



Supplement of

Estimating the probability of compound floods in estuarine regions

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Table S1 Summary of selected flood events for the Design Variabe Method

Event No.	Return period of peak of flow Q (yrs)	Return period of peak of storm tide T (yrs)	Peak flow Q (cu.m/s)	Peak storm tide T (m)
1	0	192	10.7	1.94
2	0	243	7.64	1.95
3	0	14	1.24	1.79
4	0	16	6.15	1.80
5	9	1	266	1.50
6	8	3	259	1.64
7	0	4	0.90	1.67
8	0	2	23.1	1.60
9	19	1	455	1.50
10	0	5	23.9	1.70
11	2	2	122	1.62
12	0	2	10.0	1.62
13	44	1	653	1.46
14	15	0	364	1.44
15	11	1	308	1.50
16*	44	16	653	1.80
17*	0	0	0.30	1.20
18*	250	0	1650	1.20
19*	0	250	0.30	1.95
20*	250	250	1650	1.95
21*	200	0	1450	1.20
22*	200	16	1450	1.80
23*	250	16	1650	1.80
24*	44	192	653	1.94
25*	200	192	1450	1.94
26*	250	192	1650	1.94
27*	44	250	653	1.95
28*	200	250	1450	1.95

Note: * indicates artificially created events using historical data.

