

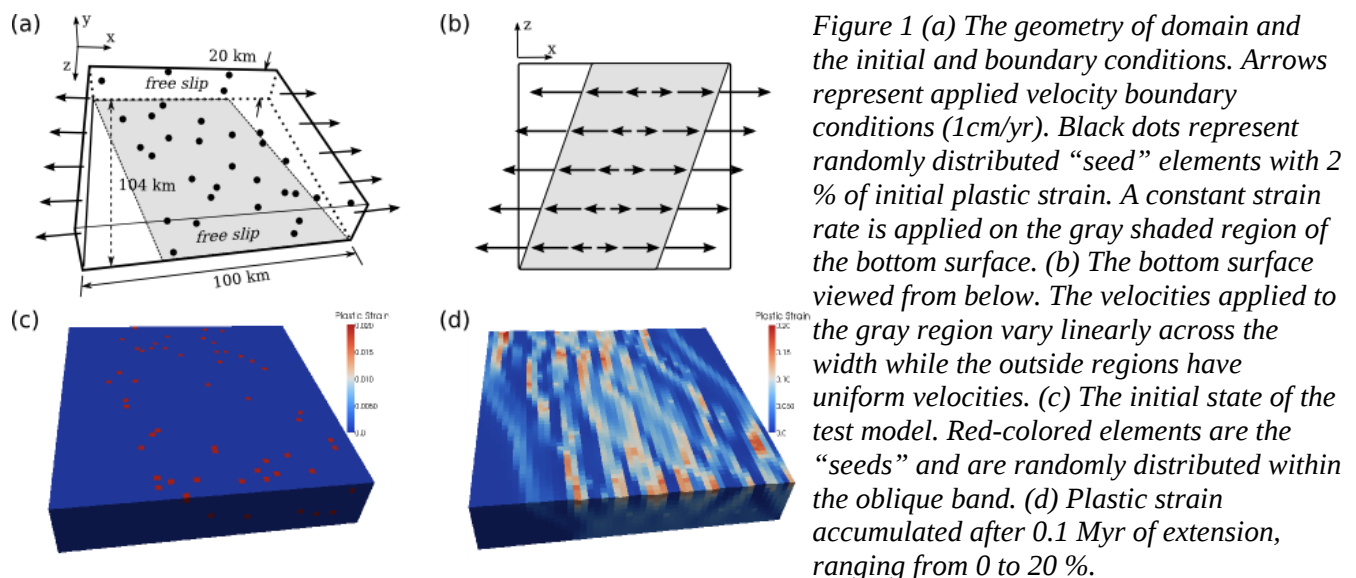
Reproducing Observed Fault Statistics in 3D Numerical Models

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We plan to use SNAC, a CIG code for 3D solid modeling, to study the controls of strain weakening on fault statistics. We model the initiation of 3D extensional fault fields as in a preliminary model shown in Fig. 1 and would try to answer the specific question: **What fault weakening parameters are needed to match normal fault population statistics for natural and analog studies?** Statistics that we would consider include the size-frequency distribution and length-offset ratios. This work builds directly theoretical and numerical work we have done on 2D extensional faulting.

We would look at the extension of uniform brittle (elasto-plastic) layers in an effort to find fault weakening parameter that give fault population statistics similar to those observed in the areas of extensional faulting (e.g., Gudmundsson, 1987), in simple 2D numerical models (e.g., Spyropoulos et al., 2002) and in laboratory experiments (e.g. Withjack and Schlische, 2006). Model predictions of D/L (displacement to length ratios), size-frequency distributions and spacing distributions are compared with published data. Next we would consider bending of layers, as may occur at subduction zones and see if we can reproduce the fault populations statistics that are observed to be different than for extensional faulting (e.g. Supak et al., 2006).



References

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