



(a) Stage 1 (incipient surface cyclone development), at intervals of 4 mb, cyclone development at the surface. Full curves represent sea-level isobars and broken curves the 1000–500 mb thickness contours (conventional map intervals and units). Shading represents continuous precipitation and arrows denote the direction and magnitude of the vertical motion at 700 mb. Conventional frontal symbols are also used. Scalping represents overcast cloud cover, as would be viewed from a satellite. **(b)** The 500 mb height (full curves at intervals of 120 dam) and vorticity contours (broken curves at intervals of 2 units) coinciding with the pattern at the surface shown in (a), which is represented on this figure by the configuration of surface fronts. The maximum vorticity is indicated by a cross labeled in vorticity units. The bold-faced arrow indicates the geostrophic wind speed maximum.