Thanks to all the students and colleagues who have pointed out the various errors in the MSM text. In this third printing, the number is diminished, but corrections are still needed. Thank you for your patience.

Gary Lackmann, 18 May 2017

Chapter 1

Page 14, Col 2: There is some complexity in interpreting equation 1.41, because if the geostrophic wind turns with height, the orientation of $\hat{n}$ also changes. Over a layer in which the geostrophic wind direction changes with height, the $\hat{n}$ direction is taken perpendicular to thickness contours, with larger thickness values in the positive $\hat{n}$ direction.

Chapter 2

Page 41, Col 2, top: Note that $\vec{V}_g$ and Φ are also unknowns, but they are observable. Both the height tendency and $\vec{V}_g$ are derivatives of Φ and so the number of true unknowns can be reduced.

Page 48, equation 2.31, figure 2.10, and in several places in the text in Col 2 of p. 49: The more direct expression of the Q-vector is to use temperature, rather than potential temperature. Then, the coefficient out in front of the brackets in (2.31) is just R/p, and T replaces θ in each instance.

Chapter 3

Page 69-70, equations 3.8 and 3.9: The letter "M" was used in equation 3.3 to denote the mass in a control volume, so to avoid confusion, Ψ_M would be a better choice for the Montgomery streamfunction. Replace M with Ψ_M in equations 3.8 and 3.9.

Page 69: In an effort to correct the previous issue, an error was inadvertently introduced into equations 3.5 and 3.6 that was not present in the first or second printing: The left side of these equations should be "M", not Ψ_M.

Page 71, top of left column: Both instances of "M" should be "Ψ_M" here.

Chapter 4

Pages 80 and 93: All instances of "Samuelson" should be "Samelson".

Page 85, left column: Equation 4.17 should be

$$\frac{d\,P}{d\,t} = -\,g\,\frac{\partial\theta}{\partial p}\varsigma_{a\theta}\frac{\partial\dot{\theta}}{\partial\theta} + g\,\frac{\partial\theta}{\partial p}\left[\frac{\partial\dot{\theta}}{\partial x}\frac{\partial v}{\partial\theta} + \frac{\partial F_y}{\partial x} - \frac{\partial\dot{\theta}}{\partial y}\frac{\partial u}{\partial\theta} - \frac{\partial F_x}{\partial y}\right]$$

The 2nd and 4th term in brackets is repeated in the current text.