation 4.2			
1-hour PMP	$= 25.4 + 14 \times 8.6 = 146 \text{ mm}$		
6-hour PMP	$= 53.6 + 14 \times 23.4 = 381 \text{ mm}$		
24-hour PMP	$= 72.4 + 16 \times 26.7 = 500 \text{ mm}$		
Adjustment of PMP based on hourly data to true maximum values (see section 4.2.4)			
1-hour PMP	$= 1.13 \times 146 = 165 \text{ mm}$		
6-hour PMP	$= 1.02 \times 381 = 389 \text{ mm}$		
24-hour PMP	$= 1.01 \times 500 = 505 \text{ mm}$		
(Note: if annual series data had been compiled from fixed observational time intervals instead of hourly data, the adjustment factor for all durations would have been 1.13.)			
Adjustment of point PMP to 500 km ² (Figure 4.7)			
	1 hour	6 hours	24 hours
Adjustment factors	0.66	0.85	0.90
PMP for 500 km ² (mm)	103	331	455

Equation 4.3 are subject to the same adjustments described in section 4.3.

4.5 CAUTIONARY REMARKS

The curves of Figure 4.1 are based on observed data from approximately 2 700 stations. About 90 per cent of the stations were in the United States, where observations were taken at least daily for a period of at least 10 years. Consequently, they assume that PMP has already occurred at those stations, providing controlling values of K_m . As a matter of fact, there are several measurements of rainfall in the United States made at locations without official gauges that exceed the PMP values calculated from this statistical procedure (Riedel, 1977). One reason given for excluding these measurements in developing the procedure was that the accuracy of the measurements was somewhat questionable and that there were no precipitation records for the locations of occurrence from which to compute \bar{X}_n and S_n . Estimates of these

parameters for nearby stations indicated that use of a K_m value of 25 would have yielded PMP values enveloping any rainfall amounts ever observed in the United States. Computations of K_m for Canada (McKay, 1965) indicated a maximum value of 30 associated with a mean annual maximum 24-hour rainfall amount of 15 mm.

Further studies are needed to determine more reliable values of K_m . It appears likely, for example, that K_m may be related to other factors besides rainfall duration and mean of the annual series. In using the procedure, it should be kept in mind that the indicated K_m values based on limited data may be too high for some regions and too low for others, and care must be exercised in selecting a value of K_m for a particular study. In general, the procedure tends to yield values of PMP lower than those to be obtained from meteorological, or traditional, procedures.

In selecting a station for making a PMP estimate for a particular drainage basin, it is important that its precipitation record is reasonably representative.