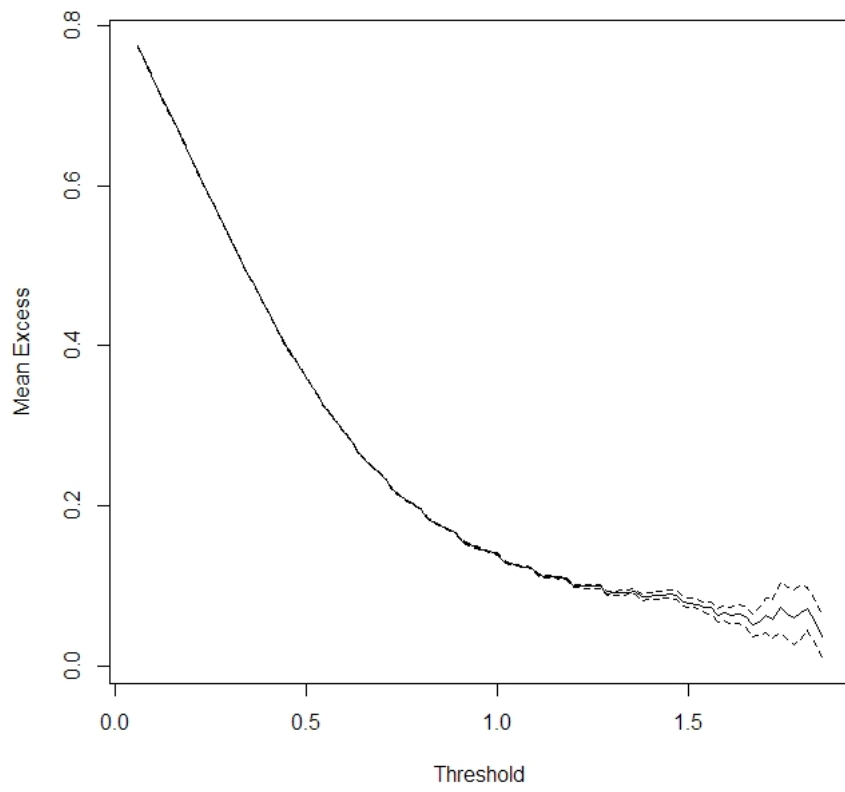


Figure S1 Mean residual plot for observed Barrack Street water levels

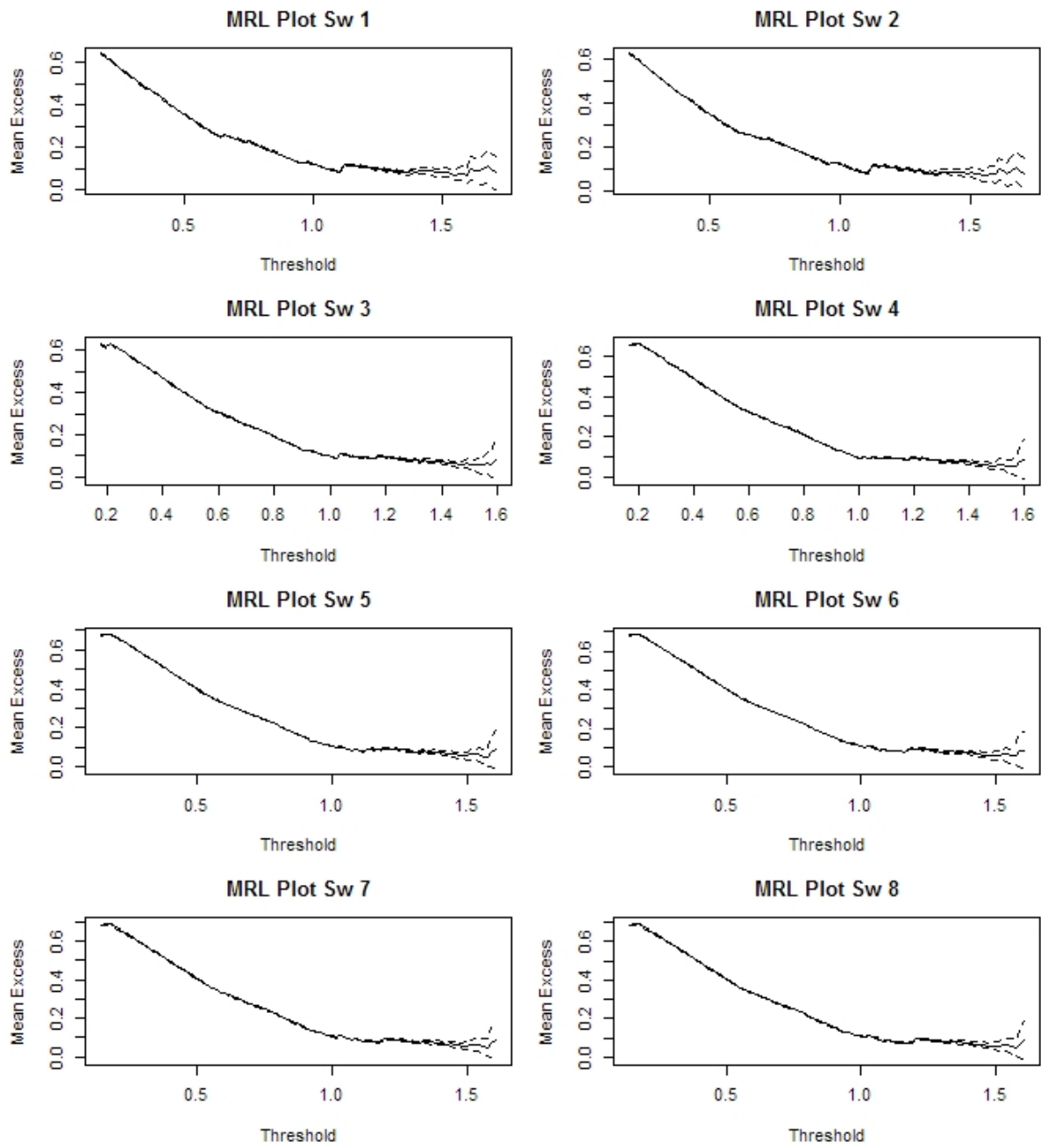


