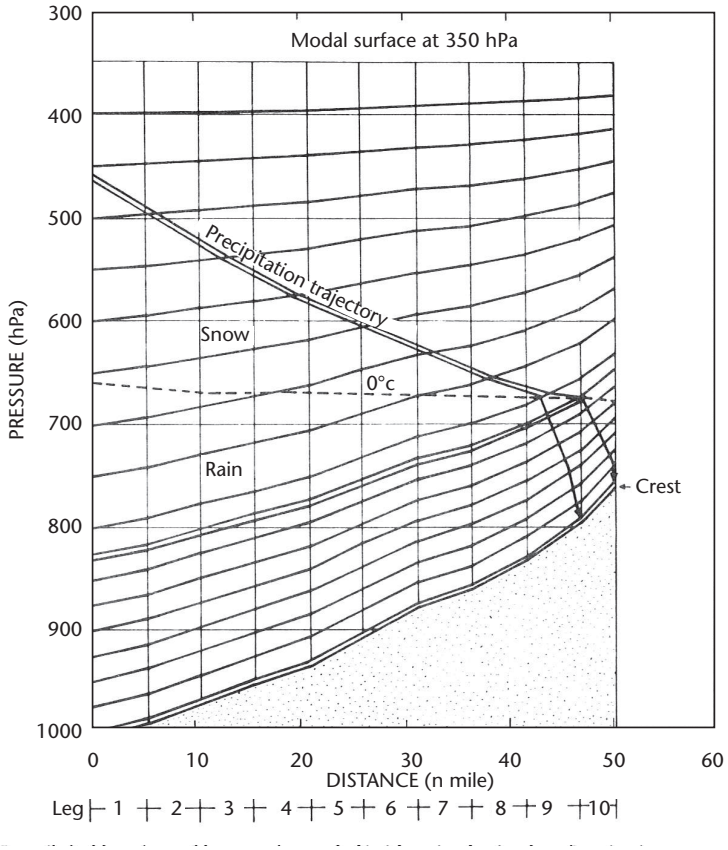

Figure 3.6. Air streamlines and precipitation trajectories for test case

temperature occurs between inflow and outflow. (See discussion of Table 3.2 in section 3.2.3.5.) Plot these points on their respective streamlines, and draw the freezing line as shown in Figure 3.6. Precipitation is assumed to fall as snow above the freezing line and as rain below.

3.2.3.5 Precipitation trajectories

The path followed by falling precipitation particles is determined by three components: (a) vertical fall due to gravity; (b) horizontal drift caused by the horizontal component of the wind; and (c) vertical rise resulting from the upward component of the wind as it flows along the streamlines.

The average falling rate of precipitation particles in orographic storms affecting the test area has been taken as 6 m/s for rain and 1.5 m/s for snow. For computational purposes, these values have been converted to 2 160 hPa/hour and 453 hPa/h, respectively.

The horizontal drift of precipitation particles while falling from one streamline to another is $\frac{\overline{V}\Delta P}{\text{rate of fall}}$

where $\overline{V}$ is the mean horizontal wind speed, in knots, in the layer between streamlines; P is the thickness of the layer in hPa; and rate of fall is in hPa/hour. Since $\overline{V}\Delta P$ is constant between any two streamlines, drifts computed at inflow may be used anywhere between the same two streamlines. In Table 3.2, horizontal rain drift (DRR) and horizontal snow drift (DRS) between streamlines are shown in columns 6 and 7. Drifts are in nautical miles (nmi) since $\overline{V}$ is in knots. The effect of the upward component of the wind is automatically taken into account by the slope of the streamlines.

Precipitation trajectories are computed from the ground up, starting at the ends of the selected legs of the ground profile. Plotting points for two trajectories are computed in Table 3.2: one, called upper (UT), beginning at outflow, or 50.3 nmi from inflow; and the other, called lower (LT), beginning at the end of the ninth leg, or 46.8 nmi from inflow. Columns 8 and 9 of Table 3.2 give accumulated horizontal drifts from the vertical passing through the ground point of each of these trajectories. Columns 10 and 11 give corresponding distances from the inflow vertical.