

Investigating the Dynamic Influence of Hydrological Model Parameters on Runoff Simulation Using Sequential Uncertainty Fitting-2-Based Multilevel-Factorial-Analysis Method

Shuai Zhou, Yimin Wang, Jianxia Chang, Aijun Guo and Ziyang Li

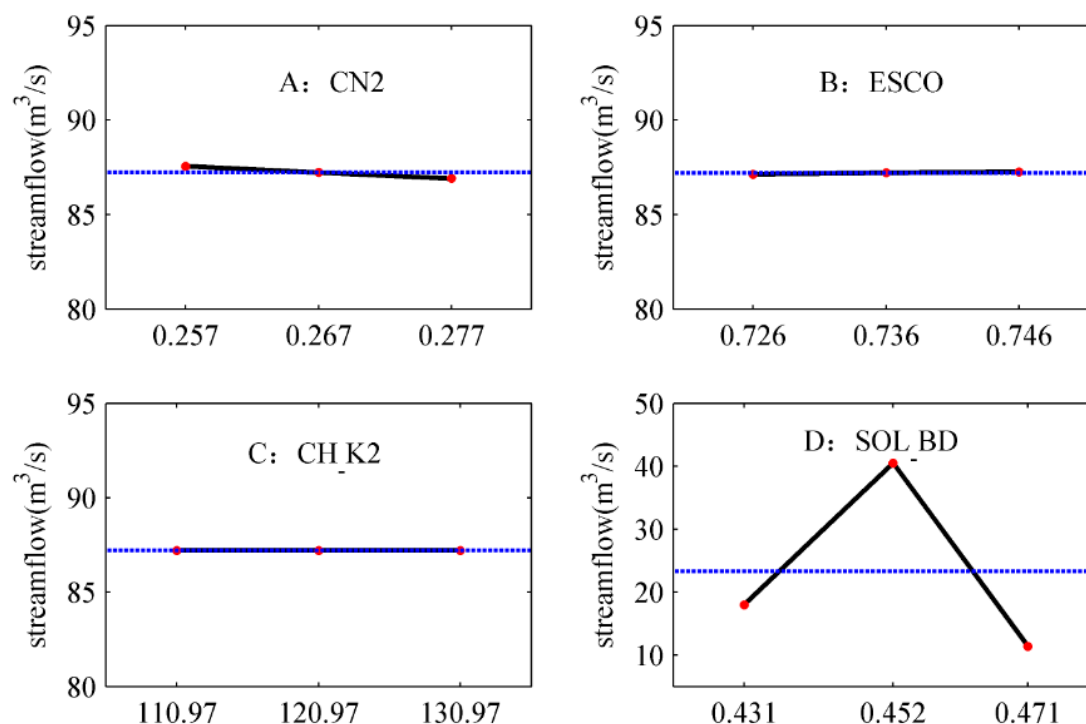


Figure S1. Individual effect of non-flood period parameters for the second days.

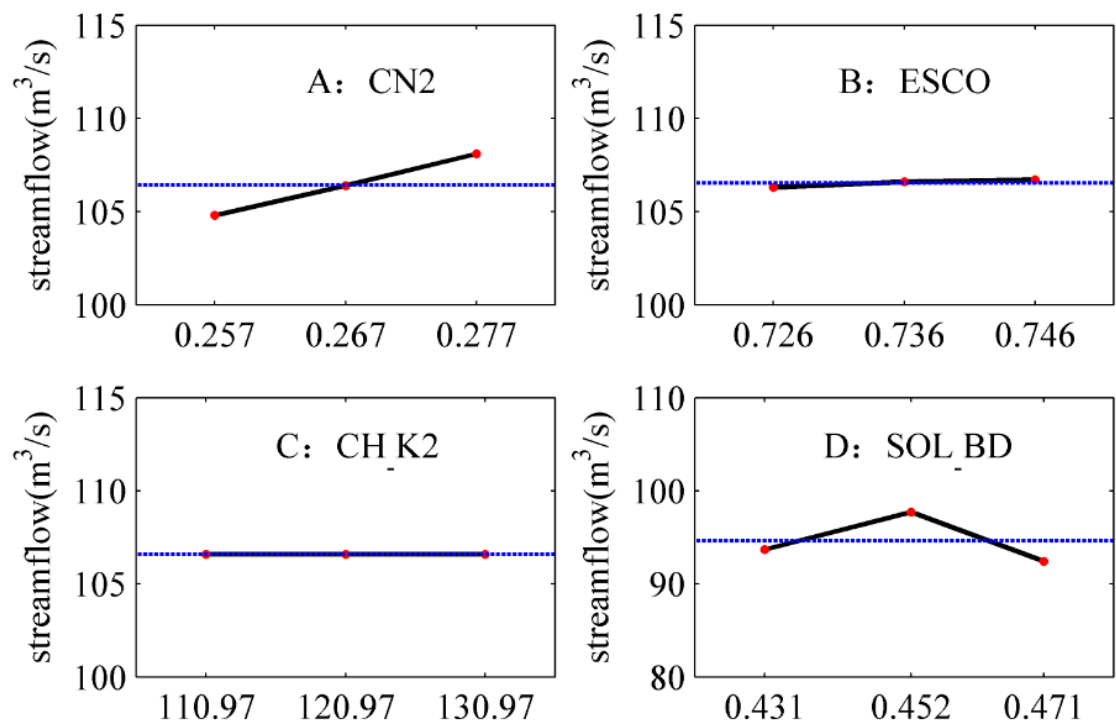


Figure S2. Individual effect of pre-flood period parameters for the second days.

