

Corrections to “Introduction to Environmental Biophysics”, Second Printing, 2000.

Chapter 2

P. 35 line 36 In prob. 1d, “...sensible heat flux, ...” should be “...sensible heat flux density,...” .

P. 44 line 26 Change “...dependence (0.01%/C)...” to “...dependence (0.1%/C)...” .

Chapter 3

P. 47 Eq. 3.19 Units for r and q normally are kg/kg and C is mol/mol

P. 50 line 19 Change “...enough to be reside ...” to “...enough to reside...”

Chapter 4

P. 55 Eq. 4.4 Change right hand side from “=a w^{-b}” to “-a w^{-b}”

Chapter 5

P. 70 Fig. 5.5 Add label to x-axis of graph – “ PAI “ .

Chapter 6

P.77 line 24 Fick’s law ...” should be “Ficks’ law...” (The reason for this is that there were two Fick brothers and both were involved in the discovery.)

P. 78 last 2 lines on page Change “... dividing by c_p ...” to “...dividing by $\hat{\rho} c_p$...”
Change “...quantity k/c_p is ...” to “...quantity k/ $\hat{\rho} c_p$...”

P. 79 Eq. 6.8 Add “) “ so right term is “ =c_p (T_s – T_a)/r_H

Chapter 7

P.87 line 15 “...return to Fick’s law...” should be “...return to Ficks’ law...”

P. 92 Example 7.3 Change the number 40x10⁻⁶ m⁻² to 40x10⁺⁶ m⁻². in g_{vs} (adaxial)

P. 103 Eq. 7.30a Since units of g_{Ha} usually are mol m⁻² s⁻¹, the constant of 240 should be 0.240. The constant of 240 means g_{Ha} in this Eq. is in mmol m⁻² s⁻¹.

Chapter 8

P. 118 Table 8.2 Quartz density=2.65, Quartz specific heat=0.74, Quartz heat capacity=1.97

P. 126 Eq. 8.21 Replace erf with erfc

And the sentence that follows should read “ where erfc is the complimentary error function, a function ...”

Chapter 9

- P. 129 Eq. 9.1 All K's should be $K(\psi_m)$
- P. 130 Table 9.1 $\theta_{-1500}=0.21$ for silty clay loam (not 0.32)
- P. 135 Example 9.1 Change “Solve Eq.(9.1) for θ .” to “Solve Eq.(9.3) for θ .”
- P. 140 Eq. 9.16 Insert a minus so $R_p = -\psi_{Lm}/E_{pmax}$
- P. 142 Eq. 9.21 All potentials are normalized so all ψ 's should be ψ^* 's.
- P.144 Rawls Ref. Van Genuchten name misspelled
Prob. 9b The reference to Eq.(9.10) should be Eq.(9.9)

Chapter 10

- P. 147 line 5 $c = 3 \times 10^8$ m/s
- P. 151 Ex. 10.1 $PPFD=500 \text{ J}/(\text{m}^2 \text{ s}) \times 1/(2.17 \times 10^5 \text{ J}) = 2.3 \text{ mol}/(\text{m}^2 \text{ s}) = 2300 \text{ } \mu\text{mol}/(\text{m}^2\text{s})$
- P. 152 line 13 Change “...give...” to “...given...” .
- P. 153 lin 15 combinations should be spelled combinations
- P. 159 Eq. 10.5 For more clarity, denominator should be $\lambda^5 [\exp(hc/(k\lambda T)) - 1]$
- P. 160 Fig. 10.4 Add units of $\text{W}/\text{m}^2/\mu\text{m}$ to right hand axis of graph
- P. 163 Eq. 10.8 The “**t**” should be “**T**” indicating K temperature
- P. 164 Eq. 10.11 The “ T_a ” should be “ T_a ” indicating K temperature

Chapter 11

- P. 171 line 7 Replace “... Eq. (11.5) is set to 90° .” by “... Eq. (11.6) is set to 90° .”
- P. 171 line 29 Converting to hours gives $128^\circ \times 1 \text{ hr}/15^\circ = 8.56$ hrs. The time of first twilight is $11.87 - 8.56 = 3.31$ hrs (local time). The daylength is $2 \times 8.56 = 17.1$ hrs. The time of sunrise in PDT is $3.31 \text{ hrs} + 1 \text{ hr} = 4.31$ hrs (PDT).
- P. 181 line 6 $F_d = F_a = (1 - \cos \gamma)/2$

Chapter 14

- P. 244 line 6 Replace "... a little above 20°C at..." with "...a little below 20°C at ..."
- P.245 Penman ref. Penman, H.L. (1948) Natural evaporation from open water, bare soil, and grass. Proc. R. Soc. London, A, 194:120-145.

Chapter 15

- P. 257 Eq.(15.10) Replace $\rho_{b,cpy}^*$ with $\rho_{b,cpy}^*(\psi)$ so that
$$\rho_{b,cpy} \approx \rho_{b,cpy}^*(\psi) - (\rho_{b,cpy}^*(\psi) - \rho_s) \exp(-2\sqrt{\alpha} K_{be}(\psi) L_t)$$
- P. 260 line 14 Example 15.2 total incident PAR above canopy should be $Q_{ob} + Q_{od} = 2000 \mu\text{mol photons m}^{-2} \text{ s}^{-1}$.
- P. 261 Example 15.2 At mid page the equation for $\bar{Q}_{sh} = \dots$ should be $\alpha \bar{Q}_{sh} = \dots$ so
$$\alpha \bar{Q}_{sh} = 0.8 (177 + 26) = 0.8 \times 203$$

The two equations for $\bar{Q}_{sl} = \dots$ should be $\alpha \bar{Q}_{sl} = \dots$ so
$$\alpha \bar{Q}_{sl} = \alpha (K_{be}(\psi) Q_{ob}) + \bar{Q}_{sh} \quad \text{and}$$

$$\alpha \bar{Q}_{sl} = 0.8(0.652 \times 1600 + 203) = 0.8 \times 1246$$

This is because these equations are for the PAR absorbed.
- P.261 last 2 lines on page Insert α in front of \bar{Q}_{sl} and \bar{Q}_{sh} so that
The leaf assimilation rates can be obtained from Fig. 14.6 using $\alpha \bar{Q}_{sh}$ for shaded leaves and $\alpha \bar{Q}_{sl}$ for sunlit leaves.
- P.262 last Eq. on Page Insert α in front of Q , \bar{Q}_{sl} and \bar{Q}_{sh} so that
$$\bar{Q} = \frac{\alpha \bar{Q}_{sl} L_t^* + \alpha \bar{Q}_{sh} (L_t - L_t^*)}{L_t} = \frac{997 \times 1.32 + 162 \times 1.68}{3.0}$$
- P.279 Table A1 Column headed with ρ should be changed to $\hat{\rho}$.
- P. 281 Table A3(continued) Units of slope of saturation vapor pressure versus temperature (triangle symbol at column head) should be PaC^{-1} as in Table A3 on page 280.
- P. 281 Table A5 Units on Gas constant should be $\text{J mol}^{-1} \text{K}^{-1}$
Units on Boltzmann constant should be J K^{-1}
Units on Stefan-Boltzman constant should be $\text{W m}^{-2} \text{K}^{-4}$
- P.284 line 5 "Flick's diffusion law" should be "Ficks' diffusion law"