**Modifying Deaggregation (Disaggregation) Input Files**Written by E. R. Abbott. Modified 12 August 2020.

Install whatever editor you want in your VM, however I like to edit everything in Spyder (a code editing assistance tool). The editor vi is automatically installed, so if you are comfortable with it, please feel to use it.

Always change.

Always evaluate/change if your analysis requires it.

Occasionally change.

Don’t touch this.

IMPORTANT NOTES:

* Between variable and value there always needs to be an equal sign
* Any unused variables need to have a # in front of them.

The more you include in your input file (ie. the more you ask of your analysis, be it number of spectral periods, values of g per spectral period, number of probabilities of exceedance (poes) to solve for) the more it *could* slow down your analysis. This is ok, but something to be aware of.

TIPS FOR DISAGGREGATION ANALYSES:

* We tend to present analyses disaggregated by magnitude and distance. The magnitude bins are usually 0.2 size, distance bins are usually 20 km size.
* OpenQuake appears to have implemented disaggregation by source. Please feel free to investigate this yourself by reading the online user group or the manual.   
  Alternatively, you can use the following hack: In order to best evaluate contributing sources, we recommend running two analyses: one as above to be presented in your report, another with magnitude bins of 0.1 and distance bins of 1 km. This second analysis should be fine enough for you to correlate mag-dist bins with specific faults using the outputs of the SiteSourceDistance.py program (run with a simple geometry fault source model).
* Before plotting, you will want to convert the mean poe output to percent contribution. Please see 4-post\_processing\_in\_a\_nutshell.docx for more information.

|  |  |  |  |
| --- | --- | --- | --- |
| Category | Variable | Value | Meaning |
| [general] |  |  | General information about your hazard run. |
|  | description | Deaggregation with NZ NSHM for Wellington | Description of the type of hazard you are running, with what source models, for where, etc. |
|  | calculation\_mode | disaggregation | classical = classical PSHA etc. LIZZIE, ADD MORE |
|  | random\_seed | 23 | If you are running multiple sets, etc. setting the random seed allows you to reproduce your ‘randomised’ results. |
|  | concurrent\_tasks | 2 | This determines how many tasks you’re allowing your engine to run in parallel. This is related to the number of cores your engine can handle. Higher numbers of tasks *can* help your job move faster, but be careful you are not eating too far into your memory. Generally safe is 1 concurrent task per 2 cores available to your machine. |
| [geometry] |  |  |  |
|  | sites | 174.777 -41.289 | This is your individual site of interest. You can have multiple sites in this section: longitude latitude, longitude2 latitude 2, lon3 lat3) |
| [logic tree] |  |  |  |
|  | number\_of\_logic\_tree\_samples | 0 | 0 means that the program will do a “full path enumeration” of all logic tree branches (ie. it will calculate the result of each branch).  Any other number in this space will be the number of samples the program will take using a Monte Carlo approach. |
| [erf] |  |  |  |
|  | rupture\_mesh\_spacing | 0.2 | In km. Can change if you’re running into memory problems (ie. try 2.0 km) |
|  | width\_of\_mfd\_bin | 0.1 | Width of your magnitude-frequency bin. Don’t change for standard source model analyses. |
|  | area\_source\_discretization | 10.0 | The size of grid your area source is broken up into (km). Don’t change for standard source model analyses (we don’t have any area sources in our standard source models at this stage). |
| [site\_params] |  |  |  |
|  | reference\_vs30\_type | inferred | Doesn’t generally change. The other option is ‘measured’ but should be careful in using this as it changes the sigma on low probability events. |
|  | reference\_vs30\_value | 250.0 | Shear wave velocity at 30 m depth. Should be site-specific. |
|  | reference\_depth\_to\_2pt5km\_per\_sec | 5.0 | Depth to shear wave velocity of 2.5km/s. Given in km.  Please use the following equation to calculate a proxy for this value if you do not have one. |
|  | reference\_depth\_to\_1pt0km\_per\_sec | 100.0 | Depth to shear wave velocity of 1km/s. Given in metres.  Please use the following equation to calculate a proxy for this value if you do not have one. |
| [calculation] |  |  |  |
|  | source\_model\_logic\_tree\_file | source\_model\_logic\_tree.xml | This is the file that contains your source model logic tree. It must be in xml format. |
|  | gsim\_logic\_tree\_file | gmpe\_logic\_tree.xml | This is the name of the file that contains your GMPE logic tree. It must be in xml format. |
|  | investigation\_time | 50.0 | The probability of exceedance in [investigation\_time] number of years. (ie. 1 = annual; 50, years 100 years, etc.) |
|  | intensity\_measure\_types\_and\_levels | {"PGA": [0.01, 0.02, 0.04, 0.06, 0.08, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.4, 2.6, 2.8, 3.0, 3.5, 4, 4.5, 5.0], "SA(0.075)": [0.01, 0.02, 0.04, 0.06, 0.08, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.4, 2.6, 2.8, 3.0, 3.5, 4, 4.5, 5.0]…} | The spectral periods (ie. PGA, SA(0.075),… SA(1.0)…) and values of g for which you are interested in probabilities of exceedance.  Unless you need the whole spectrum, do not use the whole spectrum. Better to cut it down to only the spectral periods you are interested in (ie. PGA, 1s) for this calculation.  Note that the values you can use vary from GMPE to GMPE (ie. the standard McVerry et al. 2006 GMPE will not compute beyond 3.0s and your analysis will fail if you try to exceed it). |
|  | truncation\_level | 3 | Sigma truncation. 3 is standard.  None: Means you are not truncating.  Zero: Means you are looking at the 50th percentile hazard |
|  | maximum\_distance | 400.0 | The distance from your source out to which sources are included in the analysis. Given in km. |
| [disaggregation] |  |  |  |
|  | poes\_disagg | 0.198 0.0049 | What probabilities of exceedance are you interested in? The probability is based off of your investigation time using the following equation:  poe = 1-e^(-investigation\_time \* 1/rate)  where rate is your return period of interest.  You can have as many of these as you want. |
|  | mag\_bin\_width | 0.2 | The width of your magnitude bin for the deag. |
|  | distance\_bin\_width | 20.0 | The width of your distance bin for the deag (in km). |
|  | coordinate\_bin\_width | 89.5 | Bin width of for your coordinate bin (ie. in a geographical deag).  A large bin width combined with a low number of epsilon bins is what you want for a magnitude-distance deag. |
|  | num\_epsilon\_bin | 1 | The number of epsilon bins!  A small number of bins (ie. 1) combined with a large coordinate bin width is what you want for a magnitude-distance deag. |
| [output] |  |  |  |
|  | export\_dir | ../output/deag | The directory where the output files will be located. |