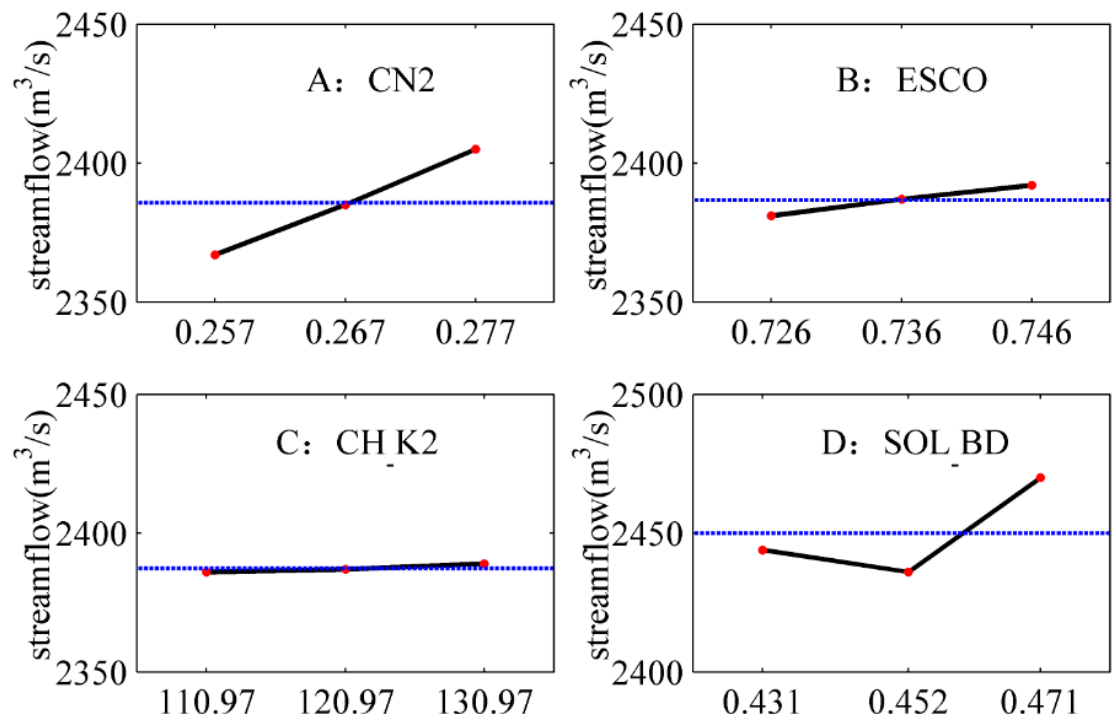


Figure S3. Individual effect of flood period parameters for the second days.

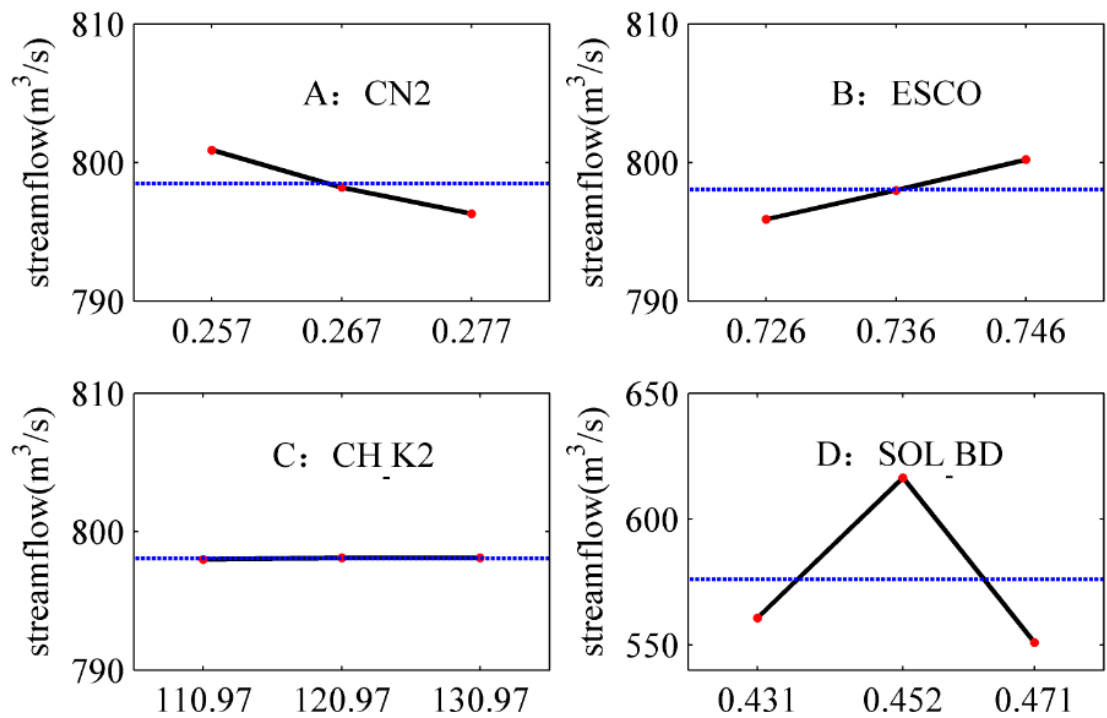


Figure S4. Individual effect of post-flood period parameters for the second days.

