

6 hours. According to studies of temporal variations in 99 local storms in the North-west region, the ratio between 6 hours and 1 hour is about 1.10 to 1.15.

5.3.7.5 PMP precipitation depth–area relation

Based on HMR No. 43 (United States Weather Bureau, 1966) and HMR No. 49 (Hansen and others, 1977) and studies of data on extreme local storms in the North-west region, the precipitation depth–area relation has been corrected. The current precipitation depth–area relation is shown in Figure 5.43. The adopted generalized local storm isohyetal map is shown in Figure 5.44. Using both of these, the spatial distribution of PMP of local storms with particular durations and areas may be determined.

5.3.7.6 One-hour 2.6 km² PMP map of the North-west region

5.3.7.6.1 Analysis of results

An index map of 1-hour 2.6-km² PMP for elevations up to and including 1 830 m is provided in HMR No. 57 (Hansen and others, 1994; Figure 5.45)

The highest values of local storm PMP are found over the extreme south-eastern portions of the region in the Snake River basin, where a maximum of almost 250 mm reaches nearly to the Idaho border. A broad maximum of 200 to 230 mm in local storm PMP is evident through the

Snake River basin along the Idaho border with a concomitant dip over the Rockies. Local storm PMP values decrease generally to the north and west across the region, falling to about 150 mm in the Cascades east of Seattle. This is in response to both decreased moisture and diminished intensity of solar radiation. The minimum local storm PMP, about 80 mm, occurs in the Olympic Peninsula in Washington. This value increases to a little over 130 mm southward along the coast, at the Oregon–California border. These lower values are due to the destabilizing effect of the cool, moist layer of surface air resulting from interaction with the cool Pacific Ocean waters along the coast.

5.3.7.6.2 Comparison with other studies

HMR No. 43 (United States Weather Bureau, 1966) calculated summer thunderstorm PMP for areas of the Columbia River basin east of the Cascades. The procedures used in that study vary significantly from those utilized in the current study. A brief review of the salient differences in procedures and results will serve to emphasize the types of changes involved.

Compare the estimate results of HMR No. 57 (Hansen and others, 1994) and HMR No. 43 (United States Weather Bureau, 1966) for 1-hour 2.6-km² PMP in inches east of the Cascades. In the majority of the region the difference between the two estimates is less than 130 mm. Slightly larger differences, however, appear in the study area

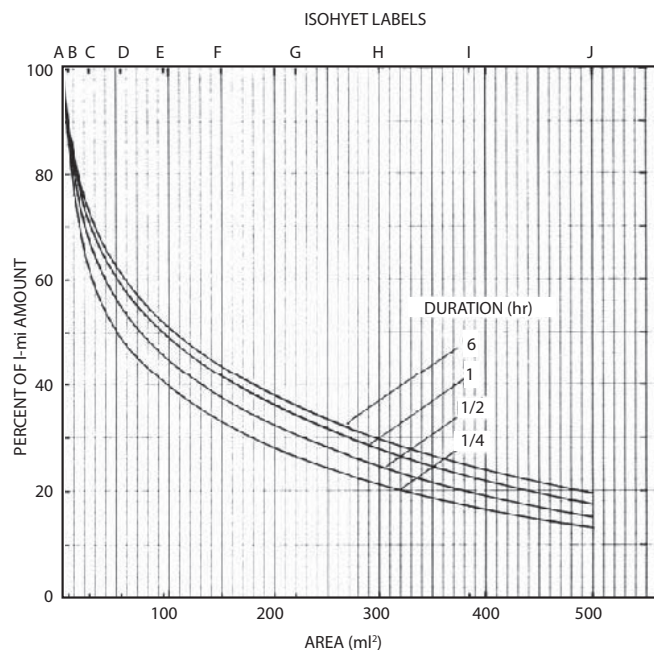


Figure 5.43. Depth–area relations for local storm PMP Pacific Northwest states