Figure S2 Mean residual plot for simulated water levels at 19 locations

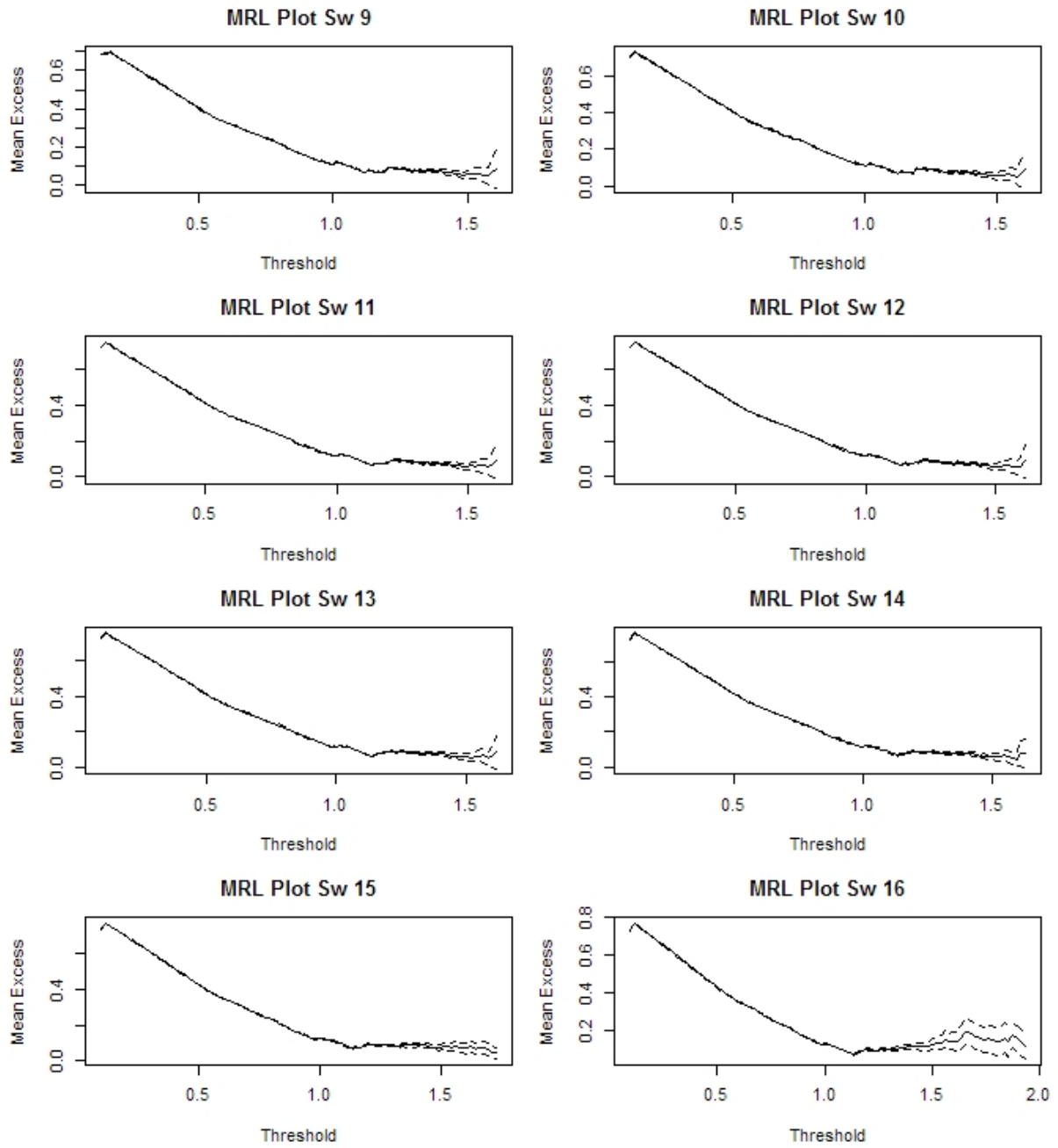


Figure S3 (Continued) Mean residual plot for simulated water levels at 19 locations