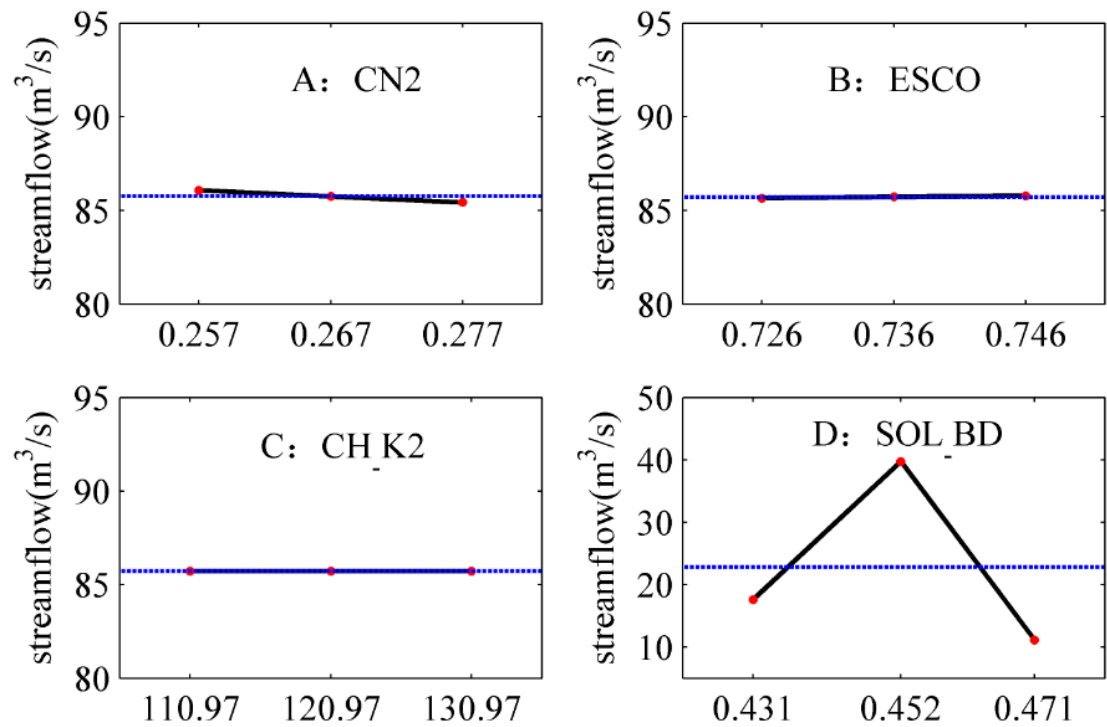


Figure S5. Individual effect of non-flood period parameters for the third days.

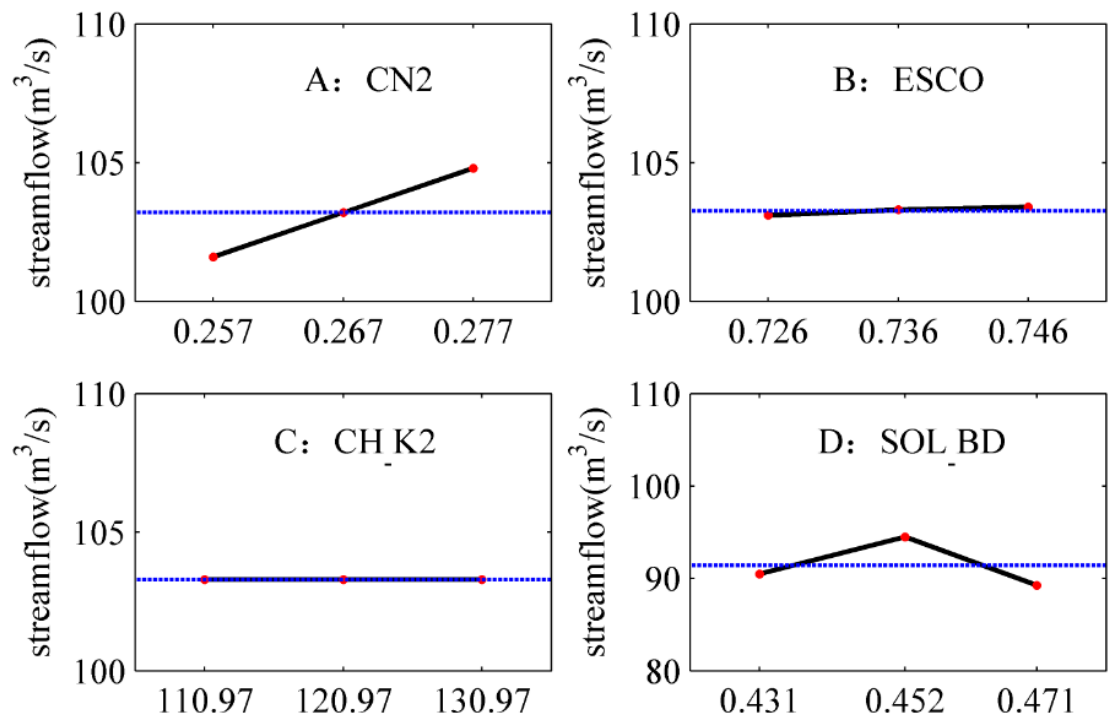


Figure S6. Individual effect of pre-flood period parameters for the third days.

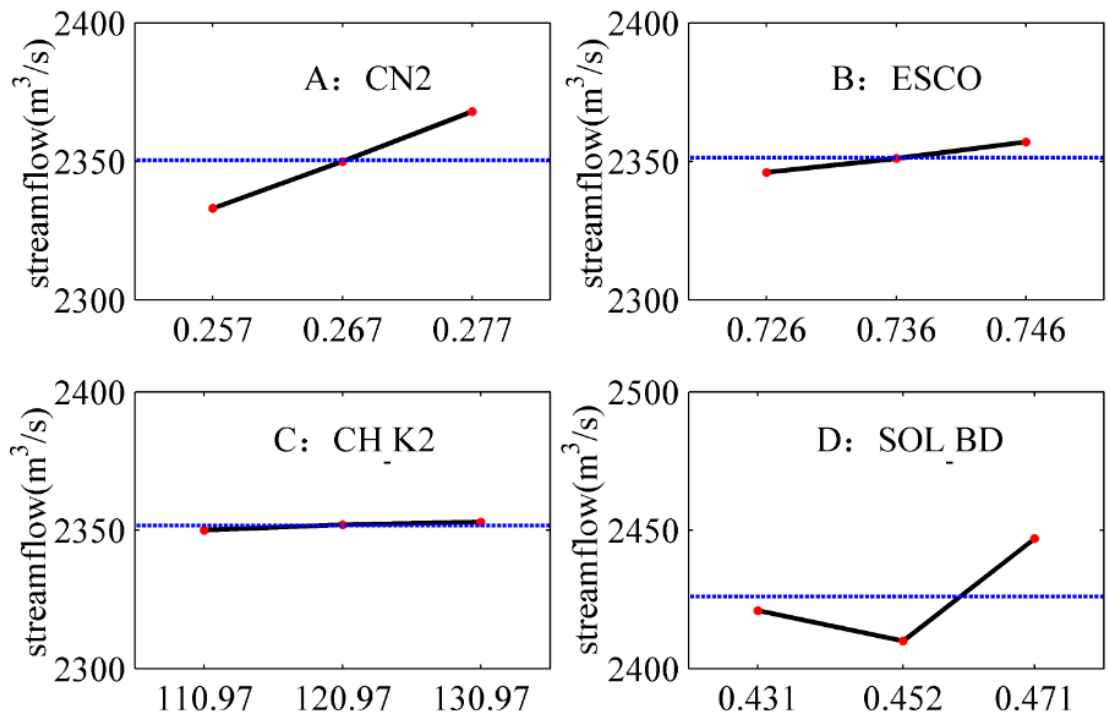


Figure S7. Individual effect of flood period parameters for the third days.

