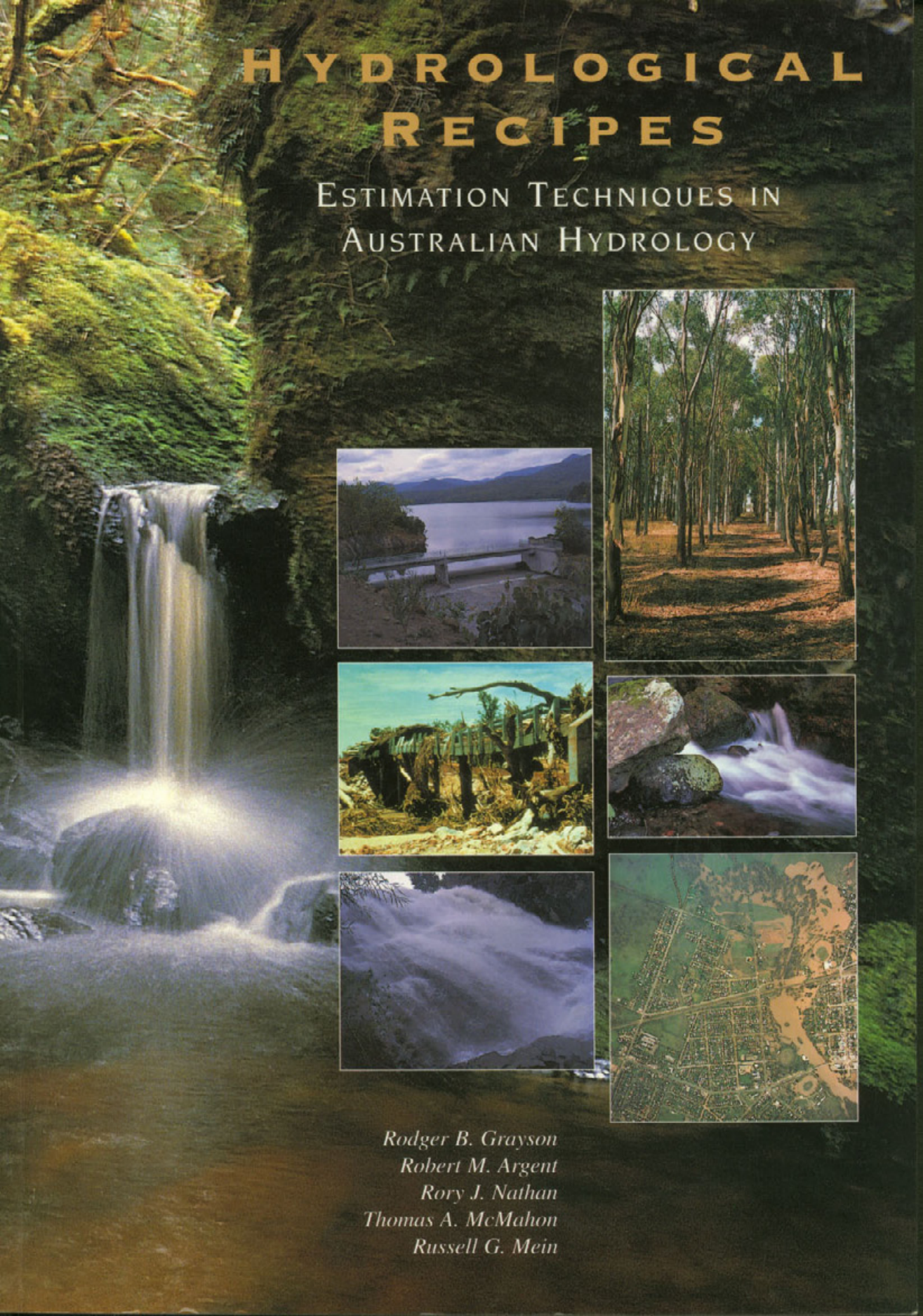
Hydrological Recipes

Estimation Techniques in Australian Hydrology



Rodger B. Grayson
Robert M. Argent
Rory J. Nathan
Thomas A. McMahon
Russell G. Mein

Errata for Hydrological Recipes
May 2004

The following errors have been discovered to date. We are thankful to those who have made us aware of their existence. Please notify the CRC for Catchment Hydrology (crcch@eng.monash.edu.au) if you are aware of other errors.

Page 16 In the definition of terms for equation 4.2.7, the reference for the computation of N (total day length) should refer to equation 4.2.3.

Page 16 In equation 4.2.9, e_a should read e_d, the actual vapour pressure [kPa] – see equation 4.6.3.

Page 17 Example Last line, R_{nl} = 3.88 $MJm^{-2}d^{-1}$ (Small difference, therefore no change to R_n)

Page 19 Section 4.3 has now been superseded by similar analysis over the whole of Australia, published by the Bureau of Meteorology as "Climatic Atlas of Australia: Evapotranspiration".

Page 33 The psychrometric constant γ should be 0.066.

Page 34 An additional method for computing e_d from climate data is to use pairs of wet and dry bulb temperature (i.e. not requiring RH data) using:

$$e_d = 0.611 \exp\left(\frac{17.27 T_{wet}}{T_{wet} + 237.3}\right) - \gamma[T_{dry} - T_{wet}]$$

Where γ is the psychrometric constant ($\cong$0.066).

As many pairs of T_{dry} and T_{wet} as are available from throughout the 24 hour period should be used to calculate a range of e_d values, which can then be averaged to give a daily value. However, because e_d does not vary a lot over a day (compared to other variables), if only one pair of T_{dry} and T_{wet} is available, it may be used as a reasonable estimate for e_d for the day.

Page 34 The constant 409.8 in equation 4.6.4 should be 4098, and the denominator should be squared. Therefore Equation 4.6.4 should read:

$$\Delta = \frac{4098 e_a}{(T + 237.3)^2}$$

Page 35 In the example, γ should be 0.066, and Δ should be 0.108$kPaC^{-1}$. These changes do not affect the answer because, in this case, ET_0 is not sensitive to γ and Δ.

Page 62 Equation 5.6.3 should read $Var(r_1) = (n^3-3n^2+4)/[n^2(n^2-1)]$. The z-statistic for the Autocorrelation test in the example on page 69 should therefore have a value of 1.523. The conclusion remains the same.

Page 63 Note that equation 5.6.13 is correct, but the equivalent equation in Chiew and McMahon 1993 is wrong.

Page 70 The K-W statistic of 9.21 is statistically significant at the 10% level but not the 5% level.

Page 103 In Table 7.4.1, the exponent in the equation for q_{smaf} should be +1.0202 and in the line above, q_{maf} should read q_{smaf}

Page 106 In the example, S =9.577 million m^3 or approximately 10,000 ML.

COOPERATIVE RESEARCH CENTRE FOR
CATCHMENT HYDROLOGY