

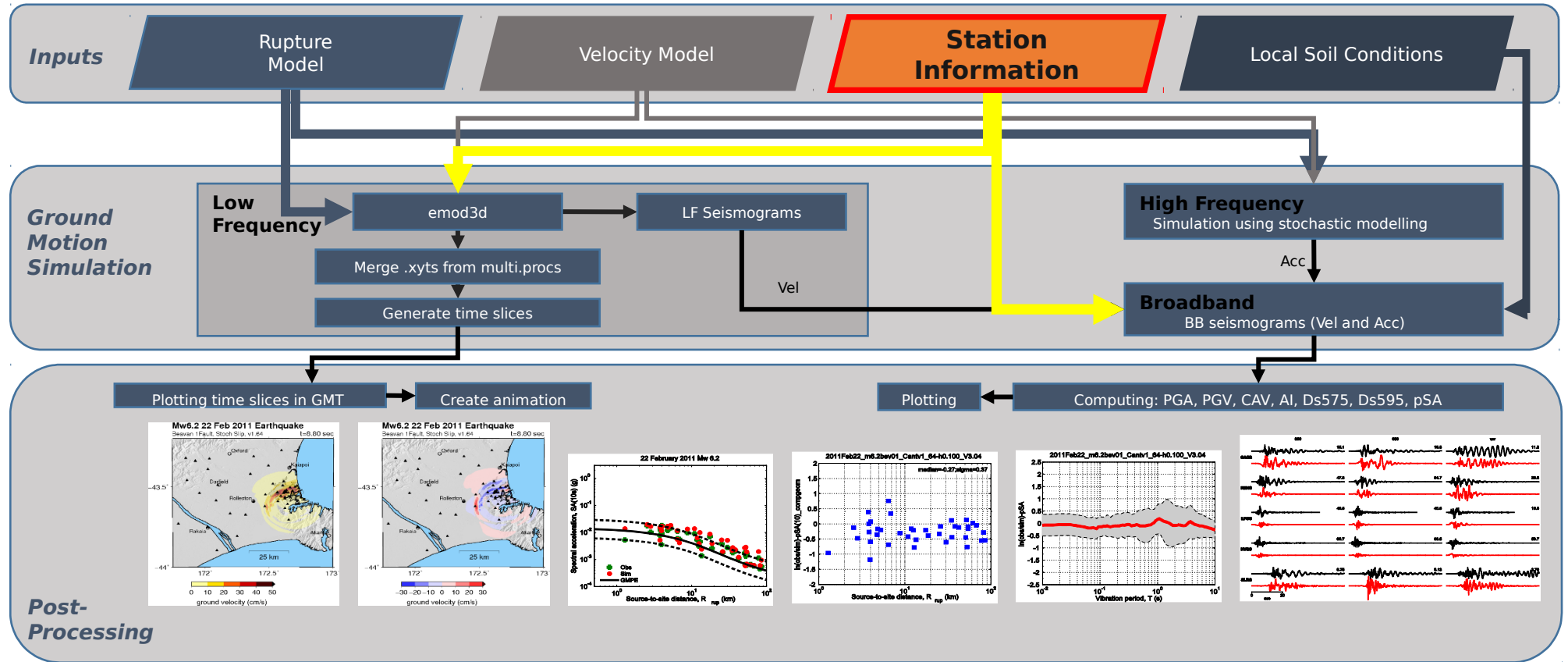


Advances on SeisFinder

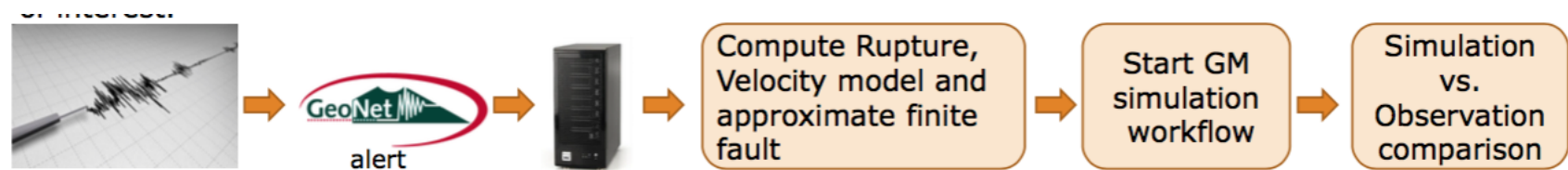
QuakeCoRE TP4: Computation and Data
Visualization

QuakeCoRE Ground Motion Simulation Workflow

Workflow



Automation for real-time simulation



SeisFinder: Interface for GM Simulations



What event,
Where?



