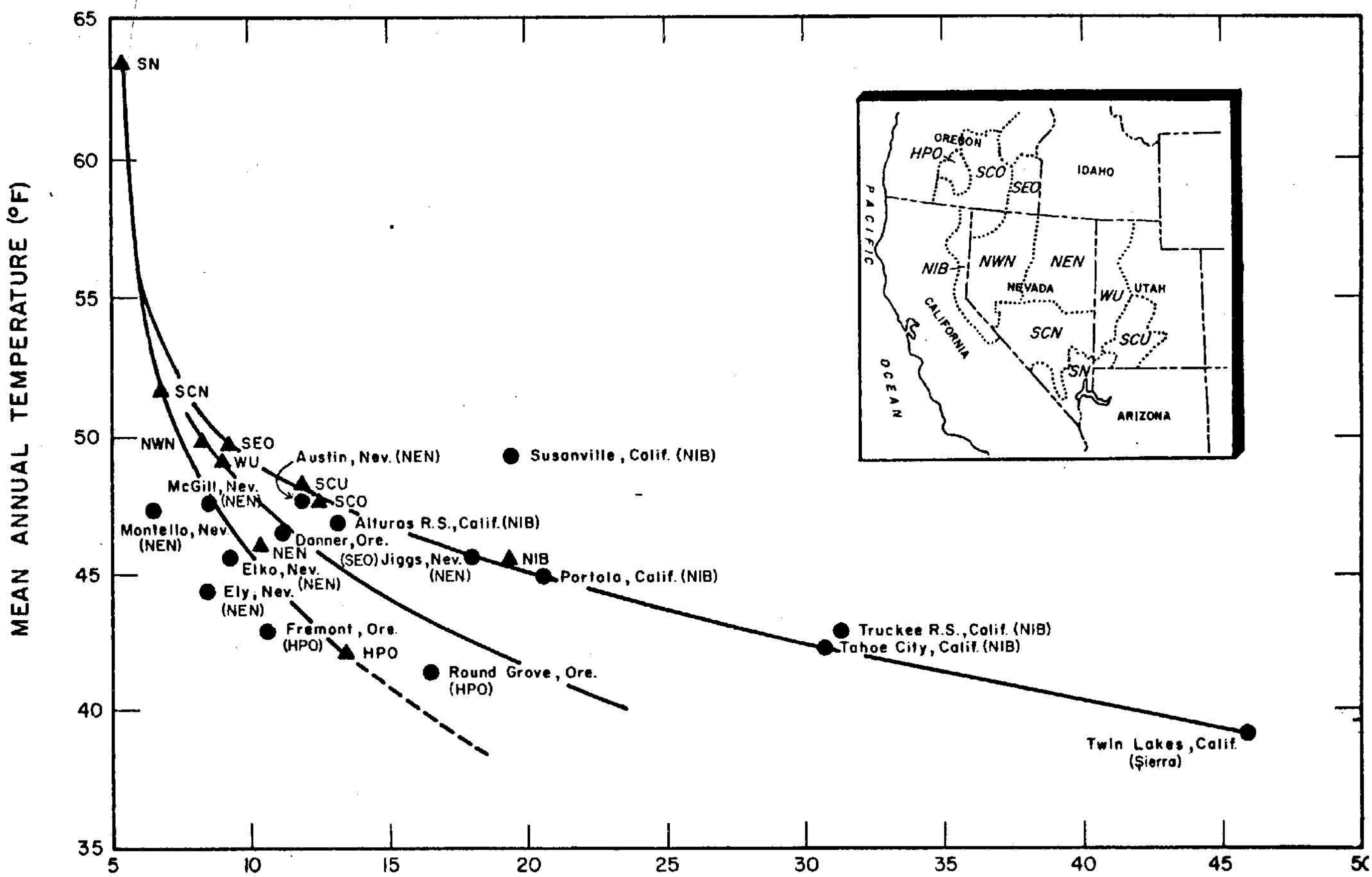

FIGURE 22. Relation of mean annual temperature to mean annual precipitation based on State Climatic Divisions, 1931–1960.

In considering these data and the typical basin configuration of the Great Basin, it is reasonable to suggest the lower Climatic Division trend represent what might be expected in the very intermontane basin environments; the upper curve represents less arid high mountain flank and crestal environments, and a few less arid basins in the north and east of Nevada. Many of the basin lowlands in this study are best related to the lower curve; however, three extreme northwestern basins of Nevada better fit the upper curve, as do parts of Lahontan Basin (the mountainous areas of the Sierra Nevada rivers and Humboldt River headwaters). Some of northcentral Nevada also may lie closer to the upper curve relationships than the lower curve, as indicated by the Austin and Jiggs data.

In analyzing Great Basin topographic configurations and requirements of precipitation values in Equation 4, it has been found that about 10 percent of the hydrographic basin can be considered high mountain terrain and the rest is intermediate or basin lowland. When precipitation is weighted according to terrain altitude using the precipitation map of Nevada, it is found that tributary basin precipitation (P_T) is usually about 25 percent higher than basin floor precipitation (P_L). This, of course, will vary in both directions depending upon the particular basin and associated mountain terrain; however, a more sensitive approach is not warranted because of the estimated nature of precipitation isohyetes in the precipitation maps of Nevada.

Figure 22 has been adopted as a guide in estimating expected changes in precipitation that seem reasonable if mean annual temperature varied during the pluvial climates. The direction of least climatic change necessary to provide more moisture is clearly toward lower mean annual temperatures; however, due to the spread of data represented by the upper and lower trends of the developed temperature/precipitation curve, judgment is necessary to use the curve for evaluating Equation 4. A conservative approach is to attempt to estimate the correct trend for several climatic zones of Nevada and also assume that the upper curve is more representative of tributary precipitation (P_T) where appropriate. The lower curve, because of the strong basin bias of the stations, seems reliable for lake precipitation (P_L) in the very arid basins. A median curve has been displayed and has been used in several cases, as discussed later. The adopted approach, using Figure 22, assumes the modern climate interdependency of precipitation and temperature in the Great Basin also applied to pluvial climates; it permits a departure from modern climate and adjusts estimates of pluvial climate to values of known variation of temperature and precipitation within the Great Basin. Other methods of estimating precipitation with a temperature drop seem less sensitive to the complex and relatively unknown characteristics of climate in the Great Basin. When searching for reasonable departure curves of precipitation and temperature for estimating pluvial climates, it was found that available long-term records do not show a clear correlation of a temperature decrease with more precipitation in the annual records of individual stations. Yet, data presented in Figure 22 clearly suggest interdependence of increased precipitation with lower temperatures