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Erratum to "SWASHES: a compilation of Shallow Water Analytic Solutions for Hydraulic and Environmental Studies" [Int. J. Numer. Meth. Fluids, 2013, 72 (3), 269-300]

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ERRATUM

SWASHES: a compilation of shallow water analytic solutions for hydraulic and environmental studies

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Christian Laguerre, T.-N.-Tuoi Vo, François James, Stéphane Cordier

Int. J. Numer. Meth. Fluids 2013; 72(3):269-300 (DOI: 10.1002/fld.3741).

The authors would like to bring out some typos detected in the published version of the article:

- On page 272, Formula (4) should read

$$\partial_t W + A(W)\partial_x W = 0, \quad A(W) = F'(W) = \begin{pmatrix} 0 & 1 \\ -u^2 + gh & 2u \end{pmatrix}. \quad (4)$$

- On page 288, the expressions of h and u should read

$$h(t, x) = \begin{cases} h_l & \\ \frac{4}{9g} \left(\sqrt{gh_l} - \frac{x - x_0}{2t} \right)^2 & \\ \frac{c_m^2}{g} & \\ h_r & \end{cases} \quad u(t, x) = \begin{cases} 0 \text{ m/s} & \text{if } x \leq x_A(t), \\ \frac{2}{3} \left(\frac{x - x_0}{t} + \sqrt{gh_l} \right) & \text{if } x_A(t) \leq x \leq x_B(t), \\ 2(\sqrt{gh_l} - c_m) & \text{if } x_B(t) \leq x \leq x_C(t), \\ 0 \text{ m/s} & \text{if } x_C(t) \leq x. \end{cases}$$

with $c_m = \sqrt{gh_m}$ solution of $-8gh_r c_m^2 (\sqrt{gh_l} - c_m)^2 + (c_m^2 - gh_r)^2 (c_m^2 + gh_r) = 0$.

- On page 289, the expressions of h and u should read

$$h(t, x) = \begin{cases} h_l & \\ \frac{4}{9g} \left(\sqrt{gh_l} - \frac{x - x_0}{2t} \right)^2 & \\ 0 \text{ m} & \end{cases} \quad u(t, x) = \begin{cases} 0 \text{ m/s} & \text{if } x \leq x_A(t), \\ \frac{2}{3} \left(\frac{x - x_0}{t} + \sqrt{gh_l} \right) & \text{if } x_A(t) \leq x \leq x_B(t), \\ 0 \text{ m/s} & \text{if } x_B(t) \leq x, \end{cases}$$

Equation (16) should read

$$\begin{cases} h_{co}(x, t) = \frac{1}{g} \left(\frac{2}{3} \sqrt{gh_l} - \frac{x - x_0}{3t} + \frac{g^2}{C^2} \alpha_1 t \right)^2, \\ u_{co}(x, t) = \frac{2\sqrt{gh_l}}{3} + \frac{2(x - x_0)}{3t} + \frac{g^2}{C^2} \alpha_2 t, \end{cases} \quad (16)$$

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and the definitions of α_1 and α_2 should read

$$\alpha_1 = \frac{6}{5 \left(2 - \frac{x - x_0}{t\sqrt{gh_l}} \right)} - \frac{2}{3} + \frac{4\sqrt{3}}{135} \left(2 - \frac{x - x_0}{t\sqrt{gh_l}} \right)^{3/2},$$

and

$$\alpha_2 = \frac{12}{2 - \frac{x - x_0}{t\sqrt{gh_l}}} - \frac{8}{3} + \frac{8\sqrt{3}}{189} \left(2 - \frac{x - x_0}{t\sqrt{gh_l}} \right)^{3/2} - \frac{108}{7 \left(2 - \frac{x - x_0}{t\sqrt{gh_l}} \right)^2}.$$