



Figure 2.1. Pseudo-adiabatic diagram for dewpoint reduction to 1 000 hPa at zero height

of maximum persisting 12-hour dewpoints, which are discussed in section 2.2.5.

2.2.4 Representative persisting 12-hour 1 000-hPa storm dewpoints

To select the saturation adiabat representing the storm moisture, the highest dewpoints in the warm air flowing into the storm are identified from surface weather charts. Dewpoints between the rain area and moisture source should be given primary consideration. Dewpoints in the rain area may be too high because of the precipitation, but they need not be excluded if they (a) appear to agree with dewpoints outside the area, and (b) appear to be truly representative of the layer of air where precipitation is forming. In some storms, particularly those with frontal systems, surface dewpoints in the rain area may represent only a shallow layer of cold air and not the temperature and moisture distributions in the clouds releasing the precipitation.

Figure 2.2 schematically illustrates a weather map from which the storm dewpoint is determined. On each consecutive weather map for 6-hour intervals during the storm, the maximum dewpoint is averaged over several stations, as illustrated in the figure. The same stations should be selected for averaging on each of the weather maps.

Occasionally, it is necessary to rely on the dewpoint at only one suitably located station, for example, when the moist airflow into the storm is from a very narrow moist tongue. The distance from the centre of the storm precipitation to the stations selected for determining the storm dewpoint should be limited to that of synoptic scale phenomena, no more than approximately 1 600 km. The average, or single, maximum dewpoints selected from consecutive maps form a series, and the maximum persisting 12-hour storm dewpoint is then determined, as described in section 2.2.3. Care should be taken to ensure that the time period selected for the storm dewpoint is taken so as to allow for transport from the location of the dewpoint stations to the storm site during an interval compatible with observed winds in the storm. The selected dewpoint is then reduced pseudo-adiabatically to the 1 000-hPa level.

If the originally observed values plotted on the weather maps are for stations differing significantly in elevation, a reduction of 1 000 hPa should be made for each station before averaging, however, elevation differences between dewpoint stations in the moist-air inflow are usually small, hence are generally neglected in the selection of the storm dewpoint.

Table 2.1. Dewpoints observed at 6-hour intervals

Time	0000	0600	1200	1800	0000	0600	1200	1800
Dewpoint (°C)	22	22	23	24	26	24	20	21