

Program: hazallXL.v2.f

Language: fortran95 (gfortran)

Purpose: Combine probabilistic seismic hazard curves at grid of sites into 1 of two outputs. (1) mapped probabilistic motions at a specified probability of exceedance, or (2) set of total hazard curves for all sites in the grid. Other options are possible but are not discussed.

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To run: hazallXL.v2.exe input.file

Sample Input File 1. Comments are given in blue. These blue comments are not read by the program. The data on the left side are what the program needs.

Here is an example input file of type 1 above:

```

1          !new input format, grid of sites
7          !number of files to combine, 7 here
SEasiadeep.5hz      !first file name (corresponds to deep intraplate eqs)
1          !weight to apply to first file
slab-5hz.50z.new    !2nd file name (has to do with subduction earthquakes)
1          !2nd file's weight
SEasiagrid.5hz     !3rd file name (has to do with background seismicity)
1          !3rd file's weight
thai5hz.char.highQ  !4th file name (has to do with char. faults)
0.67           !4th file's weight
sumatra5hz.char.lowQ !5th file name (Sumatra fault hazard)
0.67           !5th file's weight
thai5hz.gr.highQ   ! 6th file name (has to do with GR faults)
0.33           ! 6th file's weight
sumatra5hz.gr.lowQ ! 7th file name (Sumatra fault hazard)
0.33           ! 7th file's weight
0              ! output motion at a specific probability level
SEasia.prelim.5hz.2pc50 !output file name
1              !write file in ascii format (0 if binary)
4.04e-4       !use this annual rate of exceedance (2%/50 yr)
0              !0 means output ground motion.
1              !scale factor, here 1.0 or no scaling.
```

Sample Input File 2. Comments are given in blue. These blue comments are not read by the program. The data on the left side are what the program needs.

Here is an example input file of type 2 above. Note that the first several lines are identical. The first different line is marked in red.

```

1          !new input format, grid of sites
7          !number of files to combine, 7 here
SEasiadeep.5hz    !first file name (corresponds to deep intraplate eqs)
1          !weight to apply to first file
slab-5hz.50z.new !2nd file name (has to do with subduction earthquakes)
1          !2nd file's weight
SEasiagrid.5hz   !3rd file name (has to do with background seismicity)
1          !3rd file's weight
thai5hz.char.highQ    !4th file name (has to do with char. faults)
0.67         !4th file's weight
sumatra5hz.char.lowQ  !5th file name (Sumatra fault hazard)
0.67         !5th file's weight
thai5hz.gr.highQ     ! 6th file name (has to do with GR faults)
0.33         ! 6th file's weight
sumatra5hz.gr.lowQ   ! 7th file name (Sumatra fault hazard)
0.33         ! 7th file's weight
1            ! 1 means output set of hazard curves
SEasia.prelim.5hz.crv ! output file name
1            !1 means ascii output, 0 for binary output.
1            !scale factor (not used in this case).
```

This second type of output tends to produce large files, especially if you choose ascii output format. Each site in the grid will have a hazard curve composed of 20 or so points. There can be several thousand sites in a given analysis. Therefore, you should expect the output file to be several megabytes long. Be sure you have adequate space available on your disk if you choose this option.

This program will check for consistency and compatibility of the various input files. If it discovers problems it will try to let you know what went wrong. For example, you must sample the same spectral period in all input files. You must also sample the same set of ground motions. The regions should be the same but the code does try to accommodate some variation in sampled regions if it can.