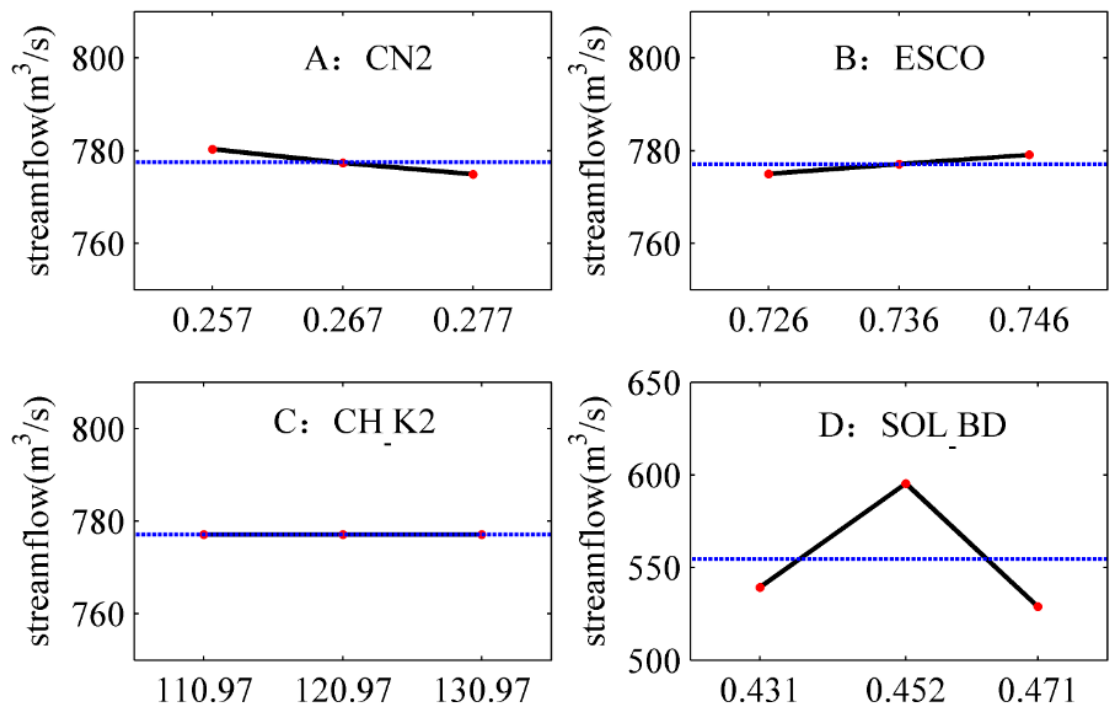


Figure S8. Individual effect of post-flood period parameters for the third days.

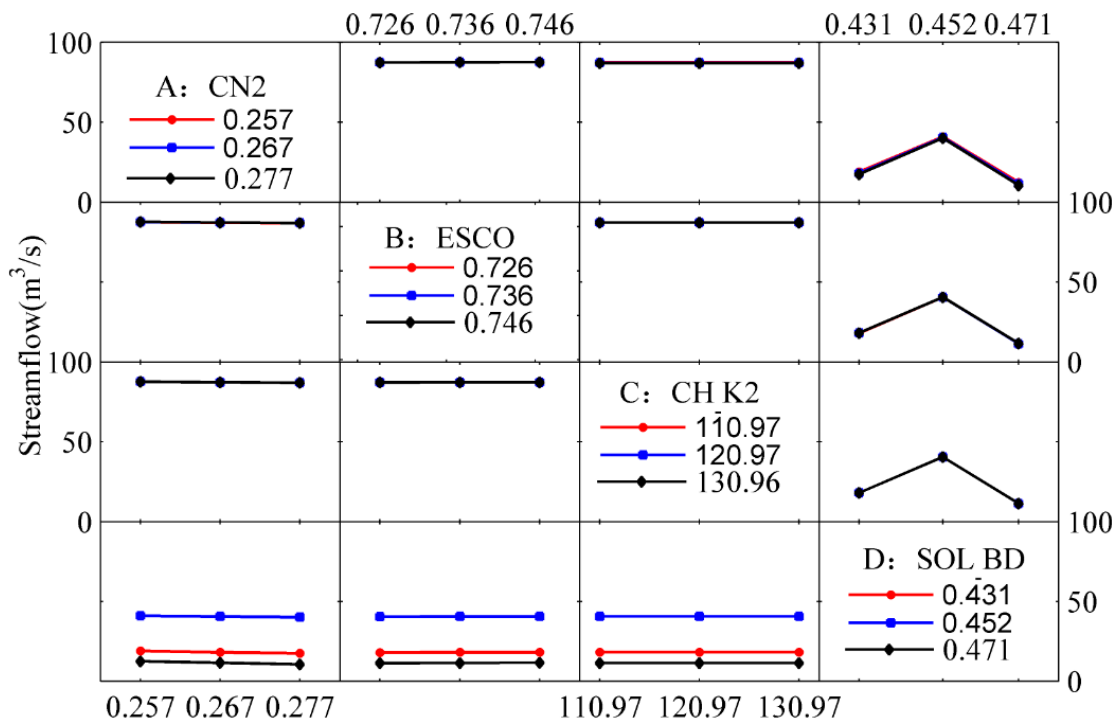


Figure S9. Interaction effect of non-flood period parameters for the second days.