SeisFinder



Simulation result at
locations of interest



Current Status

- Temporary website available for beta testers
- Ready to go live shortly
 - Machine hosted at UC (4 cores 1 TB disk space)
 - Initial assessment of load
- Four events at launch date (three already added to beta)
 - Darfield (22 Feb. 2011)
 - Christchurch (10 Sep. 2010)
 - Kaikoura (13 Nov. 2016)*
 - Alpine Fault (South to North scenario)

Demo

- Temporary website:
<http://gram5p7.canterbury.ac.nz/seisfinder>

Main Page

SeisFinder

Give us your feedback research@quakecore.nz

Event:

Model:

[Download documentation-validation](#)

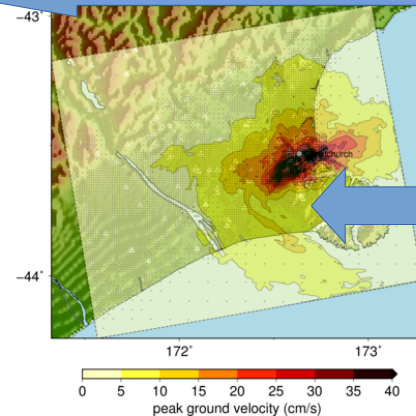
Location:

Single Multiple

Latitude

Longitude

Automatically Generated Event PGV



Select event and specifics (rupture and velocity models)

Download information about the simulation

Image showing the simulation domain

Select a single or multiple locations of interest



Documentation-Validation PDF

- Simple document
 - Internal Standard minimal format
 - Quick summary for the simulation
 - Contains references to literature
 - Selected plots
 - Intensity measures
 - Observations
 - Etc.



Example Result

Event : AlpineFault 7.9 01/01/3333 midnight

Model : m7.90-411.0x17.3_s1129570_s2n 1.65_200m

1. Location of station(s)



Note: The available locations are represented in grey markers which are visible in higher zoom levels. The simulation domain (for which the data is available) is represented in red rectangle in the map. The target location is represented by the blue marker. The nearest available location is represented by the red marker.

Locations within the domain

Target Location (latitude,longitude)	Nearest Location (latitude,longitude)	Distance (metres)	Location Code
-45,169	-45.00201,168.99483	464.82	0006853
-45.5,169	-45.46785,168.96762	4379.05	00012fb

The following locations requested by the user are outside the domain and the nearest location is significantly distant. SeisFinder will ignore these locations and your downloaded file will not contain data for these points.

Locations outside the domain

Target Location (latitude,longitude)	Nearest Location (latitude,longitude)	Distance (metres)	Location Code
-46,170.5	-46.01263,170.47862	2170.95	0001e06

2. Download

[Simulated ground motions](#): Click here to download the simulated motions.

[Instructions for use](#): Click here for an explanation of how to use the formatted files.

3. Example plotting

[Plot acceleration with time](#): Here is a python script to plot the downloaded time series of acceleration with time.

[Sample data](#): Here is the sample data for plotting.

Map showing points selected and nearest locations

List of stations corresponding to the nearest simulated locations (Locations out of domain are ignored)

