Errata

"Ocean circulation: wind-driven and thermohaline processes" by Rui Xin Huang, Cambridge Press, 2010.

July 1, 2012

There are numerous errors in this book. Drs. Le Kengtang and Shi Jiuxin have made a major effort in correcting these problems in the Chinese translation of this book. Thus, Chinese reader may compare the Chinese edition, if you are not sure whether there is a problem. The Chinese translation of this book:
"大洋环流：风生与熱盐过程"(高等教育出版社)
will be published in China in the fall of 2012,。

Page 5, Fig. 1.2
The x-axis label should be: 60E, 120E, 180, 120W, 60W, 0.

Page 36, line 15:
Figures 1.2.32 and 1.33 should be changed into Figures 1.32 and 1.33

Page 91: Equation (2.79)

$$K_T = \frac{1}{\rho}\left(\frac{\partial \rho}{\partial P}\right)_{T,s}, K_\eta = \frac{1}{\rho}\left(\frac{\partial \rho}{\partial P}\right)_{\eta,s}$$

Page 97, line 29:

$\alpha = (\partial\rho / \partial\Theta)_{P,S}$ should be changed into $\alpha = -\frac{1}{\rho}(\partial\rho / \partial\Theta)_{P,S}$

Page 104, Table. 2.5:

Speed of sound	$c^2 = v^2 \frac{\partial^2 g}{\partial T^2}\left(\frac{\partial^2 g}{\partial T \partial P} - \frac{\partial^2 g}{\partial T^2}\frac{\partial^2 g}{\partial P^2}\right)^{-1}$
Adiabatic Lapse Rate	$\Gamma = -\frac{\partial^2 g}{\partial T \partial P}\left(\frac{\partial^2 g}{\partial T^2}\right)^{-1}$
Vertical Stability (Brunt-Vaisala frequency)	This item should be eliminated. Vertical stability should include the vertical gradient of water properties, so that it cannot be

	defined as a function of the Gibbs function of a single point

1. Page 114

After equation (2.122):

The Richardson number: $R_i = N^2 h^2 / U^2$ Should be changed into $R_i = N^2 H^2 / U^2$

Page 116: Equation (2.129) should be corrected

$$\frac{du}{dt} - 2\omega v\cos\theta + 2\omega w\cos\theta + \frac{uw}{a} - \frac{uv\tan\theta}{a} = -\frac{1}{\rho_0}\frac{\partial p}{\partial x} + F_x$$

$$\frac{du}{dt} - 2\omega v\sin\theta + 2\omega w\cos\theta + \frac{uw}{a} - \frac{uv\tan\theta}{a} = -\frac{1}{\rho_0}\frac{\partial p}{\partial x} + F_x$$

Page 134, Fig. 2.25

Line labels inserted into the figure should be changed, and it should be consistent with the figure caption.

Page 227, Fig. 3.36

Dot-and-dashed line is for Annual mean velocity

Dotted line for Annual mean ($0.5u^2$ only)

Page 263

Eq. (4.3) $\nabla_h p_3 = \nabla_h p_a + \rho_1 g\nabla_h h_1 + \rho_2 g\nabla_h h_2 - \rho_3\nabla_h(h_1 + h_2)$

Should be $\nabla_h p_3 = \nabla_h p_a + \rho_1 g\nabla_h h_1 + \rho_2 g\nabla_h h_2 - \rho_3 g\nabla_h(h_1 + h_2)$

Page 273

"where f_0 is the reference latitude where the meridional volume flux"

Should be

"where f_0 is the Coriolis parameter at the reference latitude where the meridional volume flux "

Page 276

At the end of the paragraph following Eq. (4.52). Please add on the following footnote:

"Note that the spin-down time due to bottom friction is estimated at $T = H / R \simeq \frac{400}{2\times10^{-4}} = 2\times10^6 s \simeq 23(days)$; however, observations indicate the life time scale of eddies in the Gulf stream is more than several months; thus, the suitable value of R should be a small fraction of this value.

