moisture content is increased to the level of a standard extreme dewpoint temperature for the zone rather than for the storm location. In essence standardization is equivalent to transposition of each storm from its original location to a common hypothetical location. Since this is purely a transposition in terms of moisture content, standardization is only valid for the convergence component of a storm. A standardization factor is calculated in an analogous fashion to the maximization factor: it is the ratio of the precipitable water value at the standard extreme dewpoint temperature to that of the storm extreme dewpoint temperature. It is worth noting that the only essential difference between moisture maximization and standardization is in the imposition of a limit on the maximization factor.

Dividing Australia into two method regions and dividing each region further into application zones effectively limited the transposability of the storms in space. A similar limitation on their transposability in time was also considered necessary, as storm type is correlated with season as much as with geographical zone. For this reason the GSAM storm database was divided into four seasonal groups with four different standard extreme dewpoint temperatures, and the GTSMR storm database was divided into two seasonal groups with two different standard extreme dewpoint temperatures These standards were chosen on the basis of the annual variation of the extreme 24-hour persisting dewpoint temperature within the method regions.

For the GSAM, this annual oscillation was approximated by four irregular step functions. The timespan of each step was chosen on the basis of the gradient of the oscillation curve and the desire to minimize the range of associated dewpoint temperatures within each step. The groupings, therefore, are not truly seasonal. This precaution kept the effects of standardization of the database reasonably consistent from group to group. The values of these seasonal standard extreme dewpoint temperatures are typical of the northern extremities of the GSAM region, so that the standardization factors, in general, are greater than 1.0. The standard steps are shown in Figure 5.74, with the annual variation in extreme dewpoint temperature at Brisbane for comparison.

A similar process of standardization was applied to storms in the GTSMR database. The storms were standardized to a two-season function shown in Figure 5.75. It is based on the extreme 24-hour persisting dew-point values at Broome, a station with long records in a region of high monthly

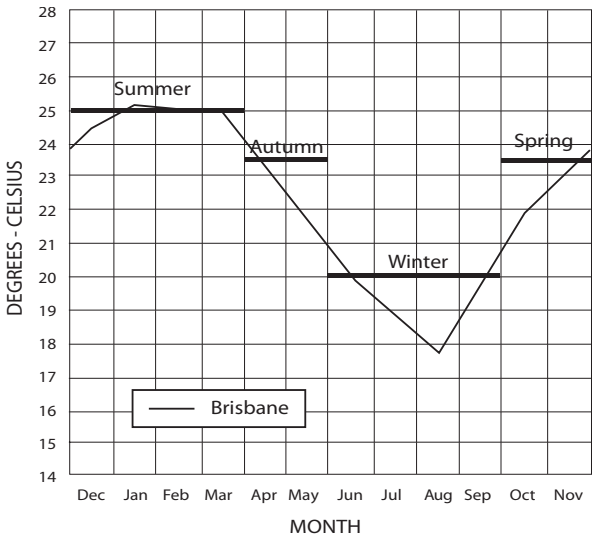

Figure 5.74. Extreme monthly 24-hour persisting dew-point temperature for Brisbane and the standard extreme persisting dew-point temperatures for the GSAM seasons

extreme persisting dewpoint values.

5.5.3.5 Geographic variation in decay of storm mechanism

The GTSMR uses an additional adjustment factor. Removal of the effects of topography and moisture maximization and standardization was sufficient in the case of the GSAM to generalize the storms such that they could be transposed within the region. However, the GTSMR region is much bigger and the type of storm that generates extreme rainfall scenarios, particularly in the coastal zone, is a tropical cyclone. In general, the tropical storms have a greater energy source to draw on in the warm moist air over the ocean and so the further they are located from this source of energy, the more reduced in magnitude they will be. In order for the storm mechanisms to be able to be transposed within the zone, this additional geographic variation needs to be considered.

A useful way of quantifying this is to take the intensity–frequency–duration (IFD) information from the Institution of Engineers, Australia (1987) as the basis for the geographic variation of rainfall intensity over the country, it being the best information currently available for this purpose. The IFD data, however, represents rainfall variability due to topography and moisture as well as the residual geographic variability that needs to be captured. The component of the rainfall contributed by moisture and by topography must be removed from the IFD data so as not to