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Corrigendum to "The long-solved problem of the best-fit straight line: application to isotopic mixing lines" published in Biogeosciences, 14, 17–29, 2017

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Two typographical errors appeared in the pseudo-code algorithm in Appendix A of the paper "The long-solved problem of the best-fit straight line: application to isotopic mixing lines", by R. Wehr and S. R. Saleska (*Biogeosciences*, 14, 17–29, 2017).

First, line 10 read

$$W_i = \alpha_i^2 / \left(b^2 \omega_{Y,i}\right) + \omega_{X,i} - 2br_i\alpha_i$$

but should have read

$$W_i = \alpha_i^2 / \left(b^2 \omega_{Y,i} + \omega_{X,i} - 2br_i\alpha_i\right).$$

Second, line 32 read

$$\bar{x} = \bar{x}/W_{\text{sum}}\,(R-2)$$

but should have read

$$\bar{x} = \bar{x}/W_{\text{sum}}.$$

The complete, corrected algorithm is

$b = b_0$.

While $b_{\text{diff}} > T$ do

Begin loop
$b_{\text{old}} = b$
$\bar{X} = 0$ and $\bar{Y} = 0$ and $W_{\text{sum}} = 0$
For $i = 1, R$ step 1 do
Begin loop
$\omega_{X,i} = 1/\sigma_{X,i}^2$ and $\omega_{Y,i} = 1/\sigma_{Y,i}^2$
$\alpha_i = \sqrt{\omega_{X,i}\omega_{Y,i}}$
$W_i = \alpha_i^2 / \left(b^2\omega_{Y,i} + \omega_{X,i} - 2br_i\alpha_i\right)$
$\bar{X} = \bar{X} + W_i X_i$ and $\bar{Y} = \bar{Y} + W_i Y_i$
$W_{\text{sum}} = W_{\text{sum}} + W_i$
End loop
$\bar{X} = \bar{X}/W_{\text{sum}}$ and $\bar{Y} = \bar{Y}/W_{\text{sum}}$
$Q_1 = 0$ and $Q_2 = 0$
For $i = 1, R$ step 1 do
Begin loop
$U_i = X_i - \bar{X}$ and $V_i = Y_i - \bar{Y}$
$\beta_i = W_i\left[\left(U_i/\omega_{Y,i}\right) + \left(bV_i/\omega_{X,i}\right) - \left(bU_i + V_i\right)r_i/\alpha_i\right]$
$Q_1 = Q_1 + W_i\beta_i V_i$ and $Q_2 = Q_2 + W_i\beta_i U_i$
End loop
$b = Q_1/Q_2$
$b_{\text{diff}} = |b - b_{\text{old}}|$
End loop
$a = \bar{Y} - b\bar{X}$
$\bar{x} = 0$
For $i = 1, R$ step 1 do
Begin loop
$x_i = \bar{X} + \beta_i$
$\bar{x} = \bar{x} + W_i x_i$
End loop
$\bar{x} = \bar{x}/W_{\text{sum}}$
$\sigma_b = 0$ and $\chi_W^2 = 0$
For $i = 1, R$ step 1 do

Begin loop

$u_i = x_i - \bar{x}$

$\sigma_b = \sigma_b + W_i u_i^2$

$\chi_W^2 = \chi_W^2 + W_i (Y_i - bX_i - a)^2$

End loop

$\sigma_b = \sqrt{1/\sigma_b}$

$\sigma_a = \sqrt{\bar{x}^2 \sigma_b^2 + 1/W_{\text{sum}}}$

$\chi_W^2 = \chi_W^2 / (R-2)$

$\sigma_\chi = \sqrt{2/(R-2)}$