Page 284

"we have $\delta_I \simeq \lambda \simeq 250\,km$"
Should be
"we have $\delta_I \simeq \lambda \simeq 25\,km$"

Page 291
Caption of Fig. 4.15
"Note that the geostrophic current should follow the h-contours." Should be "Note that the geostrophic current does not exactly follow the h-contours (See Fig. 4.4)."

Page 293:
Equation (4.94) and (4.96) should be corrected as follows:

$$e_{k,eddy} \approx \frac{1}{2}\rho g'^2 \overline{h}\overline{h'^2} k^2 / f^2 \qquad (4.94)$$

$$E_{k,eddy} / E_{k,mean} \simeq (kL_y)^2 \approx 100 \qquad (4.96)$$

Page 312, line 15:

"Integrating Eqn. (4.149b) along a closed contour" → "Integrating Eqn. (4.149b) over the area enclosed by a closed contour"

Page338
Equation (4.222): the subscript of h should be 2. i.e., h_2.

Page 358
Equation (4.278) should be

$$p_y = 0,\ or\ p = p(z),\ \rho = \rho(z),\ at\ x = 0$$

Equation (4.282) should be

$$\rho_x = 0, at\ x = 0$$

Page 363: Eq. (4.293) should add on an h term:

$$w_m = w_e - \frac{\beta}{f}\int_{-h}^{0} v dz = w_e - \frac{\beta}{f^2\rho_0}\left(B_x^s h + \frac{1}{2} g \rho_x^s h^2\right)$$

Page 369
Caption of Fig, 4.51:

"dotted lines for the water age in years since subduction" →"dotted lines for the depth, in 100 m"

Page 379

"; the *dashed lines* indicate the base of the wind-driven gyre with stagnant water below, with the *heavy dashed lines* indicating the base of moving water in the wind-driven gyre:"
should be:
"; the *heavy dashed lines* indicating the base of moving water in the wind-driven gyre:"

Page 388
Equation (4.354) has a typo, and the correct form should be:

$$\psi = y\left[1-e^{-\sqrt{\beta}x}-e^{-\sqrt{\beta}(1-x)}\right]-e^{-\sqrt{\beta}(1-y)}$$

Page 405
Equation (4.406) should be

$$h^2 = \frac{g_2^{'}\tau_0 L}{\rho_0\beta^2 l^4 U^2}\frac{2\left(x_e^{'}-x\right)(-\tau)}{1+G(1-y/y_1)^2}$$

Page 431
Caption of Fig. 4.87
"potential streamfunction" should be "virtual streamfunction'.

Page 461, Fig. 4.102
All (cm) in the subtitle of each panel should be deleted.

Page 513

Change the "seasonal thermocline" in Fig. 5.24 to "seasonal pycnocline"

Page 519:
Both equation (5.35) and (5.36) have typos, and the correct ones are:

$$S_L = -\left(\frac{1}{T}\int_o^T w_{tr}dt + \frac{\Delta h_{m,L}}{T}\right) \qquad (5.35)$$

$$S_L = -\frac{\int_0^T w_{tr}dt + \Delta h_{m,L}}{T} = -\frac{(d_{tr,1}-d_{tr,0})+(h_{m,1}-h_{m,0})}{T} \qquad (5.36)$$

Page 542, Fig. 5.45
The x-axis label should be: 60E, 120E, 180, 120W, 60W, 0.

Page 543,
If we denote the sea floor as $d=-H$, Eqn. (5.53a,b) can be rewritten as

$$-fv = -g'\left(h+d\right)_x$$

$$fu = -g'\left(h+d\right)_y$$

Page 558

Eq. (5.88b) should be $\frac{Ru}{h} + fu = -g'\left(h+d\right)_y$

Eq. (5.89) should be $h_t + \nabla\cdot\left(h\bar{u}\right) = -w^*$

Eq. (5.90) should be $\frac{d\log q}{dt} = \frac{w^*}{h} - \frac{R}{f}\left[\left(v/h\right)_x - \left(u/h\right)_y\right]$

Page 560

$f_0 = 2\omega\sin 30^o$