Step 1: Determine the list of faults considered

The first step to run Cybershake is to determine the list of faults that you will consider running GM simulations for.

This list usually based on the PGV threshold that we specify to generate velocity models (VMs). For a given PGV threshold, some of the VMs will have a small land coverage (i.e., less than 1% of the VM surface inland) and we will exclude them from the list of the considered faults. The text file containing all the faults in NZ based on Stirling et al 2012 BSSA paper is NZ_FLTmodel_2010_Modified.txt . Please note that Karim has edited the original file to address some issues, as outlined here Corrections to NHM file.

Steps:

To generate this list, you need to run srfinfo2vm.py code. Here are the steps to run it (e.g., in your home directory on the hypcoentre):

> clone https://github.com/ucgmsim/Pre-processing.git

> cd to where you have srfinfo2vm.py code: e.g. cd   /home/kta54/Pre-processing/SrfGen

> export PYTHONPATH=$PYTHONPATH:/home/vap30/ucgmsim/Empirical_Engine

srfinfo2vm.py   makes use of Empirical_Engine , so you need to add that to your path. You can either clone it from Empirical_Engine or use it from /home/vap30/ucgmsim/Empirical_Engine

> python srfinfo2vm.py NHM --nhm-file Nhm_file_Directory.txt --pgv PGV   --hh HH --dt DT --space-land SPACE_LAND --space-srf SPACE_SRF --nproc NPROC   --novm   --selection

The -- nhm-file points to the NZ_FLTmodel_2010_v18p6.txt file. The modified/corrected version of this file is NZ_FLTmodel_2010_Modified.txt as explained in Corrections to NHM file.

The --pgv assigns the PGV threshold for setting the initial boundary of the VMs before doing the optimization.

The --hh assigns the grid size for the VMs. This is written into the params files that will be generated.

The -- dt assigns the dt to run the simulations. This is written into the params files that will be generated.

The --space-land assigns the minimum distance between the edge of the VM and the shoreline. We have this option because we don't want to cut the VM right at the shoreline.

The --space-srf   SPACE_SRF assins the minimum distance between the tip of the SRF and the edge of the VM.

The --nproc NPROC is the number of processes you use to run the code.

The --novm option tells the code to just create the param files for the VM (which involves running the VM domain optimization part of the code) and skip generating the actual VM binary files.

The --selection option will write the VMs that are generated to a text file. ***This is the list we were aiming to get.***

Note: You can type 'python srfinfo2vm.py -h' to see the help options, but for this stage, the above parameters are sufficient.

Example:

> python srfinfo2vm.py NHM --nhm-file Nhm_file_Directory.txt --pgv 2   --hh 0.4 --dt 0.02 --space-land 5   --space-srf   15   --nproc 1   --novm   --selection

 The output is the text file, such as this file for the v18p6 runs: CS_list_v18p6.txt