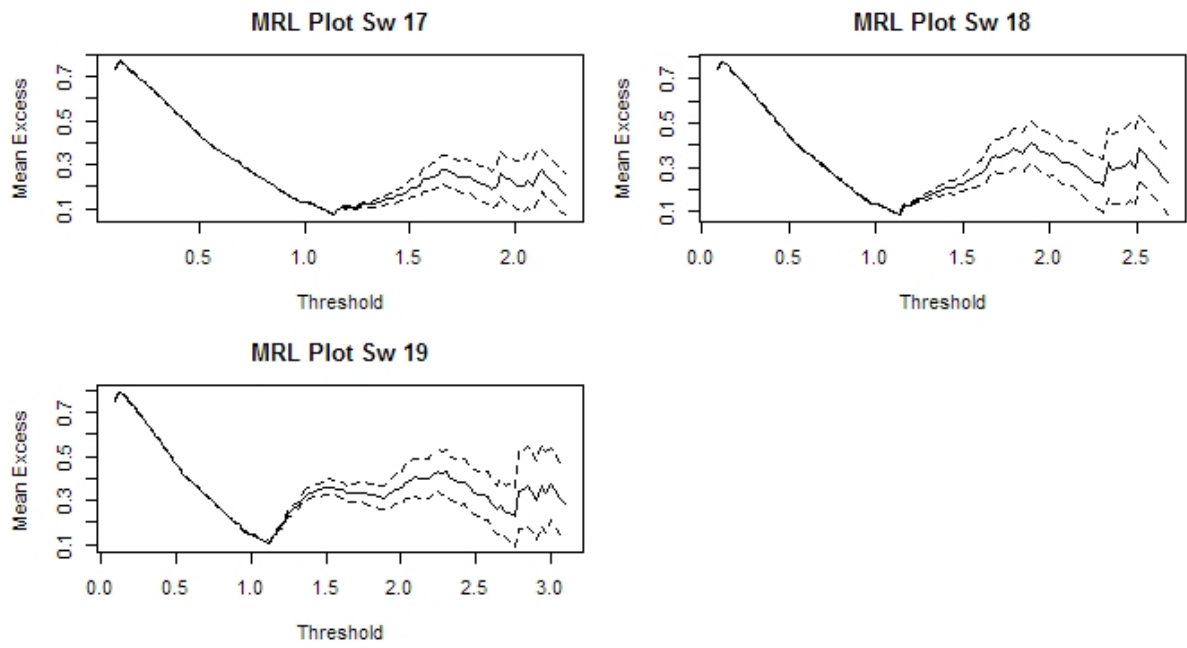


Figure S4 (Continued) Mean residual plot for simulated water levels at 19 locations

