

Step 4: Generate velocity models for the considered faults

The velocity model is generated for each fault by reading the srf.info for one of the rupture realisations for that fault.

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

```
> python srinfo2vm.py NHM "Srf_info_directories" --pgv PGV --hh HH --dt DT --space-land SPACE_LAND --space-srf SPACE_SRF --nproc NPROC
```

example:

```
> python srinfo2vm.py "/home/hta54/Pre-processing/SrfGen/NHM/autosrf/*/Srf/*.info" --pgv 2 --hh 0.4 --dt 0.02 --space-land 5 --space-srf 15 --nproc 2
```

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 assigns 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.

Note: Only a single realisation of the velocity model is generated by srinfo2vm.py (Dec 2018)

The above mentioned arguments are sufficient to generate VMs for CS runs (at least until Dec 2018).

The srinfo2vm.py code has other optional arguments. Here is the list of those:

Required parameters:

- info_glob expression to select info files eg "autosrf/Srf/*.info" or "NHM" to generate for all faults in NHM.

Optional parameters:

- --nhm-file <file> specify alternative NHM file (when info_glob == "NHM")
- -o <dir> specify output directory
- --pgv <pgv> target maximum PGV at model boundaries, set to -1 to use relation based on magnitude.
- --hh <km> set grid spacing
- --dt <s> timestep of simulation used in estimating simulation duration.
- --space-land <km> space to leave around land when reducing velocity model domain.
- --space-srf <km> space to leave around faults when reducing velocity model domain.
- --min-vs <km/s> used with NZVM generation and storing transition frequency.
- -n or --nproc <number> specify processes to use
- --novm only generate parameters, no velocity model data produced.
- --vm-version <version string> specify vm version to use
- --vm-topo <topo string> specify vm topography
- --selection store what would have been the nhm selection file equivalent for the resulting faults including list of faults which were excluded.