Actual download link and instructions

Examples to use data

Data downloaded

- Zip file
 - Contains acceleration three components per station selected

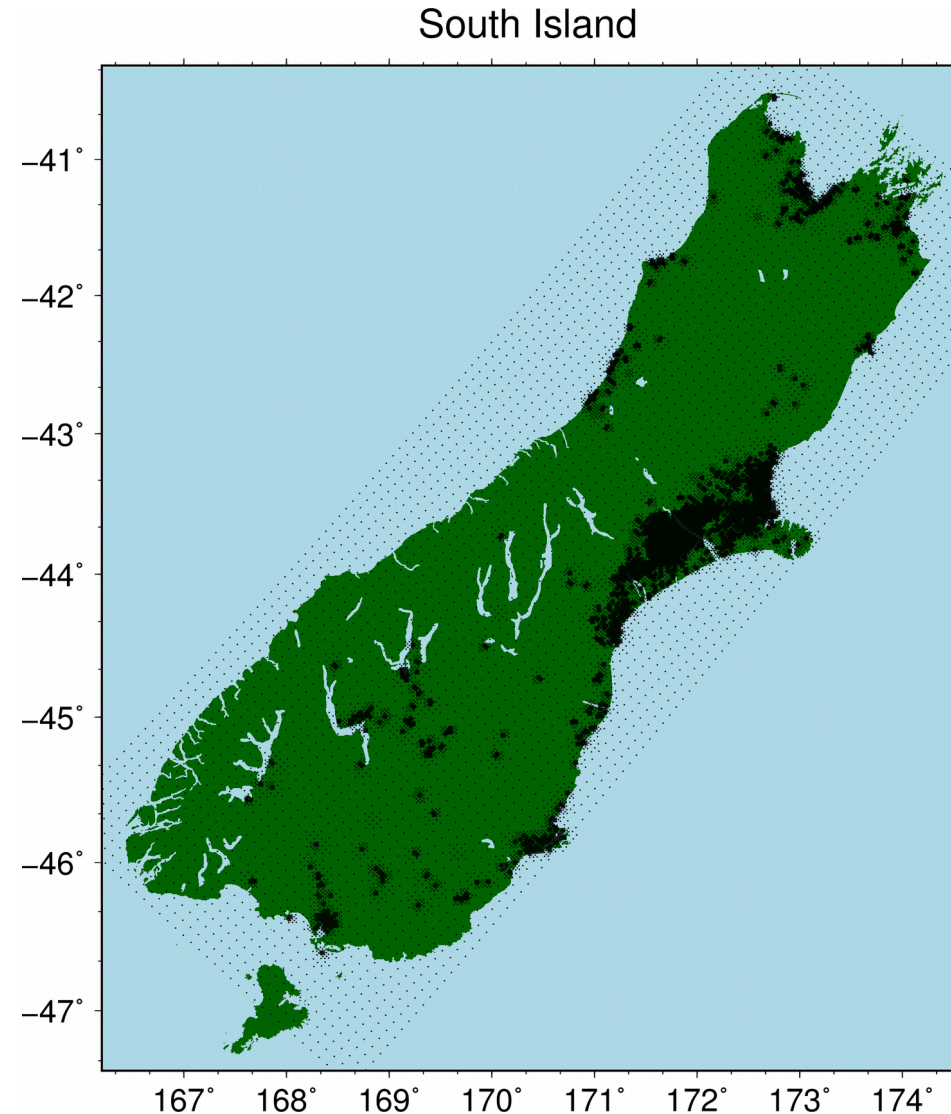
```
stations/  
├── 00012fb.000  
├── 00012fb.090  
├── 00012fb.ver  
├── 0006853.000  
├── 0006853.090  
├── 0006853.ver  
└── station_location.csv
```

- CSV file
 - Metadata for your request

```
"Target Location (latitude,longitude)","Nearest Location (latitude,longitude)",Distance (metres),Location Name,Within Domain  
"-45,-45.00201","-45.00201,168.99483",464.82,0006853,True  
"-45.5,-45.46785","-45.46785,168.96762",4379.05,00012fb,True  
"-46,-46.01263","-46.01263,170.47862",2170.95,0001e06,False
```

Where do we provide results?

- Uniform grid yields too much data
 - 40 TB (Alpine Fault 200m simulation)
- We use a non-uniform grid
 - Resolution function of population density and shear wave velocity
 - Reduce the storage needs by a huge factor



Next Developments

- News Section
 - Information about SeisFinder, events added etc.
- Upcoming Features
 - Next features in the pipeline
 - Possibility to propose new features
 - Voting to give feedback

Next Developments

- New event selection criteria
 - 100+ events expected by the end of the year
 - Interactive map to select events per region
 - Selection of events based on magnitude
 - Date selection (historical vs. future)
 - Other filtering as needed by researchers

Next Developments

- New events
 - Valentine's day earthquake (Feb 14 2015) added immediately
 - Other events to come soon
- Customize output naming
 - Currently: stations returned according to our internal codes (for example 0000aef)
 - Mapping to user defined name
 - 0000aef → my_location

Long term developments

- Precalculated IMs for the simulations
 - PGA, PGV, pSA etc.
- API to automate queries without user interaction
- FTP server for large requests

Feedback

- Important
 - Understand needed features
 - Correct bugs
 - Plan for new features
- When you use it, please tell us about it!