

# Non-Ergodic codes

This wiki explains some of the effort we have put towards multiple event validation.

## Creation of input

The code for the creation of the input files is on [https://github.com/ucgmsim/validation\\_multiple\\_events](https://github.com/ucgmsim/validation_multiple_events)

### Prerequisites

- Running the Intensity Measure calculations code for simulations and observations for the events that go into the validation
  - This means having at least: aggregate IM file, metadata and Rrup CSV files
- Somehow getting the IM for the empirical distributions for the events (this is not implemented yet).
- A comprehensive list of all stations and vs30 per station used in the simulations and present in the observations

### File structure required for the code

The following type of file structure is needed to run the code:

```
root_dir_validation/
  event1
    emp
      im_values.csv
      metadata.csv
      rrup.csv
    obs
      im_values.csv
      metadata.csv
      rrup.csv
    sim
      2012p075555.info # Metadata from the SRF creation
      im_values.csv # From IM_calculation
      metadata.csv # From IM_calculation
      rrup.csv # From IM_calculation
  event2
    emp
  |  | .....
  obs
    .....
    sim
  |  | .....
  ....
  eventN
    emp
  |  | .....
  obs
    .....
    sim
  |  | .....
station_file.ll
station_file.vs30
```

TODO: create a script to create the hierarchy and copy data as needed from Kupe.

### Output

The output consists of 6 files:

- A station file. Each line has an ID, a station name, the longitude and latitude of the station, Vs30 and Kappa.
- A ground motion file. Each line has an ID, Rrup, Rjb and R\_x. This will get used in the IM files
- An event file. Here we require an ID, the event name, longitude and latitude of the hypocentre (?), Mw, CD, strike, dip, rake and stress drop.
- 3 IM files for simulations, observations and empiricals. Each of the files is alike, having per line: a ground motion ID, an event ID, a station ID and the list of IMs that have been calculated.
- Between Obs and Sim pair, we must have a common set of events and stations. But different events may have different set of stations.

R Code

Plotting