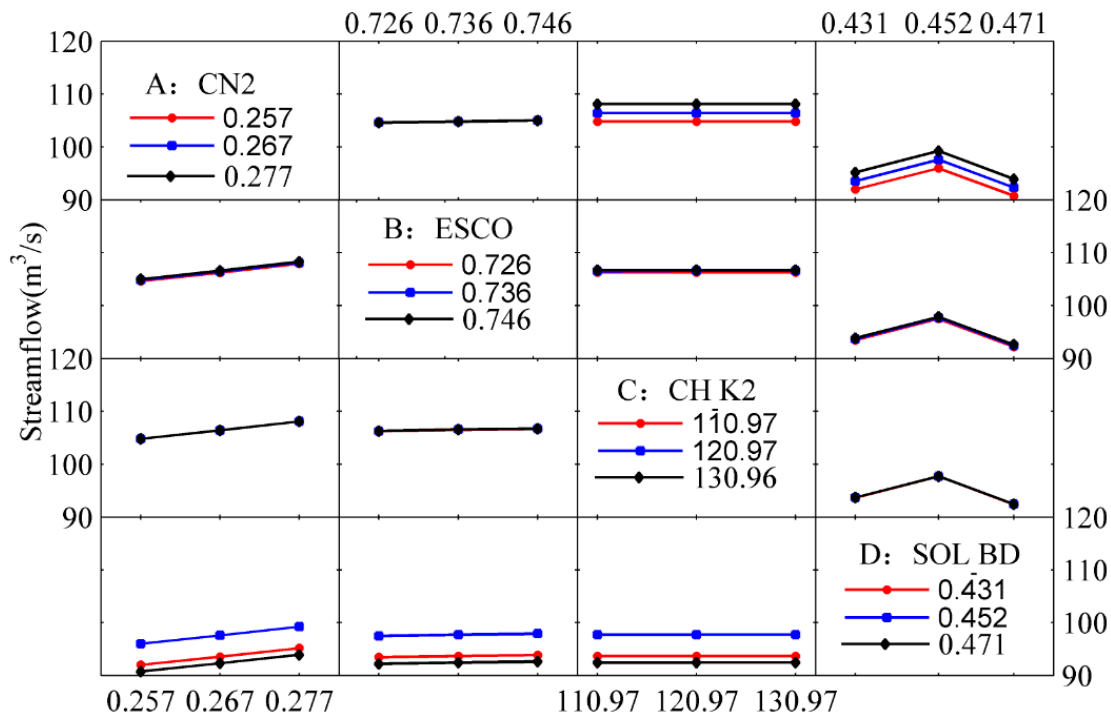


Figure S10. Interaction effect of pre-flood period parameters for the second days.

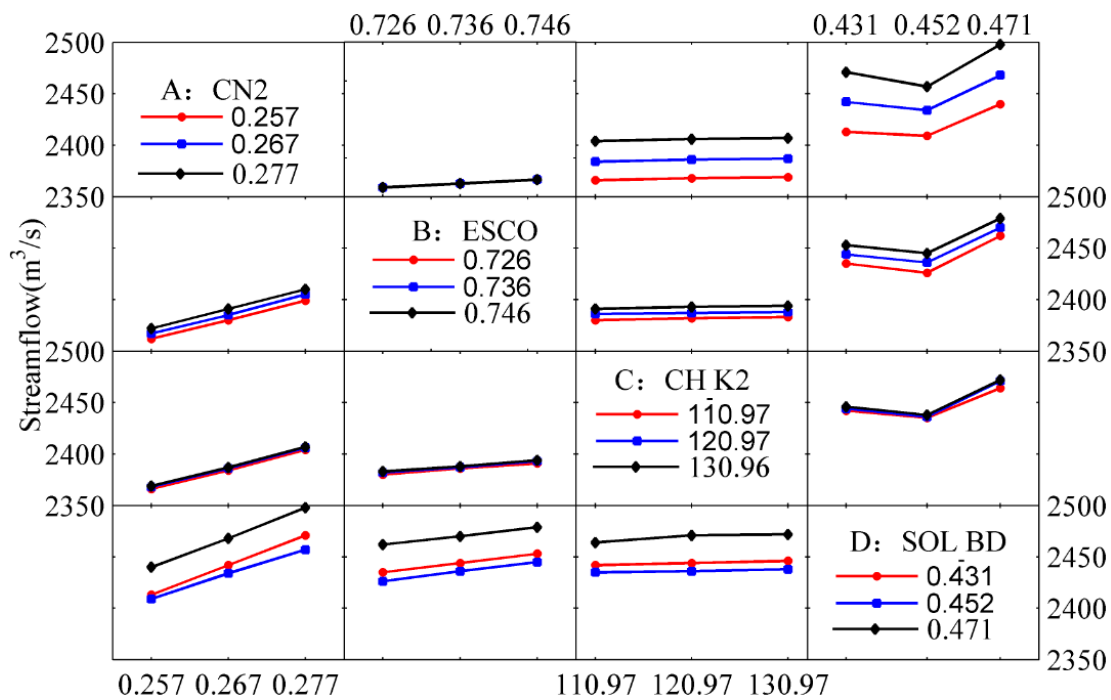


Figure S11. Interaction effect of flood period parameters for the second days.

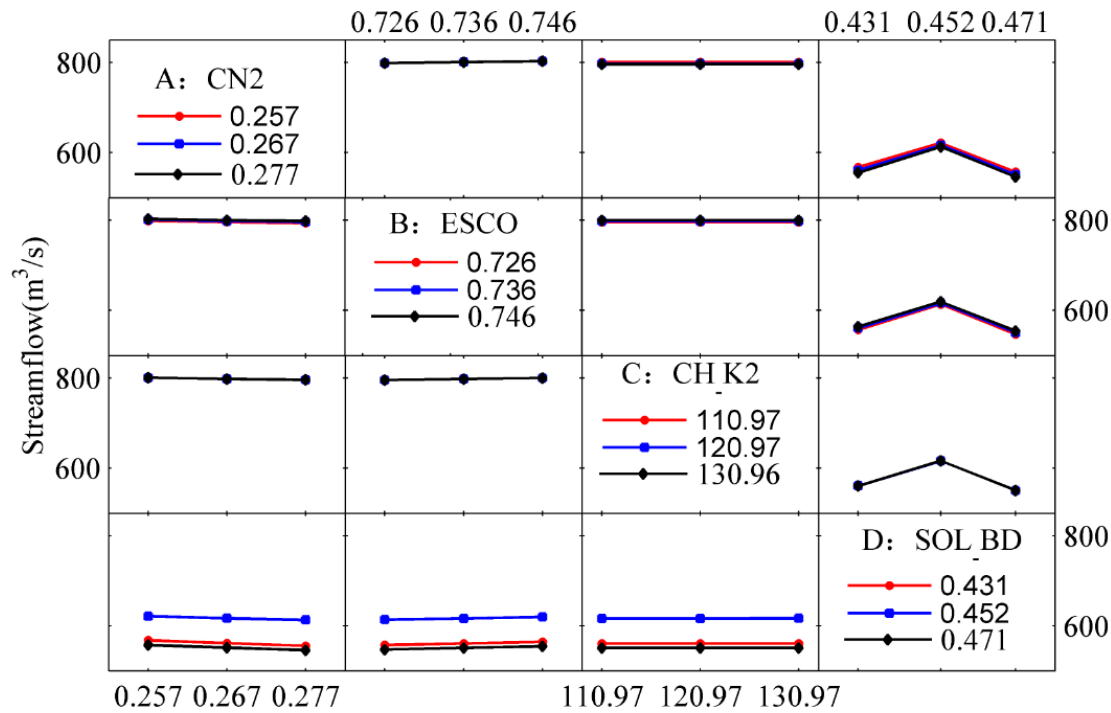


Figure S12. Interaction effect of post-flood period parameters for the second days.

