Development of interface for constructing and modeling aftershock sequences

Contexte et objectifs

Fluid-pressure diffusion following earthquakes is currently modelled as a highly non-linear diffusion process calculated using finite differences within a MATLAB script. The aim in this project is to develop a user-friendly interface that allows an easy implementation of faults (and their hydrogeological properties) and other geological domains as needed input for the fluid flow calculations. The ultimate aim is to provide the community with an open-source and easy to use tool to study their own aftershock sequences. The figure below shows a simplified (2D) fracture system used to explain aftershocks from the 2016-2017 Italian Apennine sequence, and is labor intensive to create within the code, and even more intensive in 3D. An interface that generates a finite-difference mesh, with the main hydraulic structures would significantly improve study efficiency and also make the code attractive to the earthquake/aftershocks/EGS communities.

Méthodologie et approches

The methodology and approach will be determined after discussions.

Partenaires et collaborations

This work will be supervised by Prof. Steve Miller, with assistance from B. Gisler and T. Gunatilake.

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