GM Simulation Working group meeting minutes and discussion

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I. GM Simulation

1. Chris De la Torre : Python code development
2. Hoby: Lessons from SCEC

II. Workflow

1. Current progress

1. SeisFinder (Viktor/Sharmla) : Demo, Google Map API. Viktor to investigate KML export.
2. StatGrid validation (Sung) : Issues, solutions
    - Current issue : 400m statgrid output too large. Not enough disk space for DB conversion (P7 has 2x135Gb only)
    - Plan:
        - Canterbury instead of SI (same resolution as statgrid) and comparison : Just to complete validation.
        - Talk to UC HPC for disk space.
        - **(To do)** BB suggests Sung to consult Scott Cahallagan (SCEC) re. DB tools and develop a solution compatible to SCEC.
        - Q : a method to compare two seismograms? **(To do)** To discuss with Hoby offline.
3. OpenSees (Daniel) POWER7 SW stack for OpenSees development. Will start collaboration with Alex Pletzer from NeSI. Seokho to point to a paper re. OpenSEES scalability issue.
4. HW purchase (Viktor). Quote from Cyclone, specs.

2. New Ideas

- Visualisaton (Sung) - http://scecvdo.usc.edu/ : SCEC-VDO. Shakemap animation not currently possible, and perhaps not ideal for automated 3D animation production. Yet a nice platform for data visualisation potentially beneficial for TB3.
- Non-uniform grid of stations over SI.
- **(To do)** Sung to test SCEC-VDO and explore possibility of extending it, and talk to Matthew Hughes and exchange ideas.

3. New tasks

Task	Question	Answer
Add feature for comments + validation matrix for each simulation scenario	(Sung) What comments, validation criteria do you like? Will you hand-draw an example output page?	Lets prioritise this to be considered in Nov 2016. I would like us to finish the validation framework project (Pettinga et al. #16035), as that will provide the final framework. We can then determine for each of the simulations how they meet the matrix; and finally thus decide how to display the results on SeisFinder
Add feature to show slip model of fault as image	(Sung) Image that looks like the output from rupt_rise+rake_mod_7pt9.csh?	Correct. We may want to reconsider this in the future (esp. for multi-fault ruptures), but for now (till say Q2 of 2017) this will be sufficient.

Add feature to provide multiple realizations of scenario due to different slip	(Sung) Is this related to the non-uniform weight of different rupture model (for historical event)?	This is loosely related to this. The idea is that both for historical Eqs, and also for future Eqs - there is uncertainty in our modelling assumptions. In order to represent this uncertainty, we provide multiple ground motion simulation results (the uncertainties can be due to different slip, but actually there are many more uncertainties. In general, the uncertainties relate to the earthquake source, velocity model, and local site effects assumptions); so the idea here is for SeisFinder to be able to enable users to obtain either a single result, or a suite of results (i.e if we have N simulations to represent the uncertainties, then SeisFinder would allow extraction of N ground motion time series at a given location(s) of interest). Clearly, this means that we have an increase in data storage demands. So this increases the need for our non-uniform grid (+ SQL) ideas even more (Q: Did you touch base with Scott Calaghan?(sp?))
Add feature to allow user-specified Vs30	(Sung) User to supply a new Vs30 file and web service applies new amplification and make a new set of seismogram files on the fly?	Since we already ask the user to provide the Lat and Lon values for one or more locations, if the user 'turns on' the option to provide their own Vs30 value, then my idea was that it would simply make available a third column for input data (or read a third column of a CSV file). Computationally what would happen is that we would use the site amplification scripts viktor has written to 'remove' the initial site amplification based on the previously assumed Vs30 value, and the 'add' the new site amplification based on the user-specified Vs30 value