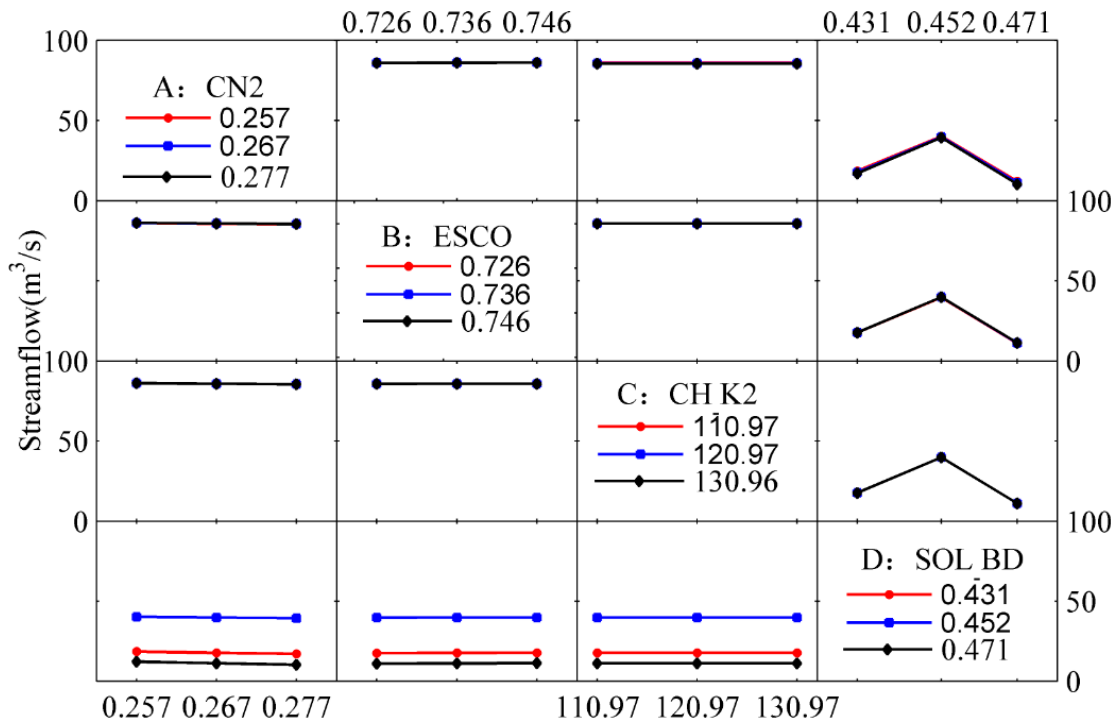


Figure S13. Interaction effect of non-flood period parameters for the third days.

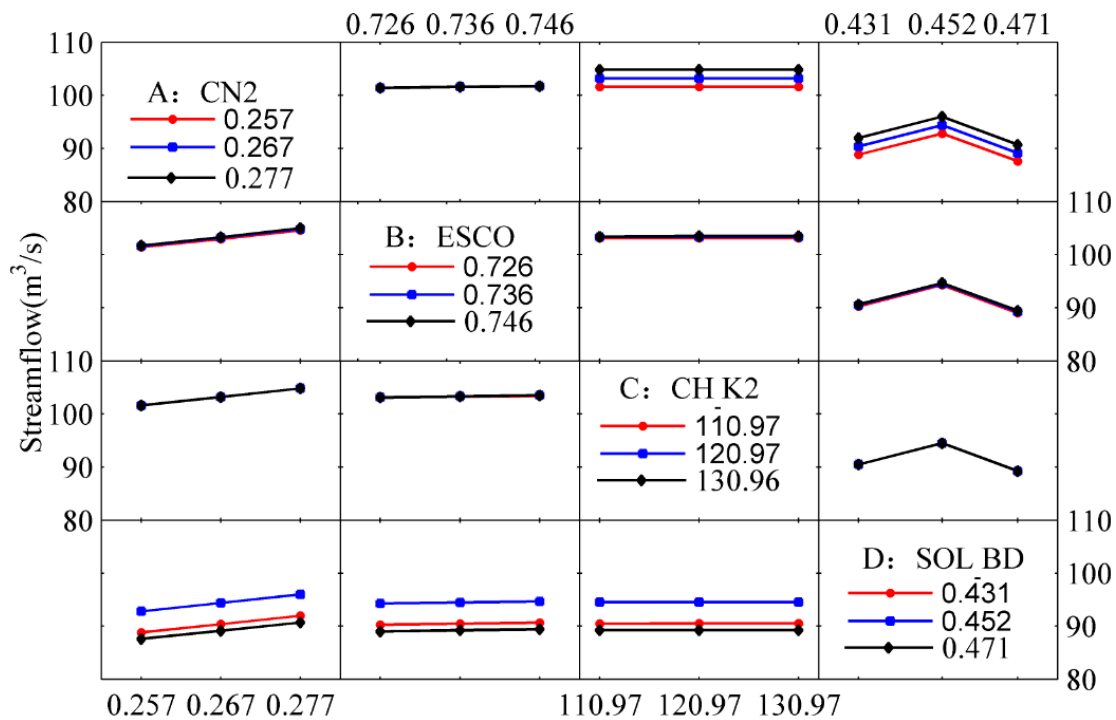


Figure S14. Interaction effect of pre-flood period parameters for the third days.