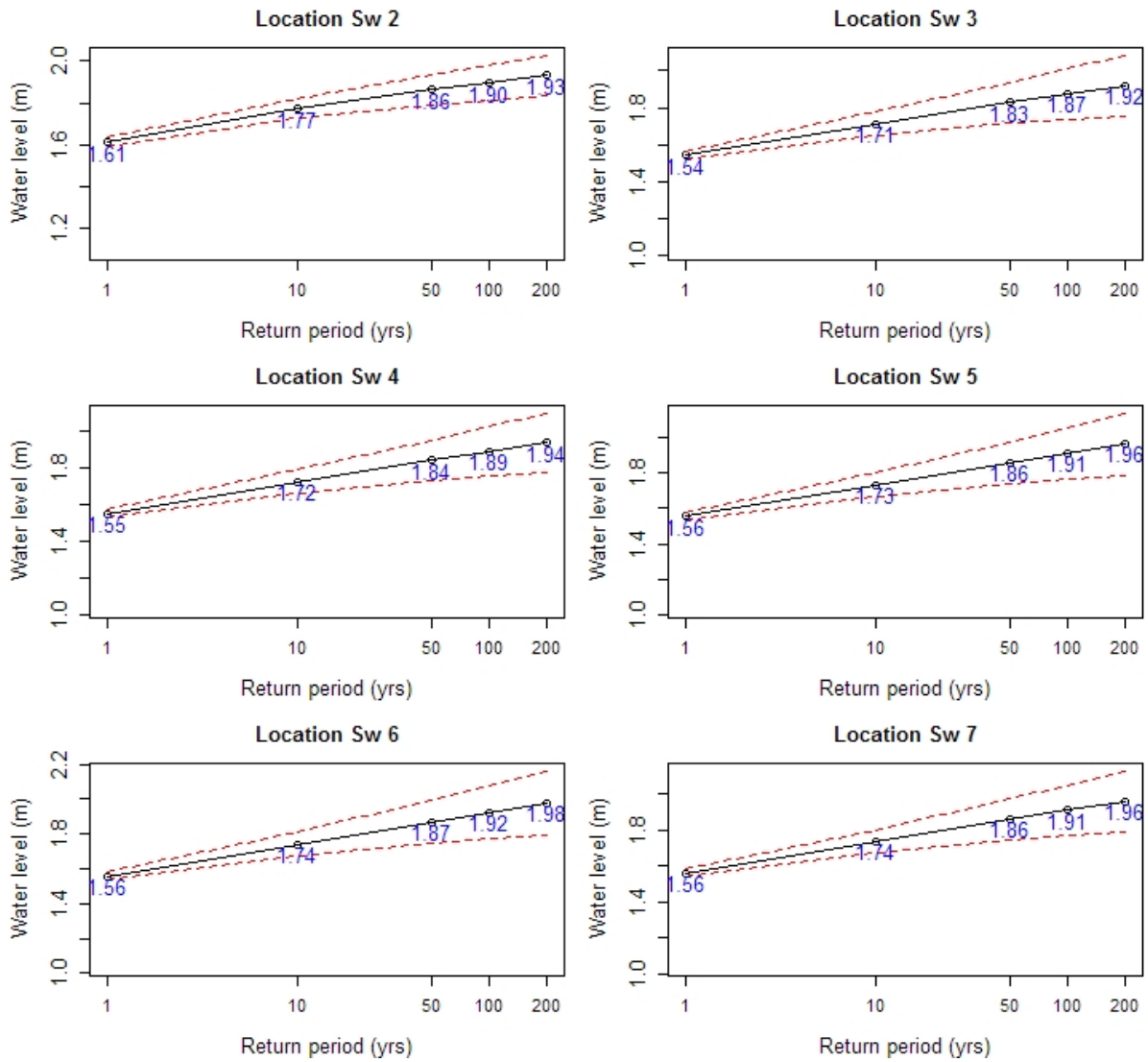


Figure S3 Results of Approach 2 applied to simulated flood level data at remaining 15 locations. The black lines represent estimated flood levels at these locations. The red dashed lines indicate the 95% confidence interval.

