



HAL
open science

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]

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

► **To cite this version:**

Olivier Delestre, Carine Lucas, Pierre-Antoine Ksinant, Frédéric Darboux, Christian Laguerre, et al.. 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]. International Journal for Numerical Methods in Fluids, 2014, 74 (3), pp.229-230. 10.1002/fld.3865 . hal-02633461

HAL Id: hal-02633461

<https://hal.inrae.fr/hal-02633461>

Submitted on 16 Nov 2022

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

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

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

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

¹Correspondence to: Laboratoire de Mathématiques J.A. Dieudonné & Polytech Nice-Sophia, Université de Nice – Sophia Antipolis, Parc Valrose, 06108 Nice cedex 02, France. E-mail: Delestre@unice.fr

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

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