

**Ye, Zhuan**

**On the global well-posedness of one-dimensional fluid models with nonlocal velocity.** (English)

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A one-dimensional fluid flow model  $w_t + (1 - \partial_{xx})^{-\beta} w w_x + \delta((1 - \partial_{xx})^{-\beta} w)_x + \nu(-\partial_{xx})^\gamma w = 0$  includes as particular examples the (fractional) Burgers equation and the Camassa-Holm equations. The author studies local- and global-in-time solvability of this equation as well as blow-up criteria. Similar results are also obtained for a related equation involving the Hilbert transform as is in the dissipative surface quasigeostrophic model.

Reviewer: Piotr Biler (Wrocław)

**MSC:**

- 35Q35 PDEs in connection with fluid mechanics
- 76D03 Existence, uniqueness, and regularity theory for incompressible viscous fluids
- 35B60 Continuation and prolongation of solutions to PDEs
- 35B65 Smoothness and regularity of solutions to PDEs
- 35B44 Blow-up in context of PDEs
- 44A15 Special integral transforms (Legendre, Hilbert, etc.)
- 35Q86 PDEs in connection with geophysics
- 76U60 Geophysical flows

**Keywords:**

fluid model; nonlocal velocity; global-in-time solutions

**Full Text:** [DOI](#)

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