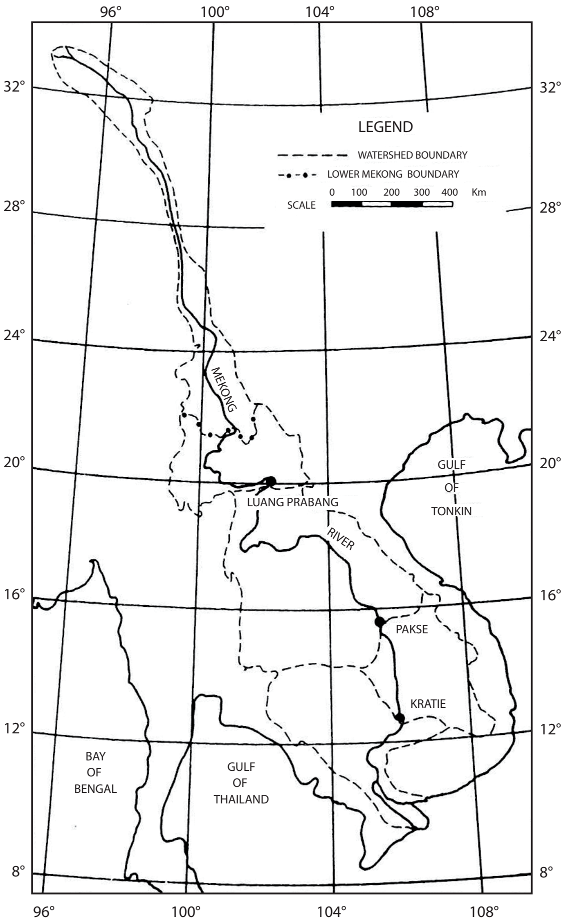

Figure 6.7. Mekong River basin and sub-basins (United States Weather Bureau, 1970)

Topographic effects on seasonal rainfall distribution were assessed on the basis of the limited data and on past experience gained from study of these effects in regions with adequate data. Comparisons of mean rainfalls at a few pairs of stations in the Mekong River basin, critically selected to reflect different topographic effects within each pair, provided guidance. These comparisons, plus experience, led to the following guidelines:

(a) For mountain slopes facing south to west, with no nearby mountain barriers to moisture inflow, mean seasonal rainfall approximately doubles in the first 1 000 m rise in elevation. Except for extremely steep slopes extending to high elevations, no further increase was indicated;
(b) Upslopes near the coast, outside the basin but bounding it, produce spillover rainfall over limited areas in the basin;
(c) Sheltered areas immediately to the lee of mountain barriers receive about half the rainfall observed upwind of the barriers.

The above guidelines, plus general guidance from some streamflow data, supplemented observed rainfall data in the construction of the mean May–September rainfall map (Figure 6.9). Mean rainfall maps for August and September, the wettest months, were constructed in a similar fashion.

6.2.2.2 The typhoon as a PMP prototype

Typhoons are the most important producers of rains with several days duration in the Lower Mekong for the range of basin sizes considered in this example. Such storms, approaching the Mekong basin from the east, produce the heaviest general rainfalls in the basin in spite of mountain barriers between the coast and the eastern border of the basin. Rainfalls from typhoon Vae (21–22 October 1952), in the southern portion of the Lower Mekong basin, and Tilda (21–25 September 1964), near the middle, are foremost examples. Large-area rainfalls from these storms, after adjustment as described below, approximate the greatest values from tropical storms throughout the world.

With the idea of adapting the more abundant DAD rainfall data from tropical storms along the United States coast to the Mekong drainage, the massiveness (size and intensity), speed of movement and other features of tropical storms affecting the two regions were compared. Also compared were average maximum 1-day point rainfalls from tropical storms in the United States and in the Pacific Ocean, including the Viet Nam coast. Values along the Viet Nam coast were about 20 per cent greater, but the excess was attributed to topographic influences absent in the coastal regions of south-eastern United States. The comparisons suggested that non-orographic tropical storm rainfall potential was about the same for the two regions.

6.2.2.3 Adjustment of United States tropical storm rainfalls

Two adjustments were made to the United States tropical storm DAD data to make them applicable to the Viet Nam coast. First, the storm data were moisture maximized for a persisting 12-hour dew point of 26°C, the highest value for United States coastal regions affected by tropical storms. Second, an adjustment was made for the decrease of tropical storm rainfall with distance inland. This adjustment is discussed in the following section. The adjusted data and enveloping DAD curves are shown in Figure 6.10. The DAD curves were considered to represent non-orographic PMP just off the Viet Nam coast.