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

Olivier Delestre [1], Carine Lucas, Pierre-Antoine Ksinant, Frédéric Darboux, Christian Laguerre, T.-N.-Tuoi Vo, François James, Stéphane Cordier

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

- On page 272, Formula (4) should read

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

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

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

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

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

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

  Equation (16) should read

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

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and the definitions of α_1 and α_2 should read

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

and

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