Nonlinear Processes
in Geophysics

Discussions

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Interactive comment on "Multistable Slip of a One-degree-of-freedom Spring-slider Model in the Presence of Thermal-pressurized Slip-weakening Friction and Viscosity" *by* Jeen-Hwa Wang

Anonymous Referee #2

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General Comments:

This is a well-documented and well-written article, however much of it seems to dwell on and define standard mathematical concepts (like deterministic chaos, fixed points and attractors) and seems not appropriate to include in a research publication. Furthermore, a parameter study (as done in this paper) finds different solution style regimes and a linearized stability analysis (which would determine critical parameter values for which bifurcations occur) seems warranted.

Specific comments:

Please define the word "multistable." It is not a commonly used term.

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[Discussion paper]

Lines 157:159 need to specify when this is true. As I recall, this situation occurs under a constant tensile stress.

Line 161-162: if viscosity is taken to be constant throughout the work, then paragraph 129-145 is inappropriate, or at least should be cut down or moved to a section on future work.

Example of too much attention paid to well-known results/definitions, for example, equation (9) is a linear, second order homogeneous ODE, so why include the discussion of its solution if this is a standard, textbook exercise?

Line 317-318: this phrase "the velocity becomes negative infinity at a certain time" appears several times throughout the manuscript, with little explanation as to why. Is the the problem ill-posed in this parameter regime?

Technical corrections: there are many typos throughout the manuscript.

Interactive comment on Nonlin. Processes Geophys. Discuss., https://doi.org/10.5194/npg-2017-17, 2017.