Elastic-plated gravity currents NEIL BALMFORTH, Univ British Columbia, ANDREW BELMONTE, Penn State, ANJA SLIM, University of Cambridge — We present theoretical models of the fingering and wrinkling of gravity currents overlain by an elastic plate, or "skin". The model consists of Stokes equations for the gravity current, and the nonlinear plate equations of von Karman and Föppl for the skin. The model rationalizes fingering in terms of the transverse instability of a sharp front, much like surface-tension driven fingering of skinless gravity current. A variety of buckling instabilities are also captured by the model which rationalizes how surface wrinkling may occur.

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