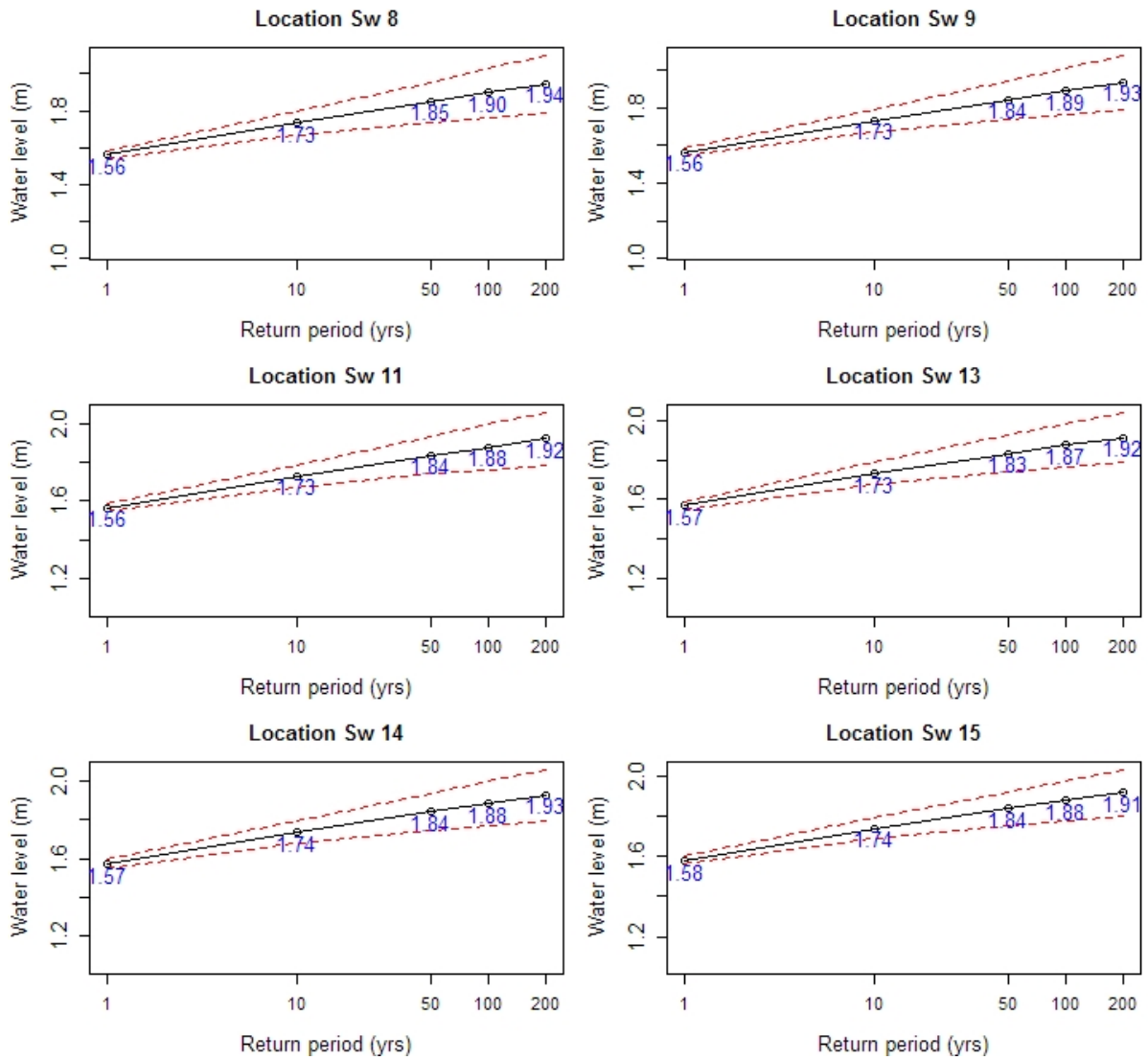


Figure S3 (Continued) Results of Approach 2 applied to simulated flood level data at remaining 15 locations. The black lines represent estimated flood levels at these locations. The red dashed lines indicate the 95% confidence interval.

