

Page • Correction

Frontispiece

Caption. Add sentence: "Both figures show a solid-body surface separating aerosol-laden (polluted) air below from cleaner air aloft."

Caption for Fig a. Add sentence: "Rising thermals carry aerosols from the surface, causing the contour surface to extend up at each thermal."

Caption for Fig b. Change the local time to 6:30, and the BL-top winds to 10 m/s. Add "Shear is evident by the folds along the right edge of the contour surface."

Chapter 1

6 Between eqs (1.4a) and (1.4b) in the body, add the partial derivative symbol "∂" just before the ξ in the last term of the equation.

18 Fig 1.14. Switch F1 and F2 in the figure, but not in the caption.

Chapter 2

32 Fig 2.2. Move middle peak left to 24 h.

27 In last figure on page. Replace the third short horizontal line with two short horizontal lines, with the new line added just above the existing third line.

35 Eq (2.4.1b right). Change the lower limit of integration from $t = 0$ to $s = 0$.

36 Fig 2.4 caption. Replace sentence "Using a finer grid than Fig 2.4." with "Flow is from left to right."

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43 First line in body after Fig 2.6. Change sentence to "Near the ground, σ_M might be expected..."

44 Fig 2.7. In caption add reference to "Deardorff, 1974: *Bound.-Layer Meteor.*, 7, 199-226."

65 In middle left of body, add an overbar over density in the term $-\bar{p} \cdot \bar{u}' \bar{w}'$.

72 Eliminate last two lines.

73 Exercise 15). Modify to read "...what would be the dimensions or units of..."

Chapter 3

78 Top paragraph. Should have used a sidereal day (23.93 h) instead of a solar day (24 h) for the Coriolis calculations. Sidereal is relative to the "fixed" stars. With this correction:

$$\omega = 7.292 \times 10^{-5} \text{ radians / s , and } f_c = (1.46 \times 10^{-4} \text{ s}^{-1}) \cdot \sin(\phi) .$$

78 Eq (3.2.3b) Term IV should be + .

86 First line after eq (3.3.3f). Remove word "incompressibility".

87 Replace the last sentence before Section 3.3.5 with: "The horizontal advection terms disappear for the special condition of horizontal homogeneity."

89 In eq (3.4.3b) the last term should be + .

97 In the last 3 lines before the Discussion section: Insert a negative sign in the equation: $v \partial^2 U / \partial z^2 = -2 \times 10^{-4} \text{ m} \cdot \text{s}^{-2}$. Also insert two negative signs in:

$$\frac{\partial^2 \bar{U}}{\partial z^2} = - \frac{[- \dots]}{[\dots]} = 13.33 \text{ (m} \cdot \text{s)}^{-1}$$

Publisher's note: the Errata listed here have resulted from comments and suggestions from users of this volume. Unfortunately, it was not possible to incorporate these changes in the text.

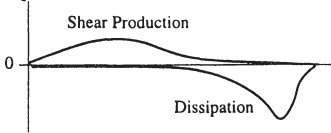
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Chapter 4

- 119 Fig 4.1. All right-side ordinates should be labeled u_*^2 (m^2 / s^2).
- 135 Fig 4.13. Add to caption: “ $\overline{u'w'}$ is positive at the surface because the mean wind was from the east (i.e., \overline{U} is negative).”
- 135 Second line of 1st eq after Fig 4.13: The term with virtual potential temperatures should be multiplied by gravity: g .
- 135 last line of last eq. Insert prime in 3rd term: $(u_i' / \bar{\rho}) \dots$

Chapter 5

- 153 First parag., 2nd word: Change to “Fig 2.9”
- 157 Fig 5.6. Inside right fig: Add the missing “t” at the end of “Turbulent” in “Turbulent Transport”.
- 158 Fig 5.7 could be enhanced by allowing for shear loss as well as shear production. To do this, extend the ordinate down to negative values. It can also be enhanced to include viscous effects, by drawing a small circle around the origin, within which there is no turbulence. Also see Stull, 1995: *Meteorology Today for Scientists and Engineers*. West (Wadsworth) Publ. 355pp. paperback.
- 167 Fig 5.16. The solid curve in the bottom fig is drawn incorrectly, because Shear Production and Dissipation should have separate lines.



