

Interactive comment on “Can the Nucleation Phase be Generated on a Sub-fault Linked to the Main Fault of an Earthquake?” by Jeen-Hwa Wang

Anonymous Referee #2

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The manuscript investigates the influence of different phenomena thought to be related to the frictional fault sliding on the emergence of the nucleation phase. To this end dynamics of a two block sliding model system with viscosity and displacement-dependent dry friction is analysed. The first thing which is apparent from the model equations is that frictional sliding is assumed to be always present, that is the system is always in the limiting stage, which is a great oversimplification. The second feature is that the friction is assumed to depend upon displacement rather than velocity as conventionally accepted. Furthermore, the model has a lot of parameters, so it is not surprising that some combination of parameters does produce the behaviour resembling the nucleation phase. The question is then as to why nature is reduced to these combinations of parameters.

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The numerical solution was not verified against the particular cases which either allow analytical solutions or could be referred to existing numerical solutions, so there is no way to believe in the correctness of the model.

For these reasons the proposed model does not seem to have any value.

The manuscript is badly written, English is substandard and the terminology is sometimes confused. For instance spring stiffness (elastic parameter) is sometimes called stiffness strength (failure parameter).

I cannot recommend the manuscript for publication.

Interactive comment on Nonlin. Processes Geophys. Discuss., <https://doi.org/10.5194/npg-2018-49>, 2018.

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