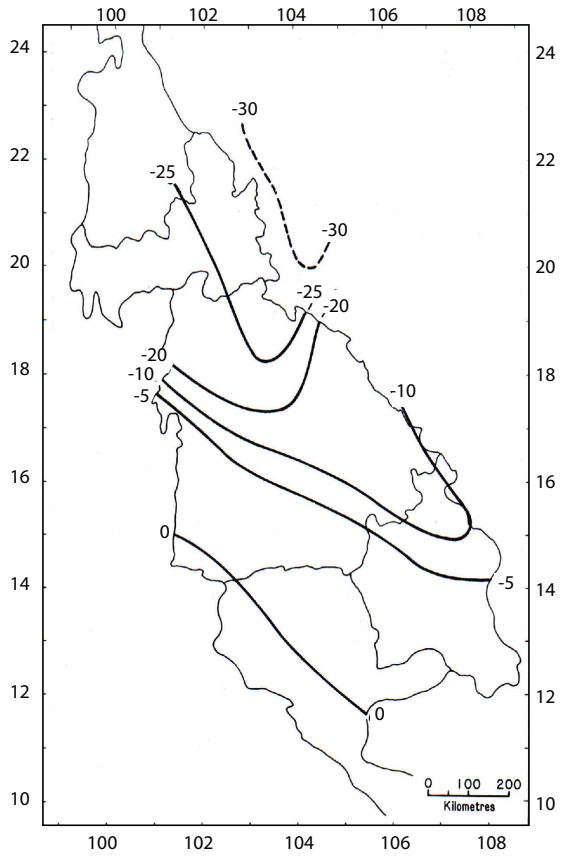

Figure 6.13. Barrier adjusment of typhoon rainfall (percentage decrease; United States Weather Bureau, 1970)

considered reasonable to have the isohyetal centre over the same location for a 24-hour period in the PMP storm.

DAD relationships in the heaviest tropical storm rainfalls of the Mekong basin and the United States were used to establish isohyetal values for the selected pattern. Particular attention was given to maximum 6- and 24-hour rainfalls. For these durations, consistent depth–area curves were constructed for standard area sizes of 5 000, 10 000, 15 000 and 25 000 km^2.

With the 6- and 24-hour relations established, the second and third heaviest rainfall increments were computed proportional to PMP increments at standard size areas. The dashed curves of Figure 6.18 represent adopted depth–area relations for key basin sizes and durations. The solid curves are based on Figure 6.10. The storm depth–area curves and PMP DAD data were used to develop nomograms like that of Figure 6.19 for evaluating isohyetal values. Such nomograms are derived by the procedure described in section 2.11.3, the only difference being that isohyetal values were converted into percentages of average rainfall enclosed by the respective isohyets and presented as a nomogram instead of in a table.

6.2.2.8 PMP for specific basins

PMP for specific basins (see cautionary remarks, section 6.3) is estimated using the following steps:

(a) Lay out basin outline of Figure 6.16 and determine average 24-hour, 5 000-km^2 PMP for the basin.
(b) From Figure 6.17, read percentages of 24-hour, 5 000 km^2 for 6, 12, 18, 24, 48 and 72 hours for the basin area.
(c) Multiply basin average 24-hour, 5 000-km^2 PMP from (a) by the percentages of (b) to obtain basin PMP.
(d) Use data from (c) to construct a smooth depth–duration curve, and read off 6-hour PMP increments for the entire 72-hour storm.
(e) Arrange 6- and 24-hour increments as described in section 6.2.2.6.
(f) Use selected elliptical isohyetal pattern (not shown) to distribute the four greatest 6-hour rainfall increments. Centre and orient pattern over the problem basin so as to obtain most critical runoff, which usually results with greatest rainfall volume within the basin. Enter Figure 6.19 with basin area, and read percentage values for each isohyet, P to E, for the maximum 6-hour increment. Multiply the maximum 6-hour PMP increment of (e) by these percentages to obtain isohyetal values in millimetres. Values for second, third, and fourth PMP increments are obtained in a similar manner from similar nomograms (not shown).

6.2.3 Estimation of PMP for India

6.2.3.1 Introduction

The PMP over most of India will be the result of either tropical cyclones or monsoonal depressions. These storms have occurred over almost all of India except the far southern extremity and northern areas bordered by the Himalayas. Thus, virtually the entire sub-continent can be treated as meteorologically homogeneous for the transposition of storm rainfall (Rakhecha and Kennedy, 1985). The limits to the transposition area are