- 168 Term 4 of eq (5.4b), in the denominator of the pressure term, change the subscript on x to i .

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- 170 Fig 5.17f should be labeled “Unstable”.
- 180 Change 3rd word in Discussion to “had”.
- 180 Eq (5.7a). Multiply term IV by $\partial \overline{U}_j / \partial x_j$
- 191 Separate 9a) and 9b) into separate exercises. 9b) has insufficient data for the solution, so assumptions would need to be made. Perhaps it is best not to assign 9b).
- 191 Remove exercises 8) and 10). They are repeats from earlier chapters.
- 192 Add to exercise 18): “Don’t forget to consider nonlocal static stability.”
- 193 Remove exercise 19). Repeated from an earlier chapter.
- 194 Ex 24), the equation in the first line should be $\epsilon = (\overline{\epsilon})^{3/2} / \ell$
- 194 Ex 25). The given fluxes are “surface” fluxes.

Chapter 6

- 202 Line 14, last term, should be:
 $(\partial u_i' w' u_k' / \partial z)$
- 246 Ex 12f) Change first phrase to be: “Using the answer from (e), make ...”

Chapter 7

- 254 Fig 7.3c. Insert “-” in front of Q_H .
- 267 Eqs (7.4.1 l) and (7.4.1m) should be:
 $C_D = k^2 \cdot [\ln(z/z_0) + \psi_M(\zeta)]^{-2}$
 $C_H = k^2 \cdot [(K_M / K_H) \cdot \ln(z/z_0) + \psi_H(\zeta)]^{-1} \cdot [\ln(z/z_0) + \psi_M(\zeta)]^{-1}$
- 271 Eq (7.4.2d). Change parameter value to 4.4×10^{-4} .
- 286 Eq (7.6.3a). Change Q_G to Q_g , because it is the soil flux out of the bottom of the slab, not at the surface.
- 293 Line 2. Change sign of all Q^* values.
- 294 Ex 19). Change last phrase to: “...compare with Fig 7.14.”

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Chapter 8

- 289 The autocorrelation solved example is slightly wrong.
- 300 Eq (8.3.1a). Change denominator to $(N-j)$, and change upper limit of summation to $(N-j-1)$.
- 330 First line after eq (8.8.1b). Switch definitions of C_s and C_c ?
- 332 Eq (8.8.2f). This whole equation is identically equal to 1, as was verified in the bottom left quadrant of Table 8-2.
- 335 Section 8.9, first parag., last sentence should read: "...it takes longer..."
- 344 Ex 4). Multiply right side of eq by 2.
- 344 Ex 6). Change in line 3 from FFT to DFT.
- 345 Ex 11). In line 2, remove "coherence" from the list of assigned calculations.
- 345 Ex 13). Change $\Delta n = 0.1$.
- 345 Ex 15). First line should read: "...TKE equation (8.11.2) is ..."

Chapter 9

- 354 Section 9.3.2, line 6. Change Fig numbers to 9.15 and 9.16.
- 358 Top third. Change q^{*SL} Order (0.1 to $0.5 g_{water} / kg_{air}$).
- 384 Eq (9.7.5f). Change power to $[...]^{-1/2}$.
- 403 Eliminate Ex 27). It duplicates Ex 4).
- 404 Ex 28b). Eliminate, because no solution.

