

⁷¹⁸ **Supplementary Material**

⁷¹⁹ Here we provide some additional results of our study in the form of figure and tables.

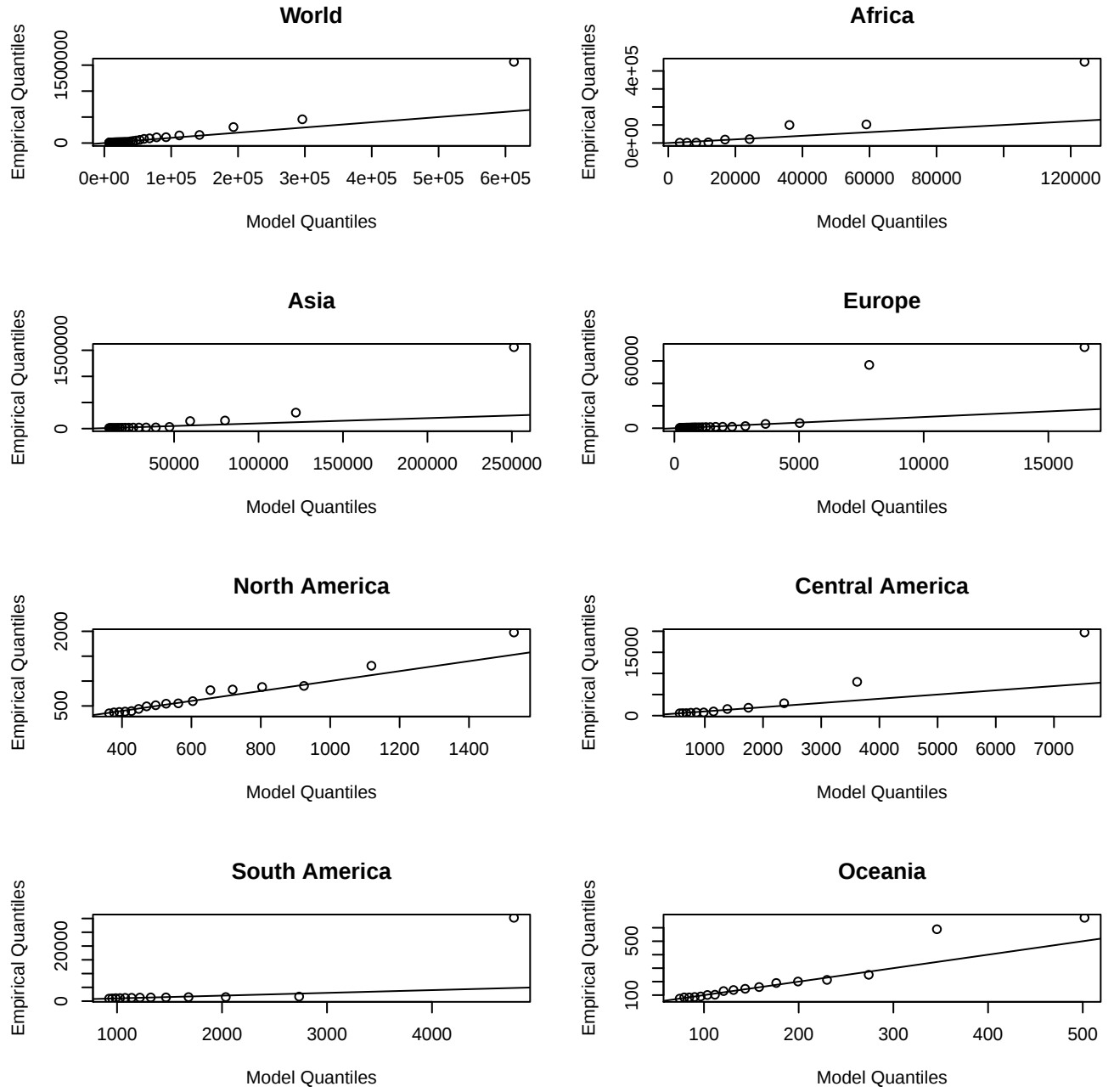


Figure S1: Quantile-quantile plots of empirical against GPD model quantiles for aggregation of all hazard types for the different continents. These plots assess the goodness of fit of the GPD models.

Area	Type	50th percentile	90th percentile	MMK
World	Drought	-11.868	-2.862	-17.056
	Heat Wave	25.944	108.465	2.659
	Flood	71.146	-13.981	49.785
	Storm	-39.674	-427.340	-31.506
	All	-62.729	-5156.429	-54.875
Africa	Drought	2.416	-2162.162	0.837
	Heat Wave	0.0	0.976	0.0
	Flood	13.556	27.743	13.72
	Storm	2.764	9.153	2.807
	All	16.295	-41.591	15.599
Asia	Drought	2.978	-149.491	0.658
	Heat Wave	8.224	50.561	8.648
	Flood	45.741	-70.191	33.958
	Storm	-51.257	-377.500	-30.426
	All	-110.836	610.061	-95.911
Europe	Drought	0	0	0
	Heat Wave	4.793	70.981	3.760
	Flood	-0.139	-6.628	0.623
	Storm	-0.450	-5.246	0.217
	All	10.647	69.979	9.008
North America	Drought	0	0	0
	Heat Wave	0.429	-2.241	0.0
	Flood	0.582	-1.286	0.216
	Storm	0.063	-6.692	0.192
	All	0.564	-1.316	0.300
Central America	Drought	0	0	0
	Heat Wave	0.0	0.813	0.0
	Flood	0.327	-0.580	0.439
	Storm	1.019	-13.500	0.444
	All	2.359	-8.755	0.780
South America	Drought	0.0	0.308	0.0
	Heat Wave	0.0	7.884	0.0
	Flood	2.351	5.464	2.436
	Storm	0.204	0.116	0.0
	All	3.300	15.727	3.539
Oceania	Drought	0	0	0
	Heat Wave	0.0	0.152	0.0
	Flood	0.152	0.527	0.184
	Storm	-0.021	-1.020	-0.057
	All	0.500	2.725	0.174

