After the determination of the convergence precipitation (FAFP) for all of the major storms in the region, the 24-hour convergence precipitation values were moisture-maximized and transposed to all other locations where similar storms have occurred. Transposition limits were determined as discussed in section 2.5. The precipitation amounts were increased or decreased based upon the differences in available precipitable water. In this study, no adjustments for change in precipitable water or changes in elevation of 300 m or less were made, and an adjustment of only one half of the available precipitable water for differences in elevation beyond the first 300 m (section 2.6.4.2). Figure 5.32 shows the analysed moisture-maximized convergence precipitation map for central and eastern Colorado. This map shows, as expected, a general decrease towards the west, the region of increasing elevation. The lowest precipitation amounts are shown along the Continental Divide, where, in general, elevations are the highest.

5.3.4.2 Orographic factor *T*/*C*

It was necessary to adjust the convergence precipitation for the variation in orographic effects that occurs over this region. The variation of the orographic factor was determined from the 100-year 24-hour precipitation frequency maps from National Oceanic and Atmospheric Administration (NOAA) Atlas 2 (Miller and others, 1973). A first step of this procedure was to determine the non-orographic portion, or convergence component *C*, of the 100-year precipitation frequency amounts. The procedure used was to examine the map to find regions of minimal values in plains regions and broad valleys. These were considered to experience the least amount of influence of orographic effects. Smooth isolines of the convergence component were then drawn for the regions, assuming these minimum values reflected only the convergence precipitation. These isolines would reflect solely the decrease of convergence potential away from the moisture source, generally toward the west and north in this region. Figure 5.33 shows an example of this convergence portion of 100-year 24-hour precipitation for the state of New Mexico east of the Continental Divide.

The orographic factor was then determined by dividing the total 100-year 24-hour precipitation frequency amount *T* by that amount determined to be convergence precipitation *C*. This was done for a variable grid over the region with the closest spacing in regions of tight gradient on the precipitation-frequency maps. A portion of the resulting map, for Colorado east of the Continental Divide, is shown in Figure 5.34. There is generally some orographic effect on precipitation throughout this study region, but there is little or none on the western limits of the Great Plains or in some broad river valley bottoms.

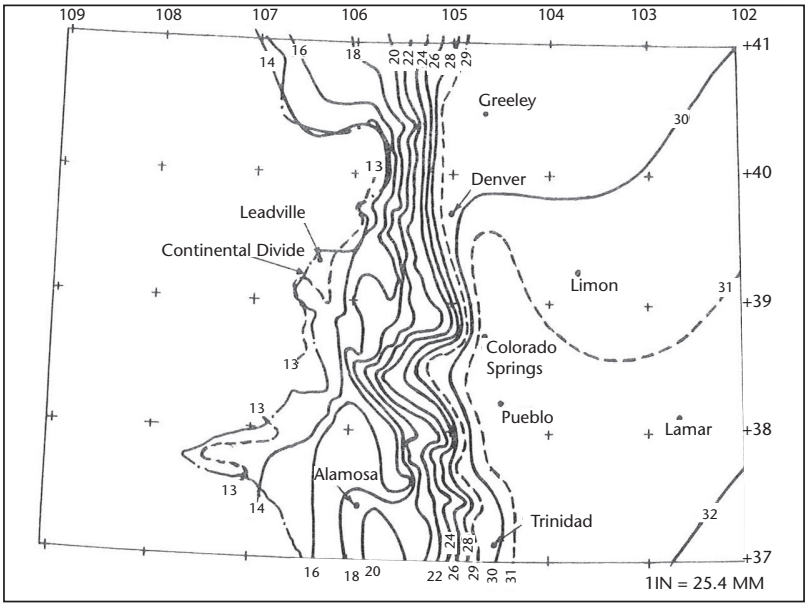

Figure 5.32. Moisture-maximized convergence precipitation (inches) map for state of Colorado east of Continental Divide (Miller and others, 1984*b*)