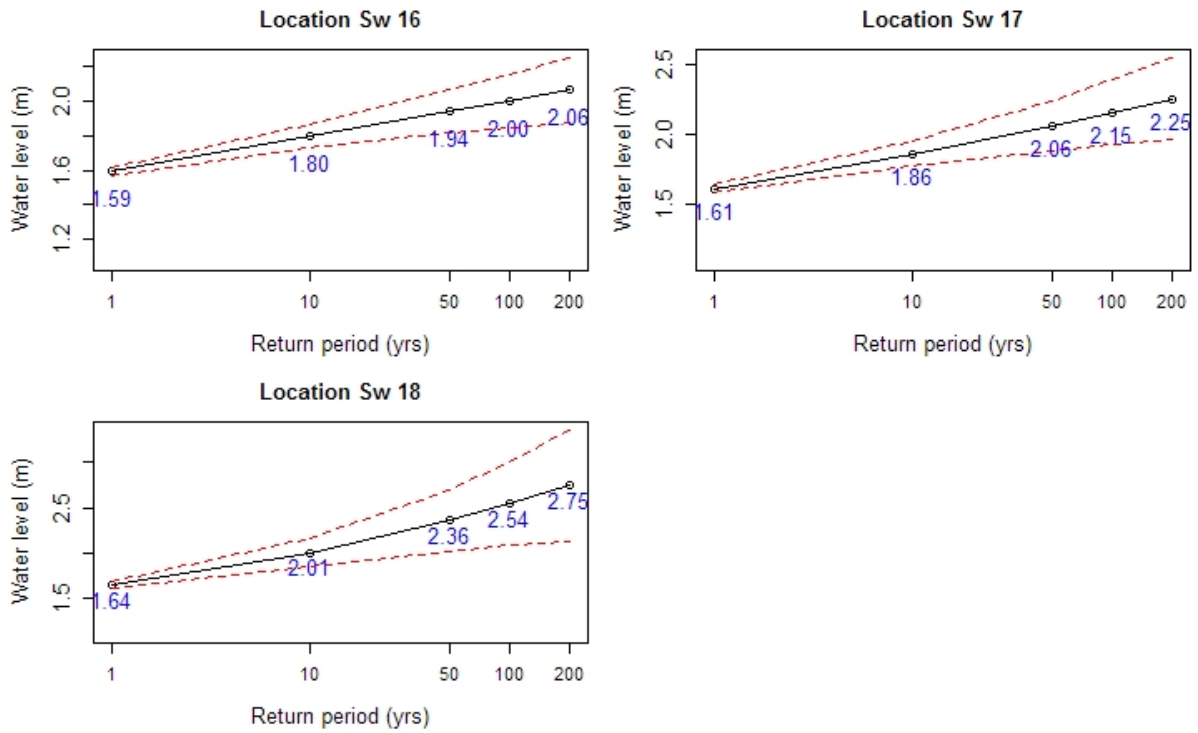


Figure S3 (Continued) Results of Approach 2 applied to simulated flood level data at remaining 15 locations. The black lines represent estimated flood levels at these locations. The red dashed lines indicate the 95% confidence interval.

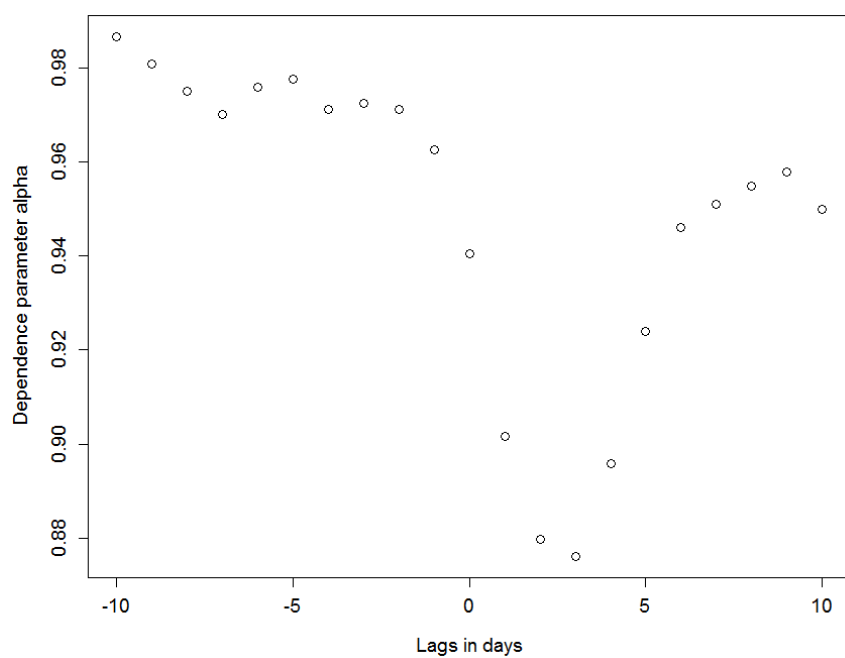


Figure S4 Dependence between storm tide T and river discharge Q at various time lags. A negative lag indicates that flow arrives before storm tide; a positive lag indicates that flow arrives after storm tide; and a lag of zero indicates dependence estimated at concurrent storm tide and flow. (note: An α value of 0 indicate complete dependence and an α value of 1 indicates complete independence.)