Table S1: Quantile regression trend slopes and Mann-Kendall Sen slopes of the number of fatalities; significant trends at the 5% level are in bold. Slopes are in fatalities per year.

Area	Model	Location	ϕ_0	ϕ_1	ϕ_2	ϕ_3	ξ_0	ξ_1	ξ_2	ξ_3
World	stationary	5751.95	6540.80				1.17			
Africa	Shape & Scale Parameters	-67.70	5.66	0.20 (ACE- NIO)	3.58 (SST2)	-0.71 (NAO)	0.70	0.03 (ACE- NIO)	-3.81 (SST2)	-1.12 (NAO)
Asia	Shape & Scale Parameters	4195	9.44	-0.05 (ACEWP)	1.52 (PNA)		-0.05	0.02 (ACEWP)	-3.30 (PNA)	
Europe	Shape & Scale Parameters	-18.17	6.04	-0.96 (SST1)	-0.64 (SST3)	0.13 (NAO)	0.73	0.00 (SST1)	1.99 (SST3)	-0.92 (NAO)
North Amer- ica	Shape & Scale Parameters	134.89	4.37	3.04 (SST1)	-2.62 (PNA)		0.49	-2.16 (SST1)	2.19 (PNA)	
Central Amer- ica	Shape & Scale Parameters	70.60	5.11	-0.95 (SST1)	-8.86 (SST3)		0.24	3.16 (SST1)	5.73 (SST3)	
South Amer- ica	Shape & Scale Parameters	675.29	3.38	7.12 (SST1)			1.07	-5.20 (SST1)		
Oceania	Shape & Scale Parameters	1.86	4.15	-1.75 (SST4)			0.09	2.23 (SST4)		

Table S2: GPD model parameters with corresponding covariates.

Area	Percentiles	10-year effective return level	25-year effective return level	50-year effective return level
Africa	ACENIO(10th), SST2(10th), NAO(10th)	14153	413250	5032340
	ACENIO(50th), SST2(50th), NAO(50th)	1214	3524	7418
	ACENIO(90th), SST2(90th), NAO(90th)	787	813	820
	ACENIO(10th), SST2(10th), NAO(90th)	1806	20014	116323
	ACENIO(10th), SST2(90th), NAO(10th)	968	1172	1277
	ACENIO(90th), SST2(10th), NAO(90th)	3717	43779	269337
	ACENIO(90th), SST2(90th), NAO(10th)	1872	2314	2556
	ACENIO(10th), SST2(90th), NAO(90th)	402	415	417
	ACENIO(90th), SST2(10th), NAO(10th)	28908	911031	11760520
Asia	ACEWP(10th), PNA(10th)	184472	1064034	3918448
	ACEWP(50th), PNA(50th)	29103	62865	110747
	ACEWP(90th), PNA(90th)	9733	10441	10735
	ACEWP(10th), PNA(90th)	20180	20641	20740
	ACEWP(90th), PNA(10th)	150343	1769718	11195984
Europe	SST1(10th), SST3(10th), NAO(10th)	2476	4416	6414
	SST1(50th), SST3(50th), NAO(50th)	2502	5766	10270
	SST1(90th), SST3(90th), NAO(90th)	2350	6740	14272
	SST1(10th), SST3(10th), NAO(90th)	1059	1266	1370
	SST1(10th), SST3(90th), NAO(10th)	15893	97936	374594
	SST1(90th), SST3(10th), NAO(90th)	575	689	746
	SST1(90th), SST3(90th), NAO(10th)	8743	53909	206187
	SST1(10th), SST3(90th), NAO(90th)	4283	12256	25942
	SST1(90th), SST3(10th), NAO(10th)	1355	2423	3523
North America	SST1(10th), PNA(10th)	417	516	582
	SST1(50th), PNA(50th)	453	649	826
	SST1(90th), PNA(90th)	527	1023	1697
	SST1(10th), PNA(90th)	664	3993	16884
	SST1(90th), PNA(10th)	756	774	778
Central America	SST1(10th), SST3(10th)	8112	119298	880363
	SST1(50th), SST3(50th)	904	1726	2695
	SST1(90th), SST3(90th)	569	581	583
	SST1(10th), SST3(90th)	649	956	1212
	SST1(90th), SST3(10th)	1524	4524	10029
South America	SST1(10th)	1165	6730	39699
	SST1(50th)	950	1478	2404
	SST1(90th)	1026	1081	1106
Oceania	SST4(10th)	135	154	163
	SST4(50th)	155	223	274
	SST4(90th)	226	522	932

Table S3: Effective return levels for 10th, 50th and 90th percentile values of the respective covariate combinations. Numbers in parenthesis denote the used percentile for the respective covariate.