Chapter 10

- 428 Eq (10.7.1c). Change to:

$$Q_H = (\rho_d \cdot C_{pd} + \rho_v \cdot C_{pv}) \cdot \overline{w} \cdot \overline{T} + \bar{p} \cdot C_{pv} \cdot \overline{w} \cdot \overline{q} \cdot (\overline{T} - \overline{T}_0) - Q_R$$
 where $Q_R = 3 \text{ W/m}^2$ is a radiation correction, and T_0 is surface temperature. Refer to Sun, Esbensen & Mahrt, 1995: *J. Atmos. Sci.*, **52**, 3162-3171.
- 436 Add reference: Stull & Eloranta, 1984: Boundary layer experiment - 1983. *Bull. Amer. Meteor. Soc.*, **65**, 450-456.
- 440 Ex 20). Remove tilde from Q^*_s and Q_G .

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Chapter 11

- 459 Fig 11.14. Change legend to contain a negative sign in the definition for A_R :

$$A_R = -\overline{w' \xi'} / \overline{w' \xi'_s}$$
- 468 Fig 11.25. Shaded ends of 1st and 3rd rolls from left should have circulation reversed.
- 497 Ex 14). Add: "Let $z_1 = 1 \text{ km}$."

Chapter 12

- 502 Add additional eq just after eq (12.1.2a):

$$\Delta \bar{\theta}(z) \equiv \bar{\theta}(z) - \bar{\theta}_0$$
- 508 Under eq (12.2.1b), move Roman numeral "I" to the left so it is under the left side of the eq.
- 509 Remove whole second paragraph, because "Guttation is the process by which droplets form on the tips of grass blades. Not dew." See *Weatherwise*, Oct 1990, p284.
- 512 Eq (12.2.3g). Change Q_H to Q_T .
- 519 Eq (12.4.2). Change h_e to h_{eq} .
- 520 Section 12.5.1, line 1. Change "stream" to "sheet".
- 525 Top eq. Change $-f_c$ to $-f_c^2$.
- 537 Eq (12.7.2c). Multiply by 2 inside [].
- 542 Ex 1). Add: "Assume $Q_T \approx \overline{w' \theta'_s}$."
- 542 Ex 3). Change \overline{U}_g to \overline{G} . Add: "The Coriolis parameter is $f_c = 10^{-4} \text{ s}^{-1}$."
- 543 Ex 4) and 6). Change \overline{U}_g to \overline{G} .
- 543 Ex 9). Change $Q_H = -0.01 \text{ K}\cdot\text{m/s}$.
- 543 Ex 14). Change primes to double-primes.

Chapter 13

- 547 Second eq after Table 13-1 should be:
 $s_e = s_{es}$ for saturated air.
- 557 Replace Fig 13.6 with updated graph from Stephens et al, 1984: *J. Atmos. Sci.*, **41**, 687-690, Fig 1.
- 558 Left side of eqs (13.2.2) are in kinematic units.

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- 559 Change last word before section 13.3.2 to "saturated".
585 Ex 9). Change K to $K \downarrow = -900 \text{ W/m}^2$.

Chapter 14

- 594 Fig 14.7 caption. Remove "(")" from around "1975".
605 Eq (14.2.3d). Use z_0 for the surface, not for a mountain.
618 Ex 17). Add: "Assume $\overline{M} = 10 \text{ m/s}$."
618 Re-number the last 3 exercises to be 15), 16) and 17).

Appendix A

- 626 In denominator of R_a , replace ρ with θ_v .
627 Change ϕ_H definition to use θ^{*SL} instead of θ^{*ML} .

Appendix B

(none)

Appendix C

- 639 Use sidereal day for ω . Namely,
 $\omega = 2\pi \text{ radians} / 23.93 \text{ h}$
 $= 1 \text{ cycle} / \text{sidereal day}$
 $= 7.292 \times 10^{-5} \text{ rad} / \text{s}$.
Note that f_c is OK as is.

Appendix D

(none)

Index

- 649 Advection. Change p3 to p4.
653 Dissipation
length scale. Add p194.
655 Fumigation. Change p18 to p17.
658 Ozmidov scale. Change to p511, 533
664 Turbulence
as a category of wind. Change 3 to 2.

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