San-Hua region (see Figure 7.3: the San-Hua region is located in the middle of the shaded area), the south-eastern wind prevails, and the topography of the San-Hua region is such that the elevation increases gradually from east to west, and thus enables the lifting of the warm and wet air mass, and also the formation of heavy rainstorms.

The above six key points are summarized in Table 7.1, which shows the required characteristics for storm models of PMP/PMF in the San-Hua region. Only a flood derived from the PMP that is determined using storm models with these characteristics is the high-peak and large-volume PMF that meets design requirements of the project.

7.2.5.5 Similar work in other countries

Most practices in other countries for estimating PMP require the qualitative assessment of characteristics of storm models. For example, in Hydrometerological Report (HMR) No. 46, the United States transposed typhoon rainstorms in the south-eastern coastal region of the country to the Mekong River basin for PMP estimation (United States Weather Bureau, 1970, 6.2.2). In HMR Nos 55A, 57 and 59, storms are categorized into local and general storms and PMP estimation is performed using generalized estimation (Hansen and others, 1988, 1994; Corrigan and others, 1998).

The Australian Bureau of Meteorology also categorizes storms according to duration and location, and uses different models for each in PMP studies. It formulated the Generalized Short Duration Method (GSDM; Australian Bureau of Meteorology, 1994) for short duration storms (less than 6 hours). Furthermore, it separates longer duration storms into tropical weather systems and subtropical weather systems and applies different generalized approaches to each. For storms occurring in the region of Australia where tropical storms are the most significant, the Generalized Tropical Storm Method (GTSM), revised in 2003, is applied (Walland and others, 2003). In regions where a subtropical weather system is the most significant rain-producing system, the Generalized Southeast Australia Method (GSAM) is applied (Minty and others, 1996).

In studies of PMP for the Indus River basin, Pakistan, the PMF for the basin can be deduced from observed data. Essentially, it has been determined that PMF results from tropical depressions in the Bay of Bengal, and the time the PMF is most likely to occur is between mid-August and late September.

In one case of PMP estimation in Korea, four typhoon rainstorms are selected for generalized studies, since extraordinary storms and floods in the country are caused by typhoons (Kim and others, 1989).
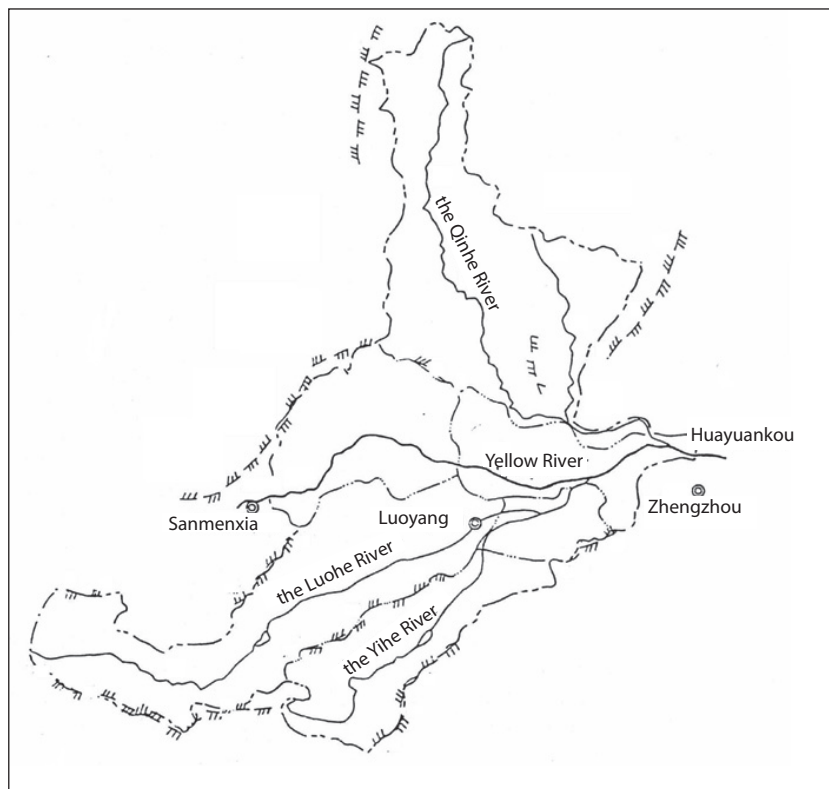

Figure 7.2. Diagram of the shape of the San-Hua region watershed on the Yellow River (Wang G., 1999)