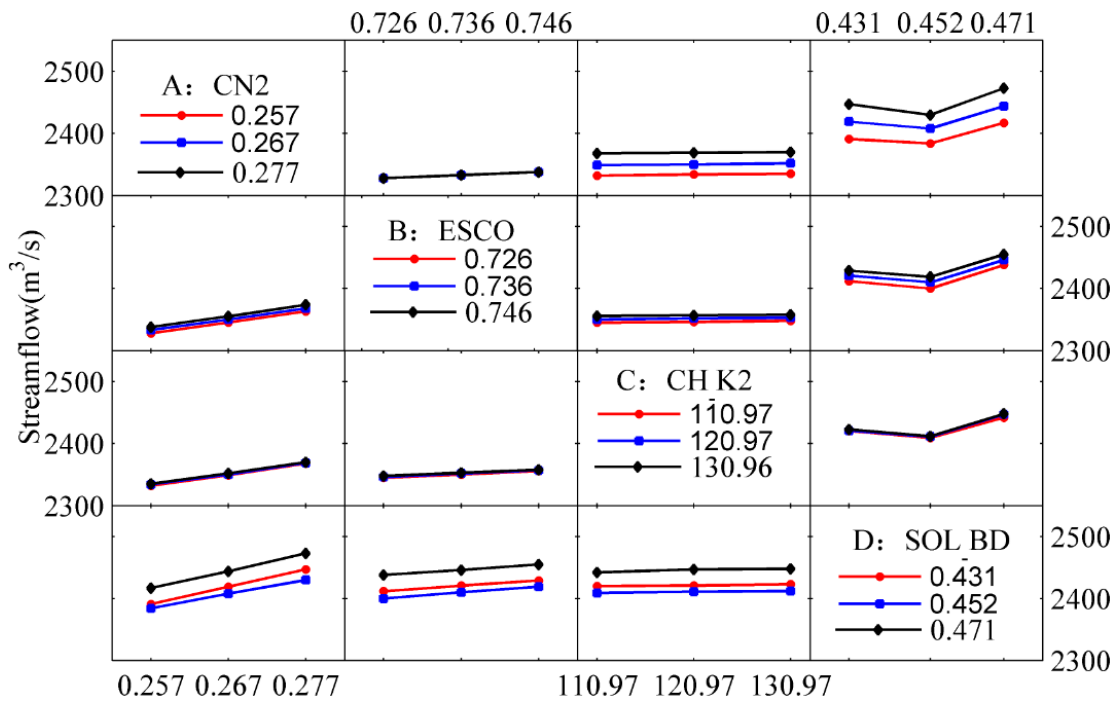


Figure S15. Interaction effect of flood period parameters for the third days.

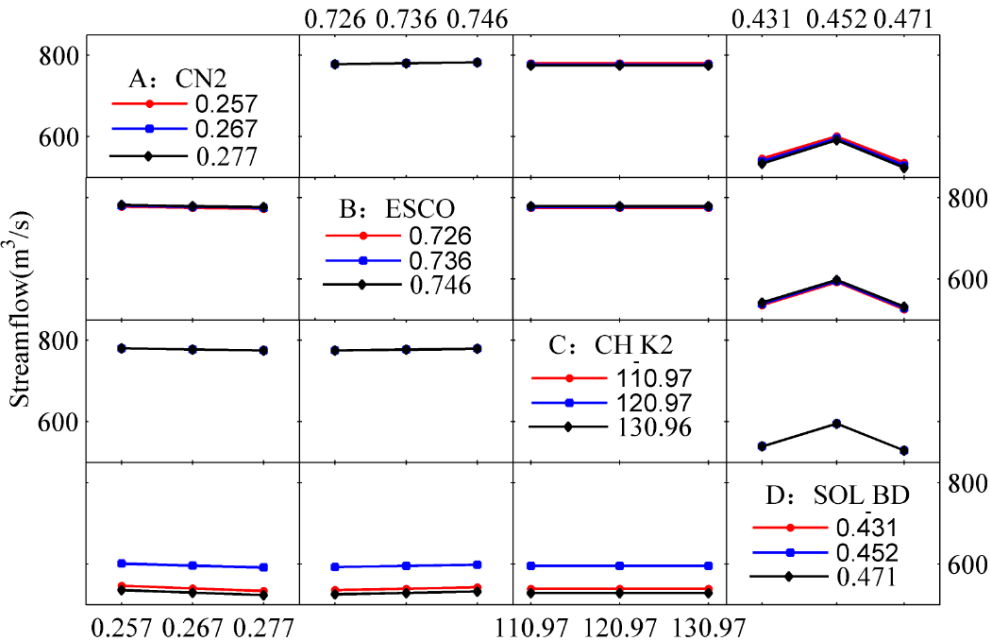


Figure S16. Interaction effect of post-flood period parameters for the third days.

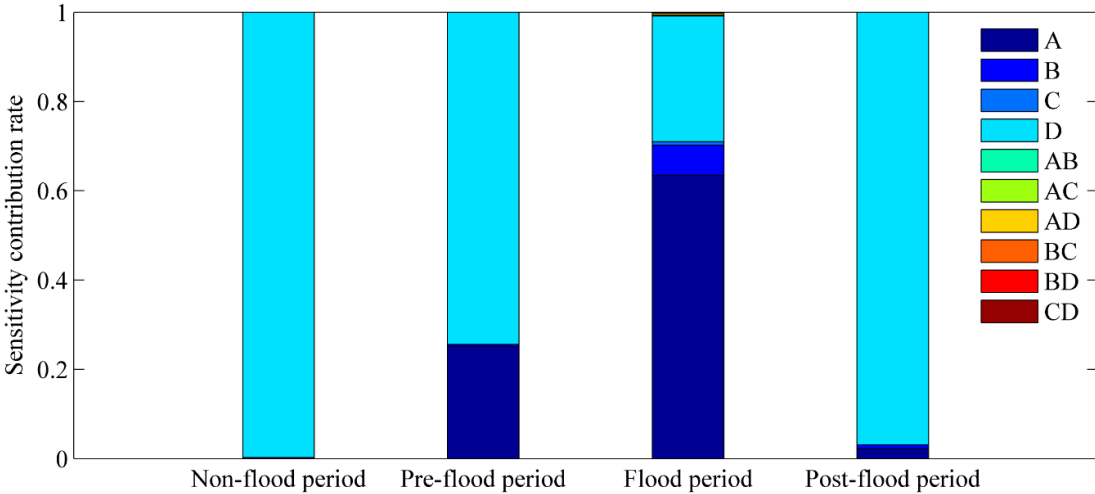


Figure S17. Dynamic change characteristics of second day parameters on the time scale.

