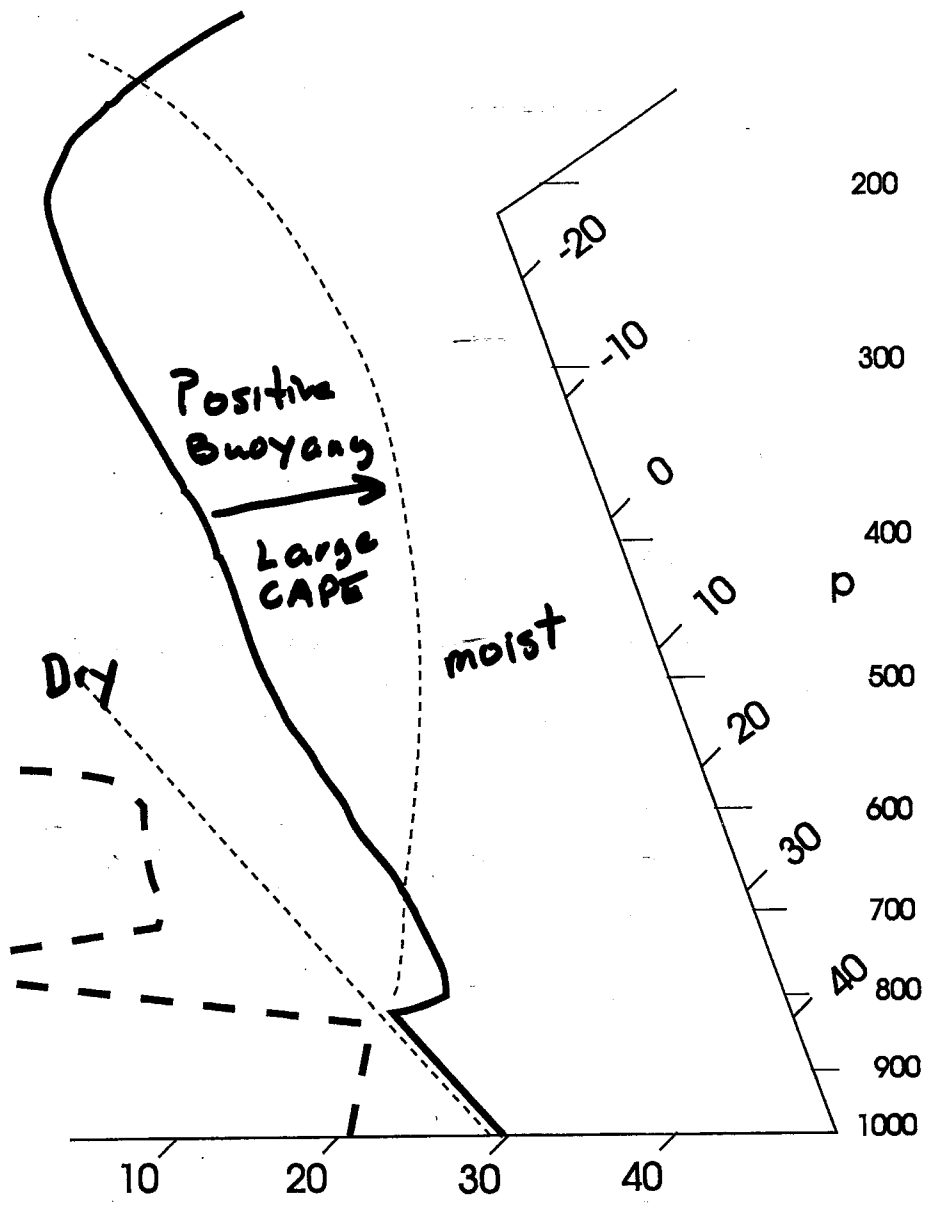

Fig. 9.8 Thermodynamic sounding, 00 GMT, May 7, 1986, at Oklahoma City, Oklahoma. Light dashed lines show dry and moist adiabats.

The meteorological conditions that lead to vertical thermodynamic structures with large CAPE result from particular arrangements of geographical features. An example is the topography of the southern United States and the Gulf of Mexico, illustrated in Figure 9.9. During the early and middle spring, the atmosphere in this region is still highly baroclinic, exhibiting strong vertical wind shear. The Gulf of Mexico absorbs more solar radiation than the high deserts of northern Mexico and the southwestern United States simply because its albedo is less. Most of the radiation is used to evaporate water, elevating the θ_e of air over the gulf.

Over the deserts, less radiation is absorbed but nearly all of it is used to heat the land and overlying air, as there is very little soil moisture that