

Automated Simulation validation using empirical

Background

CS Scientific output

Story / Deliverable

- ~~a) For a given fault (median and sigma ratios) are plotted (histogram and map)~~
 - ~~b) For a given realisation, a map plot of the simulation deviation from empirical is plotted (histogram and map)~~
 - ~~c) When all realisations are complete for a fault, Empirical validation for a fault (a) is done automatically~~
-
- a) For all realisations epsilon is calculated using Empirical median and sigma. -Done
 - b) For all realisations a mean is calculated over all stations in domain - Done
 - c) Plot 22 histograms to summarise cybershake - Done
 - d) When a Cybershake run is running, the first realisation of a fault is automatically verified/validated against empirical (b) before running other realisations

Tasks

- 1) Calculate empirical for each fault for 18p6 - Done
- 2) Calculate median and sigma for an 18p6 fault - Done
- 3) Plot median and sigma ratios on a histogram and map plot for AlpineF2K - Will not Do
- 4) Calculate realisation standard deviation from empirical for all stations for AlpineF2K-HYP01 - Modified to calculating epsilon
- 5) Plot this on a map and histogram - 0.5 day - modified to plotting histogram of means across all realizations
- 6) after researcher validation on the workflow, automate this process
 - a) Calculate rrup and empirical automatically for each fault - mgmt db - 1 day
 - b) Create new management step for realisation validation and automate it - 0.5 day
 - c) Create new management step type for fault validation and automate it - 1 day
 - d) Block running other realisations if the realisation validation didn't pass - 1-2 days

Notes

Workflow

This is an initial trial - no actual automation has been implemented yet.

If the results from this are promising this will be incorporated into the automated management of runs.

Rrup calculation for 1 realisation of each fault

- Done
- Computed for HYP01

Empirical calculation for 1 realisation of each fault

- Issues with python modules on maui / mahuika
- Needs work to parallelise this effectively. Currently starting 492 processes at once on 40 cores on Maui.
- Calculations done
- Aggregation is pending

Ratio calculation for all realisations vs the fault empirical data

- For loop looping over every IM file and comparing that with the corresponding empirical fault
- To-Do
- Generates .xyz file for plotting over a map

Plotting / data analysis

- No codes exist for data analysis Karim to examine .xyz file and provide guidance
- Plots for all realisations are not required at this time