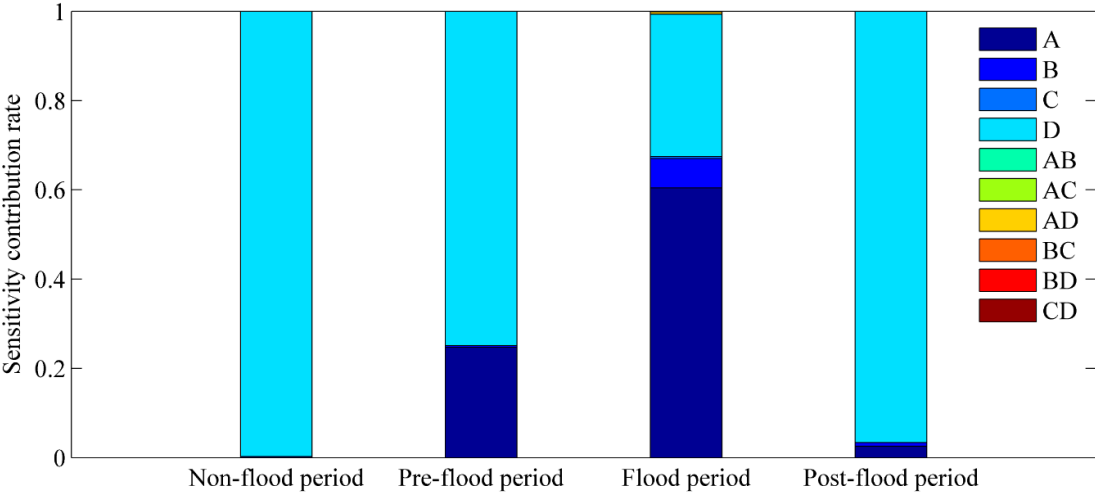


Figure S18. Dynamic change characteristics of third day parameters on the time scale.

Table S1. ANOVA results for the second day of the non-flood period runoff simulation.

Model term	A	B	C	D	AB	AC	AD	BC	BD	CD	Error	Total
Sum of	27.31	0.74	0.00	12,495.59	0.11	0.00	2.60	0.00	0.10	0.00	0.04	12,526.49
F value	17,297.75	465.80	0.00	7,915,096.24	34.66	0.00	823.73	0.00	32.66	0.00		
p-value	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00		
Significance	*			***		*						

Table S2. ANOVA results for the second day of the pre-flood period runoff simulation.

Model term	A	B	C	D	AB	AC	AD	BC	BD	CD	Error	Total
Sum of squares	139.24	2.25	0.00	412.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	553.52
F value	4,903,790.17	79,213.65	7.91	14,509,565.56	80.43	0.35	402.87	1.39	22.00	0.22		
p-value	0.00	0.00	0.00	0.00	0.00	0.84	0.00	0.25	0.00	0.93		
Significance	**	**		***								

Table S3. ANOVA results for the second day of the flood period runoff simulation.

Model term	A	B	C	D	AB	AC	AD	BC	BD	CD	Error	Total
Sum of squares	36,765.51	3,901.65	452.32	16,311.28	0.20	125.09	225.46	19.38	28.86	111.53	102.07	58,043.36
F value	8644.43	917.37	106.35	3835.16	0.02	14.71	26.51	2.28	3.39	13.11		
p-value	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.07	0.02	0.00		
Significance	***	**	*	***		*	*		*	*		

Table S4. ANOVA results for the second day of the post-flood period runoff simulation.

Model term	A	B	C	D	AB	AC	AD	BC	BD	CD	Error	Total
Sum of squares	1535.55	616.12	0.05	67,584.18	0.08	0.00	29.19	0.00	4.75	0.00	0.15	69,770.08
F value	253,835.80	101,848.82	8.49	11,172,078.53	6.84	0.41	2412.71	0.10	392.73	0.04		
p-value	0.00	0.00	0.00	0.00	0.00	0.80	0.00	0.98	0.00	1.00		
Significance	**	**		***			*					

Table S5. ANOVA results for the third day of the non-flood period runoff simulation.

Model term	A	B	C	D	AB	AC	AD	BC	BD	CD	Error	Total
Sum of squares	26.21	0.71	0.00	12,113.54	0.11	0.00	2.49	0.00	0.11	0.00	0.04	12,143.20
F value	17,312.28	467.71	0.00	8,001,604.80	34.97	0.00	823.22	0.00	35.12	0.00		
p-value	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00		
Significance	*	*		***			*					

Table S6. ANOVA results for the third day of the pre-flood period runoff simulation.

Model term	A	B	C	D	AB	AC	AD	BC	BD	CD	Error	Total
Sum of squares	133.77	2.12	0.00	405.41	0.00	0.00	0.02	0.00	0.00	0.00	0.00	541.34
F value	5,221,981.39	82,942.07	11.95	15,825,757.68	71.37	0.24	425.30	0.82	22.94	0.39		
p-value	0.00	0.00	0.00	0.00	0.00	0.91	0.00	0.52	0.00	0.82		
Significance	**	*		***								

Table S7. ANOVA results for the third day of the flood period runoff simulation.

Model term	A	B	C	D	AB	AC	AD	BC	BD	CD	Error	Total
Sum of squares	35,267.06	3850.77	273.28	18,576.32	0.49	40.42	271.83	5.60	24.12	49.38	50.37	58,409.65
F value	16,803.72	1834.78	130.21	8851.07	0.12	9.63	64.76	1.34	5.75	11.76		
p-value	0.00	0.00	0.00	0.00	0.98	0.00	0.00	0.27	0.00	0.00		
Significance	***	**	*	***		*	*		*	*		

Table S8. ANOVA results for the third day of the post-flood period runoff simulation.

Model term	A	B	C	D	AB	AC	AD	BC	BD	CD	Error	Total
Sum of squares	1829.13	571.04	0.02	69,132.39	0.10	0.00	32.14	0.00	4.64	0.01	0.11	71569.58
F value	400,430.65	125,010.86	3.30	15,134,389.03	11.16	0.22	3518.57	0.14	508.11	0.95		
p-value	0.00	0.00	0.05	0.00	0.00	0.93	0.00	0.97	0.00	0.45		
Significance	**	**		***			*		*			