Index of Equations

Equation 3-1 $$P(d)_{\overline{i,n}} = P(d)_1 \times P(d)_2 \times P(d)_3 ... P(d)_n$$

Equation 3-2 $$S_x^2 = \overline{s^2}\left[\frac{1+(n-1)\bar{r}}{n}\right]$$

Equation 3-3 $$P(d)_{\overline{i,n}} = \left[geometric\_mean(P(d)_{i,n})\right]^n$$

Equation 3-4 $$S_X{}^2 = \frac{\overline{s^2}}{n'}$$

Equation 3-5 $$n' = \frac{n}{1+(n-1)\bar{r}}$$

Equation 3-6 $$P(d)_n = (\overline{P(d)_{i,n}})^{n'}$$

Equation 3-7 $$'r(w/d)' = \frac{P(d)_2 - \left(\overline{P(d)_1}\right)^2}{\overline{P(d)_1} - \left(\overline{P(d)_1}\right)^2}$$

Equation 3-8 $$P(d)_n = (\overline{P(d)_{i,n}})^{n'}$$

Equation 3-9 $$n' = \frac{n}{1+(n-1)\overline{r(w/d)}}$$

Equation 3-10 $$r(w/d) = \frac{P(d)_2 - \left(\overline{P(d)_1}\right)^2}{\overline{P(d)_1} - \left(\overline{P(d)_1}\right)^2}$$

Equation 3-11 $$P(d)_N = [\overline{P(d)_{i,N}}]^{N'}$$

Equation 3-12 $$N' = \frac{N}{1+(N-1)\overline{r(w/d)}}$$

Equation 3-13 $$n' = \frac{1}{\overline{r(w/d)}}$$

Equation 3-14 $$r(w/d) = ae^{-bd}$$

Equation 4-1 $$f(x) = \frac{(x/\beta)^{\alpha-1}\exp(-x/\beta)}{\beta\Gamma(\alpha)}$$

Equation 4-2 $$\Gamma(\alpha) = \int_0^\infty t^{\alpha-1}e^{-t}dt$$

Equation 4-3 $$\alpha = \frac{1+\sqrt{1+4D/3}}{4D}$$

Equation 4-4 $$D = \ln(x) - \frac{1}{n}\sum_{i=1}^{n}\ln(x_i)$$

Equation 4-5 $$f(x) = \frac{((x-\zeta)/\beta)^{\alpha-1}\exp(-(x-\zeta)/\beta)}{|\beta|\Gamma(\alpha)}$$

Equation 4-6 $$\alpha_n = f_1\overline{(\alpha_{i,n})}$$

Equation 4-7 $$\beta_n = f_2\overline{(\beta_{i,n})}$$

Equation 4-8 $$\bar{x} = \alpha\beta$$

Equation 4-9 $$MWDA_n = \frac{MD_n}{[1-P(d)_n]}$$

Equation 4-10 $$y = 1 - a(1-x^{-b}),$$

Equation 4-11 $$\beta_n = \overline{\beta_{i,n}}\left[a(n')^{-b} + (1-a)\right]$$

Equation 4-12 $$\alpha_n = \frac{\overline{MD_n}}{\beta_n\left[1-P(d)_n\right]}$$

Equation 4-13 $$\beta_N = \overline{\beta_{i,N}}\left[a(N')^{-b} + (1-a)\right]$$

Equation 4-14 $$\alpha_N = \frac{MD_N}{\beta_N\left[1-P(d)_N\right]}$$

Equation 4-15 $$N' = \frac{1}{\overline{r(wet)}}$$

Equation 5-1 $$r = ae^{-bd}$$

Equation 5-2 $r = c + ae^{-bd}$

Equation 5-3 $MWDA_N = \frac{MD_N}{1 - P(d)_N}$

Equation 7-1 $P(d)_N = [\overline{P(d)_{i,n}}]^{N'}$

Equation 7-2 $\overline{P(d)_{i,n}} = \left[P(d)_N\right]^{1/N'}$

Equation 7-3 $\beta_N = \overline{\beta_{i,n}}\left[a(N')^b + (1-a)\right]$

Equation 7-4 $\overline{\beta_{i,n}} = \frac{\beta_N}{a(N')^b + (1-a)}$

Glossary of Mathematical Terms

n	Number of available gauging stations
N	A number of stations that is larger than the *n* for which data is available
n'/N'	The effective number of independent stations for any value of *n* or *N*. See Equation 3.5, and Section 3.3.2.
r	Pearson's correlation co-effiecient
r(w/d)	A measure of the 'correlation' of the wet-and-dry-day occurrences between a pair of stations, vales of which range from 0 to 1 (although negative values can occur). See equation 3.7 and Section 3.3.3.
r(wet)	Correlation between rainfall amounts on days where at least one of the two stations records >0.3mm
MD	Mean Daily rainfall (mm d^{-1})
MWDA	Mean Wet-Day Amount (mm d^{-1}), or Mean daily intensity
α	Gamma distribution shape parameter
β	Gamma distribution scale parameter