

Chapter 7

Applications and data examples

7.7 Multivariate extreme values

site	GEV for months 1–3			GEV for months 5–7			GEV for months 9–11		
	$\hat{\xi}$	$\hat{\sigma}$	$\hat{\mu}$	$\hat{\xi}$	$\hat{\sigma}$	$\hat{\mu}$	$\hat{\xi}$	$\hat{\sigma}$	$\hat{\mu}$
D	-.08 (.07)	.20 (.02)	7.13(.03)	-.36 (.11)	.15 (.01)	6.79(.03)	-.05 (.08)	.16 (.02)	7.13(.02)
L	.10 (.09)	.23 (.03)	3.02(.04)	-.11 (.07)	.10 (.01)	2.70(.01)	.17 (.10)	.18 (.02)	2.99(.02)
C	-.09 (.06)	.21 (.02)	5.45(.04)	-.26 (.05)	.14 (.01)	5.11(.02)	-.08 (.09)	.17 (.02)	5.44(.03)
I	-.18 (.06)	.19 (.02)	7.71(.03)	-.29 (.09)	.16 (.02)	7.31(.03)	-.37 (.10)	.25 (.02)	7.70(.04)
W	-.49 (.10)	.27 (.04)	5.98(.03)	-.55 (.33)	.20 (.03)	5.68(.04)	-.36 (.10)	.18 (.02)	6.06(.03)
N	-.12 (.07)	.17 (.01)	5.49(.03)	-.50 (.06)	.15 (.01)	5.21(.02)	-.24 (.20)	.15 (.02)	5.55(.02)
Hüsler-Reiss dependence parameters and Kendall taus									
		D	L	1.16 (.12)		.32 (.05)			
		D	C	1.55 (.22)		.46 (.06)			
		L	C	1.34 (.16)		.38 (.05)			
		D	I	1.62 (.19)		.46 (.05)			
		L	I	0.93 (.07)		.23 (.03)			
		C	I	1.38 (.18)		.39 (.06)			
		D	W	1.18 (.16)		.32 (.06)			
		L	W	0.88 (.10)		.20 (.05)			
		C	W	1.34 (.27)		.38 (.08)			
		I	W	1.41 (.18)		.40 (.05)			
		D	N	1.25 (.15)		.35 (.05)			
		L	N	0.83 (.09)		.18 (.04)			
		C	N	1.57 (.25)		.44 (.07)			
		I	N	1.66 (.27)		.47 (.06)			
		W	N	1.46 (.28)		.41 (.08)			
Hüsler-Reiss dependence parameters (small errors) and Kendall taus									
		D	L	1.21 (.11)		.34 (.04)			
		D	C	1.57 (.21)		.45 (.05)			
		L	C	1.38 (.14)		.39 (.04)			
		D	I	1.60 (.19)		.45 (.05)			
		L	I	1.04 (.06)		.27 (.02)			
		C	I	1.38 (.16)		.39 (.05)			
		D	W	1.21 (.15)		.34 (.05)			
		L	W	0.98 (.08)		.25 (.03)			
		C	W	1.35 (.25)		.38 (.08)			
		I	W	1.41 (.17)		.40 (.05)			
		D	N	1.27 (.13)		.36 (.04)			
		L	N	0.97 (.06)		.24 (.03)			
		C	N	1.55 (.23)		.44 (.06)			
		I	N	1.64 (.26)		.46 (.06)			
		W	N	1.44 (.27)		.41 (.07)			

Table 7.18 UK sea level data with two-stage estimation. Univariate GEV parameters with (ξ, σ, μ) estimated separate for three 3-month periods. The bivariate parameters are for the Hüsler-Reiss model, and the corresponding Kendall tau values are based on the inverse transform of the copula