for calculating the combined maximization and transposition adjustments.

2.6.2 Elevation adjustments

An increase in surface elevation decreases the moisture that may be contained in a column of the atmosphere. However, many storms receive most of their moisture in a strong low-level flow 1 to 1.5 km deep, and this inflow is not appreciably affected by relatively small changes in ground elevation. Ranges of low hills or gradually rising terrain may actually stimulate convection and increase rainfall. This effect on precipitation may more than compensate for the decrease in precipitable water with increasing ground elevation. Elevation adjustments for PMP estimates for non-orographic regions in the middle latitudes are discussed in the next two paragraphs.

2.6.2.1 General storms

Because the effects of relatively small elevation changes on precipitation is uncertain, there are different opinion as to whether elevation adjustments should be made for storm transposition over small elevation changes that occur over relatively short distances. A decision as to whether or not to use an elevation adjustment in a certain situation is based on a comparison of major storms in the vicinity of the actual site of the storm to be transposed with those in the area surrounding the project site. For example, if observed major storms at the two sites showed differences in magnitude ascribable only to differences in moisture, omission of an elevation adjustment would be justified. In some studies (Hart, 1982; Miller and others; 1984*b*; Schreiner and Riedel, 1978), adjustments for elevation differences of about 300 m or less over short distances have not been made. A second consideration involves similar changes over broad, gradually sloping plains. This situation must be considered separately and major storm rainfalls in these regions examined. Again, if differences in rainfall amounts can be ascribed to differences in moisture not involving elevation differences, omission of an elevation adjustment is justified. If it is decided to omit adjustment for elevation, W_2 of Equation 2.5 is computed for the maximum dewpoint at the referenced location (section 2.6.1.1) for the project site and the same column height as for W_1. If an adjustment is used, W_2 is computed for the same maximum dewpoint just described, but for the column above the ground at the project site, which may be lower or higher than the site of the observed storm. Regardless of whether or not an elevation adjustment is used, transposition involving elevation differences of more than 700 m is generally avoided.

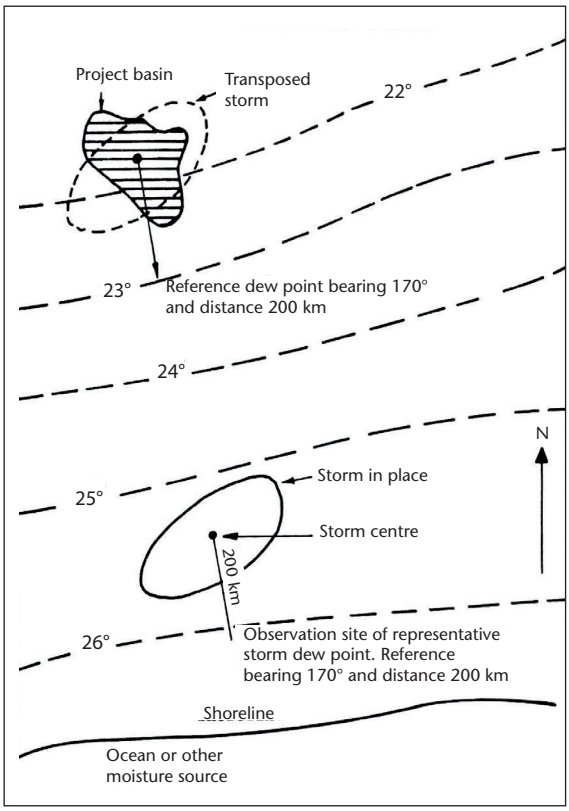

Figure 2.7 Example of storm transposition. Long dashed lines indicate maximum persisting 12-hour 1 000-hPa dewpoints (°C) for the same time of year the storm occurred or within 15 days according to common practice (section 2.3.1).

2.6.2.2 Local thunderstorms

Intense local thunderstorms are not adjusted for elevation when transposition involves elevation differences of less than around 1 500 m. Since this chapter deals with non-orographic regions, it can be stated simply that no elevation adjustment is made for local thunderstorms. Elevation adjustment for such storms is required in orographic regions, however, and they are discussed in sections 5.3.2.1 and 5.3.7.4.

2.6.3 Barrier adjustment

Transposition of a storm from the windward to the leeward side of a topographic barrier normally requires an adjustment for the height of the barrier. This is a common situation, because basins upstream from a proposed dam site are often rimmed by mountains or hills. Transposition of