

(moisture-inflow directions) with no intervening mountains between the slope and the moisture source (that is, the Gulf of Mexico and the Atlantic Ocean);

- (b) Secondary upslopes: A secondary upslope high and steep enough to increase precipitation, but partially shielded from moisture sources by a lower mountain range with an elevation between crests of at least 500 m;
- (c) Sheltered areas: These are defined as valleys having moisture-inflow barriers of 600 m or higher;
- (d) Depression: The elevation difference between the barrier crest and a point in the sheltered area is the depression of that point.

Terrain classifications in the project basin are delineated in Figure 5.14. Analysis of summer rainfall amounts for the various classifications led to the adoption of the following guides on topographic effects on PMP:

- (a) Precipitation increases of 10 per cent per 300 m from sea level to 800 m on first upslopes, with no further increases above 800 m;
- (b) Increases of 5 per cent per 300 m from sea level to all elevations on secondary upslopes;
- (c) Decreases of 5 per cent per 300 m of depression in sheltered areas.

5.3.2.4 PMP depth–duration curves for 2.6 km²

Point rainfalls measured at regularly reporting precipitation gauges are likely to be less than the maximum point rainfalls experienced. It is for this reason supplementary precipitation surveys are conducted after most major storms. These surveys usually reveal

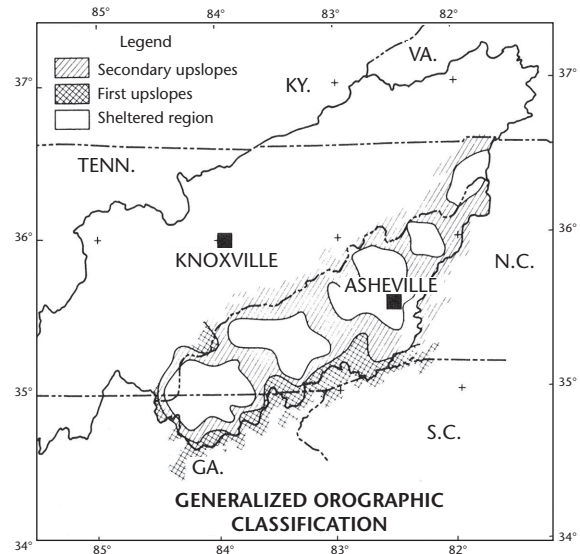


Figure 5.14. Topography classified on basis effect on rainfall, Tennessee River basin above Chattanooga, Tennessee (Zurndorfer and others, 1986)

significantly larger amounts. These maximum point values are considered to apply to average depths over 2.6 km², the smallest basin size assigned for study. Maximum observed point, or 2.6-km², rainfalls for durations up to 12 hours in the eastern half of the country were transposed and maximized as described in Chapter 2. Outstanding maximized and observed values were plotted against duration (Figure 5.15), and curves (solid lines) were drawn to 6 hours for smooth and rough terrain (section 5.3.2.2).

The following concepts and principles were observed in constructing the two depth–duration curves. Over

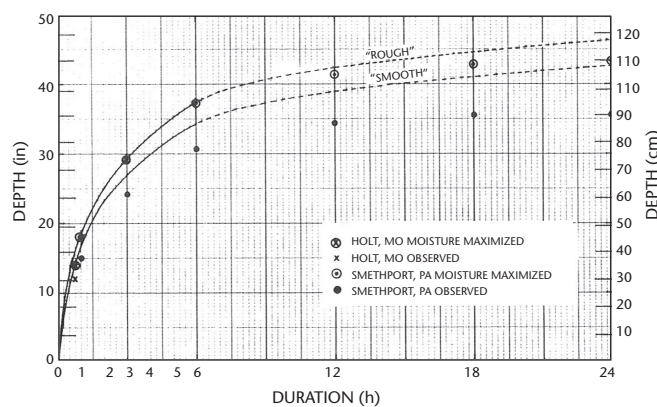


Figure 5.15. Adopted 2.6-km² PMP with supporting data, Tennessee River basin; dashed lines are extrapolations based on relation of Figure 5.16, smooth curve applies uncorrected only to 100 per cent line of Figure 5.18 (Zurndorfer and others, 1986)