included in this manual), average trough-ridges and locations of subtropical anticyclones in the East Asia region were very similar. After the combination, mid-latitude areas maintained the dual-ridge and single-trough circulation type. This indicates that after the similar process substitution, the circulation type did not vary greatly, indicating that such a combination was possible and rational. Meridional circulations of the combined average circulation field were enhanced, which was favourable for the north–south exchange of cold and warm air and the enhancement of storm intensity.

7.5.5.1.5 Maximization of combination model

The 10-day rainfall of the combined storm was 177.1 mm, which was 34.1 per cent larger than the

typical-year 10-day rainfall (132.1 mm). Nonetheless, it was smaller than the 10-day storm rainfall (215 mm) of the historically largest flood, which occurred in 1750. The combined storm also didn't reach the PMP magnitude of the 1750 flood peak (16 000 m³/s at the Jiajiu station), so it was necessary to maximize physical factors.

Based on watershed characteristics and meteorological data, the moisture inflow index method (introduced in section 2.4.3) was used to maximize both the August 1966 storm and the July 1972 storm by 3 days. The ultimate 3-day PMP of the combined storm was 127.4 mm, while the 10-day PMP was 280 mm (Table 7.8). The latter was inconsistent with the post-moisture-maximization result of the back-induced 10-day storm rainfall of the 1750 flood,

Table 7.7. Table of typical storm process sequence in Manwan in 1966

				<i></i>								
Date		August 1966										Total
Item		21	22	23	24	25	26	27	28	29	30	
Areal rainfall (mm)		14.1	23.1	18.2	21.6	9.6	5.4	10.6	7.8	7.1	13.2	132.1
Circulation type		Dual-ridge and single-trough										
	500 hPa	Shearii	ng		Southern sub-trough shearing vorticity			Shearing trough (vorticity)				
Weather system	700 hPa	Shearing vorticity				Shearing vorticity			Shearing			
	Ground	Tibet monsoon depression				Plateau cold front and Burma monsoon depression			Burma monsoon depression and plateau cold front			

Table 7.8. Table of combined storm process sequence using similar process substitution method for the 1966 typical storm in Manwan

	August 21				July 19	5.5		July 10	72			
	21	2.2		August 1966				July 1972			- Total	
		22	23	24	22	23	24	24	25	36	Total	
Areal rainfall (mm)		23.1	18.2	21.6	10.1	28.6	15.6	12.5	18.5	14.8	177.1	
Circulation type		Dual-ridge and single-trough				Dual-ridge and single-trough			Dual-ridge and single-trough			
500 hPa	Sheari	ng			Low trough (vortex)			Sheari				
700 hPa	Shearin	ng vortio	city		Shearing vorticity			Sheari				
Ground	Tibet n	nonsoor	n depress	sion	Burma monsoon depression			cold fr				
PMP (mm)		46.8	36.8	43.8	10.1	28.6	15.6	23.1	34.1	27.6	280.0	
y 5	pe 00 hPa 00 hPa	pe Dual-ri 00 hPa Shearii '00 hPa Shearii	pe Dual-ridge and 00 hPa Shearing 00 hPa Shearing vortion Ground Tibet monsoor	pe Dual-ridge and single-to the single of th	pe Dual-ridge and single-trough 00 hPa Shearing 00 hPa Shearing vorticity Ground Tibet monsoon depression	pe Dual-ridge and single-trough Dual-r single- 00 hPa Shearing Low tr 00 hPa Shearing vorticity Sheari Ground Tibet monsoon depression Burma depression	pe Dual-ridge and single-trough Dual-ridge and single-trough 00 hPa Shearing Low trough (volume of the control	pe Dual-ridge and single-trough Dual-ridge and single-trough 00 hPa Shearing Low trough (vortex) 00 hPa Shearing vorticity Shearing vorticity Ground Tibet monsoon depression Burma monsoon depression	pe Dual-ridge and single-trough Single-trough Shearing Dual-ridge and single-trough Shearing Public Shearing Vortex Shearing Vorticity Shearing Vorticity Shearing Vorticity Shearing Tibet monsoon depression Burma monsoon cold from Shearing Vorticity Shearing Public Shearing Vorticity Shearing Vo	pe Dual-ridge and single-trough Dual-ridge and single-trough 00 hPa Shearing Low trough (vortex) Shearing trough 00 hPa Shearing vorticity Shearing vorticity Shearing Ground Tibet monsoon depression Burma monsoon depression Ground plateat cold front and monsoon depression	pe Dual-ridge and single-trough Dual-ridge and single-trough 00 hPa Shearing Low trough (vortex) Shearing trough 00 hPa Shearing vorticity Shearing vorticity Shearing Ground Tibet monsoon depression Burma monsoon depression Ground Plateau cold front and Tibet monsoon depression	