

Index

- adaptive kernel, 75
- akaike information criteria,
 - 15, 21, 101, 128, 179
- algebraic method, 5, 113
- Ali-Mikhail-Haq, 5-7, 7, 13, 100
- a-priori, 72
- archimedean copula families,
 - 5, 13
- bandwidth parameter, 73, 78
- beta function, 54, 155
- biased cross-validation, 75
- bivariate copula, 6, 14, 18-19, 55, 99, 113-15, 119-23, 125, 127-32, 135, 150, 171, 174, 183-84, 186
- bivariate distribution, 11, 23, 137, 186, 192-93
- bivariate exponential
 - function, 113-15, 131
- bivariate functions, 113, 115, 131
- bivariate mixed lognormal,
 - 137-38, 142-43
- bivariate quadratic function,
 - 113-15, 131-32
- bivariate rainfall, 13, 22, 106, 137, 173
- bivariate skew- t , 171
- bivariate weibull, 2
- biweight, 73-74
- canonical maximum
 - likelihood method, 75
- cholesky decomposition, 159-60
- clayton, 5-7, 13, 16-17, 19-20, 100, 106-07, 174, 178-79, 183-87, 232
- conditional expectation, 14, 142
- continuous random variable,
 - 2-3, 18, 153, 192
- convex sums method, 5
- copula construction, 33-34
- copula families, 4-6, 13, 24, 71, 87, 109, 174, 178, 185, 193-94
- correlation coefficient, 6, 11, 35, 65, 89, 109, 129-30, 132, 135, 141-42, 144-45, 147-50, 162, 164-65, 167, 171

covariance, 11, 142, 157, 165
 cramer-von mises, 180, 184
 cumulative distribution
 function, 3, 6-10, 78-79,
 88, 92-93, 155, 170, 175,
 177, 182, 186, 228
 daily rainfall, 19, 104-06, 137
 dependency structure, 4, 12-
 13, 15-18, 20, 23-24, 72,
 87, 90, 98, 102, 129, 173,
 184
 discretized, 220, 226-29
 drought analysis, 12, 18, 20,
 22-24, 72, 173
 elliptical copula families, 5
 empirical study, 91, 99-100,
 104, 106, 108
 entropy, 12, 22-24
 epanechnikov, 73
 extreme value copula, 5, 9
 FGM copula, 34, 36, 50-51,
 53-54, 62
 flood frequency analysis, 13,
 15, 17, 179
 frank copula, 13, 16-17, 22,
 204-05, 210-11, 232

frechet-hoeffding bounds, 4
 galambos, 5, 9-10, 19
 gamma, 2, 21, 77, 99, 136,
 155, 175, 181, 183, 191,
 201-03, 207, 209
 gaussian, 5, 8, 17-18, 20-22,
 73-75, 79, 89, 94, 100,
 106-07, 154, 174, 178-79,
 183-86
 gaussian kernel, 73-75, 78-79,
 89, 94
 generalized extreme value,
 175, 181
 generalized sarmanov
 density, 34, 42
 genetic algorithm, 21
 goodness of fit test, 22, 101,
 128, 162, 169-71, 176-77
 gumbel-hougaard, 5-6, 13-14,
 17, 20, 100, 184
 hill's assumption, 223
 Huang and Kotz copula, 36,
 53
 Intensity-Duration-
 Frequency (IDF), 195,
 200-01, 205-07, 211-13

Inter-Event Time Definition
(IETD), 195-96

inversion method, 5, 113

inversion of kendall's tau, 14,
88, 95, 108

inversion of spearman's rho,
88, 96, 108

joint probability density
function, 114, 116

joint probability distributions,
173, 192

kendall's tau, 6, 11, 13-14,
35-36, 58, 60-64, 66, 88-
91, 95, 98, 102, 106, 108-
09, 114, 123, 128-30, 132,
177-78, 180

kernel density, 72, 74, 78-79,
88-89, 93, 108

kernel smoothing, 73-74, 77,
79, 83, 89

lallena-flores copula, 37-38,
55, 65

likelihood function, 95, 101,
129, 139,

log-normal, 17, 19, 136

marginal distribution, 1-3, 8,
10, 12, 15, 19-23, 71-73,
87-89, 92-93, 99-101,
106, 108, 113, 154, 161-
64, 169, 173-74, 181-83,
185-86, 191-92, 200-01,
203, 207-8, 212, 214,
226-27

maximum likelihood, 21, 75,
88, 93, 108, 129, 171,
179, 181, 227, 232

maximum pseudo likelihood,
13, 88, 92, 108

multivariate distribution, 1-2,
33, 113, 153-54, 173,
191-92

multivariate skew-t
distribution, 154, 157

non-parametric, 19, 71-72,
76, 78-79, 82-84

Nonparametric Predictive
Inference (NPI), 220-21,
223-24, 227-28, 232-34

non-zero values, 135-36

optimal bandwidth, 73, 78,
94

- parameter estimation, 13-14,
75, 88, 102, 108, 139, 143
- parametric copula, 72, 76,
82-83, 180, 220-21, 224,
227, 232-33
- pearson product-moment
correlation coefficient, 11
- plackett, 5, 10, 18, 21
- predictive inference, 220-21,
224, 229, 233-34

- rain rate intermittency, 147
- rainfall field, 137, 150
- rank correlation, 6, 11, 90,
96-97, 109
- return period, 13-14, 18-23,
90, 102, 195, 200-01,
206-07, 211-13
- rüschen-dorf, 5, 34, 36, 40,
48, 58, 66, 113-14, 129,
131
- semiparametric methods, 90,
99-100, 104, 107, 109
- sheather-jone plug in, 75

- skew- t copula, 154, 157-58,
160-162, 165, 169-71,
173-74
- smoothing parameter, 72
- Standard Precipitation Index
(SPI), 18-20, 72-74, 76,
78-79, 83
- student- t , 5, 14

- tail dependence, 9, 11-12, 16-
17, 23, 66, 114, 123, 125,
127-28, 180

- uncertainty, 221, 223
- uniform distribution, 3,
106, 154, 177, 192

- Weibull, 2, 21, 99, 175-76,
181, 183, 201-03, 207-09

- zero values, 135-36, 150