Comments and Errata on Atmospheric and Oceanic Fluid Dynamics (2nd Printing)

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The following errata and comments apply to the *second printing* of the book, available from October 2007. (The second printing says 'Reprinted 2007' on the copyright page.) If you have the first printing of the book, please see the corresponding errata sheet. Errors that occur in both printings are (or should be) listed in both errata sheets. If you find other errors, or if you think something is poorly explained, please contact the author at 'gkv-at-princeton-dot-edu'.

1. Page 21, first line of last paragraph. $(\partial h/\partial t)_p$ should be $(\partial h/\partial T)_p$.

2. Page 24, eq. (F.2). Second term in left equation should be plus, not minus. See eq. (1.93).

3. Page 27, expression for $Q[\rho]$ on line 3. The second term on the right-hand side should be $+(\partial\rho/\partial S)_{\eta,p}$ and not $-(\partial\rho/\partial S)_{\rho,p}$.

4. Page 34, line before (1.148). Should be $\alpha = (\partial G/\partial p)_{T,S}$ and not $\alpha = (\partial G/\partial p)_{T,p}$.

5. Page 70, expression following (2.98). Should be minus sign in front of $c_p/(T\rho_0\beta_T)$. [Note the use of the equation of state (1.59).]

6. Page 74, eq. (2.122). For notational consistency, ρ' should be $\delta\rho$, and similarly in the sentence immediately following.

7. Pages 81–82, Eqs. (2.167) and (2.174). On right-hand sides $-b$ should be $+b$ and, for more clarity, $\nabla\phi$ should be $\nabla_z\phi$ (it is a horizontal derivative).

8. Page 130, eq. (3.33). Extraneous minus sign on rhs.

9. Page 136–137, section 3.6.1. It should probably be stated explicitly that we are considering the $f = 0$ case, especially as (3.68) only follows from (3.8) if $f = 0$. The rotating case follows on page 138.

10. Page 147, line before (3.134). In fact, the condition that is imposed is that the *derivative* of streamfunction (i.e., the velocity) goes to zero, not streamfunction itself.

11. Page 258. This explanation (the informal mechanism) is a little brief and may be hard to follow, and (6.48) is not transparent without more algebra. A clearer version may be provided eventually.

12. Page 237–238 on phase speed. Some sources define the 'phase velocity' to be given by $\boldsymbol{c}_p \equiv \omega \boldsymbol{k}/K^2$, where $\boldsymbol{k}$ is the wavevector. The components of the phase velocity are then given by $c_p^x = \omega k^x/K^2$, etc. Defined this way, the phase velocity is a true velocity. However, its components do *not* represent the speed at which wave crests travel along the coordinate axes. This definition is not common, but be aware of it. Also, at the bottom on page 240, the explanation of group velocity is rather terse, and note that $\omega' = \omega(k + k') - \omega(k)$.

13. Page 343, eq. (8.17). $\widetilde{u}(\boldsymbol{k})$ should be $\widetilde{u}(\boldsymbol{k}, t)$.

14. Page 456, eq. . (11.3). The signs on the right-hand sides of both equations such be flipped in order to be consistent with figure (11.3) and eq. (11.68). Note, though, that there is no a priori correct definition of the sign of a streamfunction.

15. Page 536–537. The appendix discusses the computation of the EP fluxes in log-pressure coordinates. However, the computations were actually carried out in pressure coordinates, with the scaling as indicated at the bottom of page 537, and then the results transformed to log-pressure coordinates for plotting purposes only.