

**Figure 5.28. Nomogram for determining terrain adjustments for basins larger than 259 km<sup>2</sup> (Zurndorfer and others, 1986)**

5.3.3, have shown that for basins in the mountainous east, differences between the two procedures may be 10 per cent to 20 per cent. In particular, for basins between 259 and 285 km<sup>2</sup> that are primarily upslopes, a reduction to BOF adjustment is necessary, as shown in Figure 5.30.

Reduction of discontinuities at the interface is necessary to enable smoothing of depth–area relations throughout the range of area sizes needed for proper application of the procedures outlined in section 5.2.7.

The entire procedure for estimating PMP for specific basins is outlined in section 5.3.3.6.

### 5.3.3.5 Areal and time distribution

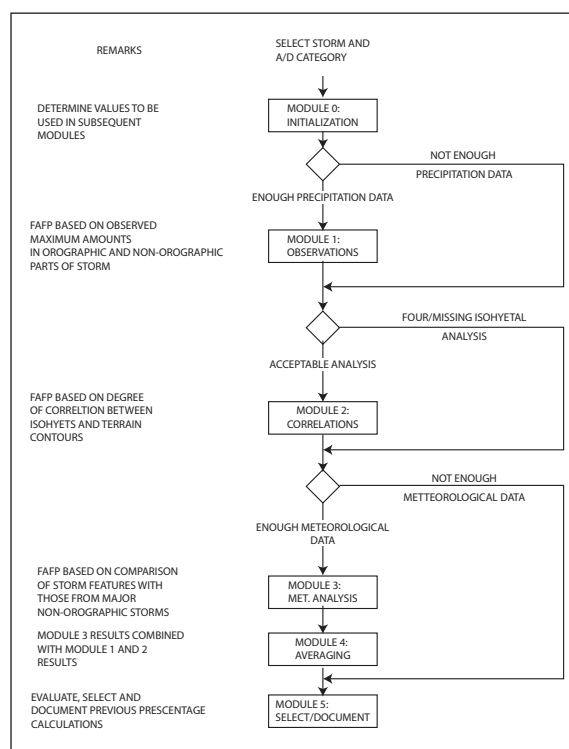
The relationships described above yield the volume of PMP for specified area sizes and various durations. Geographic distribution of PMP within problem basins is determined by developing the isohyetal pattern of an idealized or typical representative storm and providing nomograms for obtaining isohyetal values, then adjusting for the effects of topography. The procedure is described in section 5.3.3.6. Critical sequences of 6-hour and 24-hour rainfall increments may be arranged as described in section 3.4.2.6.

### 5.3.3.6 PMP for specific basins

For the relatively smooth north-western portion of the total Tennessee River basin, referred to as the non-mountainous east (unhatched regions of Figure 5.25), PMP estimates are obtained from the basin PMP at Knoxville (Figure 5.22) and the regional adjustment (Figure 5.23). The stepwise procedure follows. Individual steps needed to compute basin average PMP – steps (a) to (g) – may be followed more easily by referring to

the example computation for the 7 542 km<sup>2</sup> Clinch River basin above South Holston Dam, Tennessee, in Table 5.2.

- From Figure 5.22, 6-, 12-, 18-, 24-, 48- and 72-hour values of non-orographic PMP for the basin size are obtained.
- The percentage adjustment indicated in Figure 5.23 is obtained for the centre of the problem basin, and used to multiply values obtained in (a).
- A smooth enveloping depth–duration curve is constructed from the adjusted values of (b), and 6-hour increments for the 72-hour PMP are obtained.
- From Figure 5.27, the percentage of intermediate and rough terrain within the basin for the respective portions of the basin is determined. Figure 5.28 for each of these percentages is entered to obtain the terrain adjustments for this basin. These adjustments are combined. Figure 5.29 for the area size of the basin (7 542 km<sup>2</sup>) is entered to get an areal adjustment. If the basin size were less than 285 km<sup>2</sup>, the areal adjustment would have to be multiplied by the combined adjustment from



**Figure 5.29. Variation of terrain roughness adjustment (Figure 5.28) with basin size (Zurndorfer and others, 1986)**