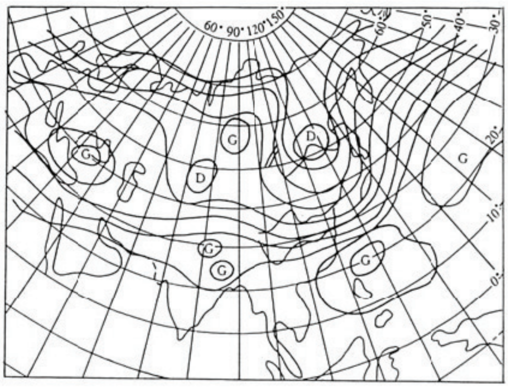

Figure 7.8. 500-hPa situation map for 5 June 1956 (MWR and others, 1995)

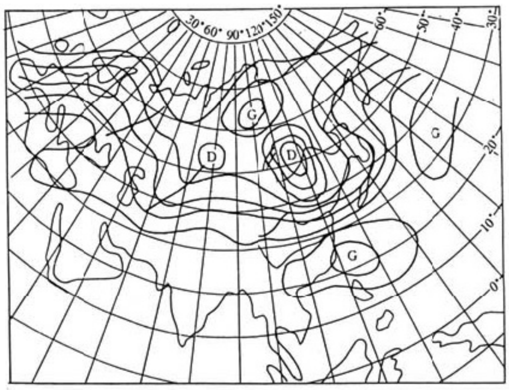

Figure 7.9. 500-hPa situation map for 6 June 1956 (MWR and others, 1995)

to the east, it would have been possible that the weather system on 13 July 1981 could have moved eastward and got weaker and evolved into the location of the weather system on 15 July 1982.

7.5.5.2.4 *Post-combination analysis of storm spatio-temporal distribution*

After the combination, the storm was first in the north-east–south-west rain belt on the Tuojiang River and the Jialingjiang River, then moved eastward to the Three Gorges region. It moved out 2 days later, causing the Tuojiang River and the Jialingjiang River floods to meet, generating large peaks. To study the spatio-temporal distribution of such storms, statistics were gathered about 27 large floods with precipitations in the Three Gorges reach. Among them, 12 precipitations had moved in from the Jialingjiang River. There were eight large storms on the Jialingjiang River that brought large storms in the Three Gorges reach. Descriptions of the rains for the 1870 historical flood indicate that it was also of this type. The storm distribution and trend on 5–7 June 1956 were very similar to those of the combined storm (Figures 7.10 to 7.13). This all suggested that linking the 13 July 1981 process with the 15 July 1982 process was reasonable.

7.6 PMF ESTIMATION

7.6.1 Introduction

The essential issue of deriving PMF from PMP is how to convert the design rainfall for a particular watershed into the design flood for the outlet section (or the dam site of the reservoir). This issue can be solved using rainfall-runoff modelling methods. These methods estimate flood characteristics based on rainfall data. There are numerous methods available to convert rainfall to runoff, from a simple empirical correlation to the complex watershed models. Users can select the model they need based on: specific conditions (mainly data conditions) of the design watershed; suitability of the approach; and methods with which they are familiar (Wang G., 1999; CJWRC, 1993; CJWRC, 1995).

A brief overview of deriving PMF from PMP is given herein. Specific methods for estimation are only briefly described and references exist that provide much more detail (United States Department of the Interior, 1992; United States Army Corps of Engineers, 1996).

7.6.2 Basic assumption for deriving PMF from PMP

The basic assumption is that the flood discharge resulting from the PMP is the PMF. When deriving PMF from PMP, special attention should be given to establishing what type of storm mechanism results in the PMP (including the storm volume and its spatio-temporal distribution) that produces the overall PMF required by a design project. One of the most important steps is to establish the qualitative characteristics of the ideal or model storm, which has been described in section 7.2.5.

7.6.3 Characteristics of runoff yield and flow concentration with PMP

Some studies indicate that runoff yield and flow concentration of discharge have distinct characteristics associated with the PMP design storm (Hua, 1984). These characteristics are noteworthy.