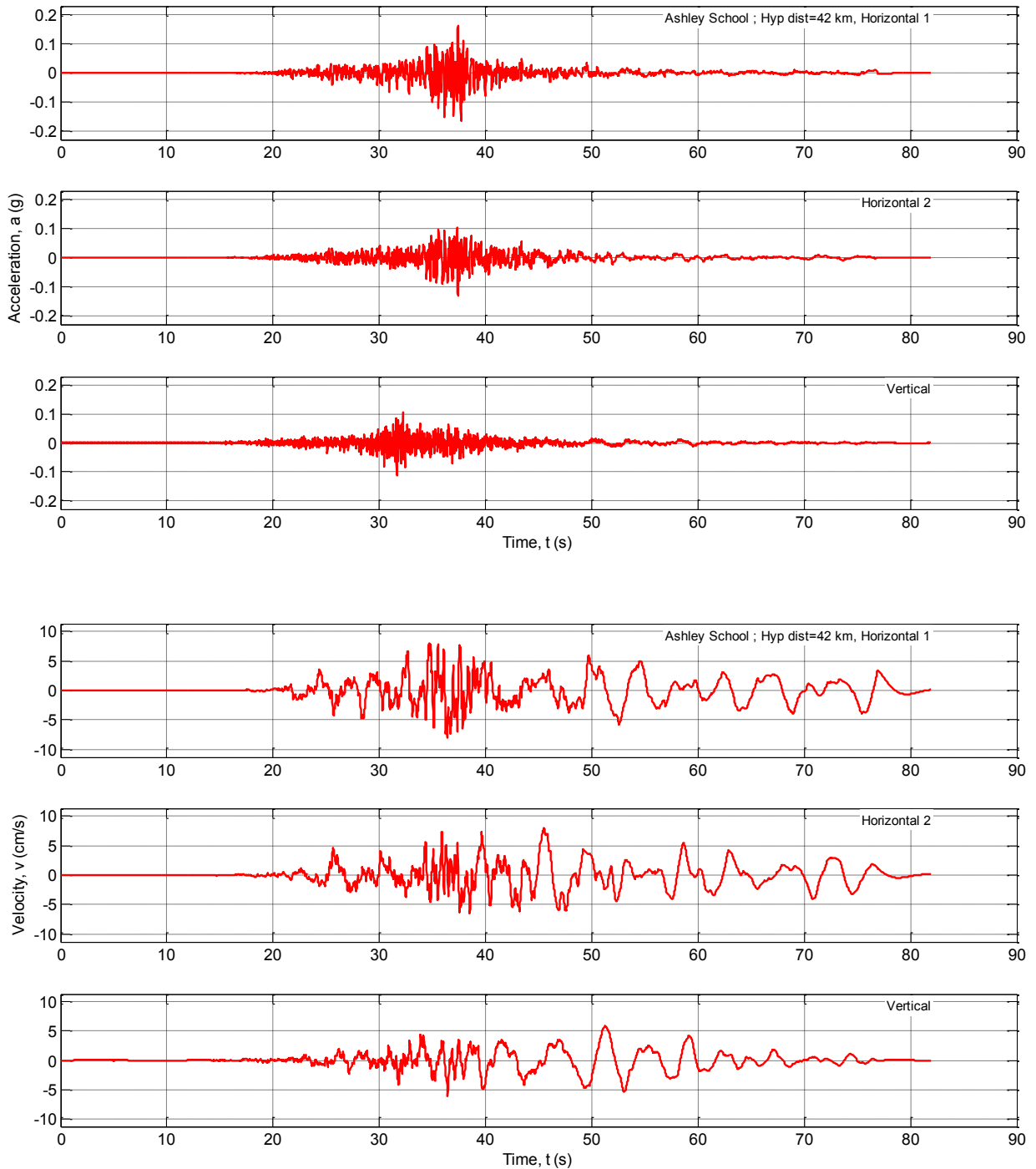
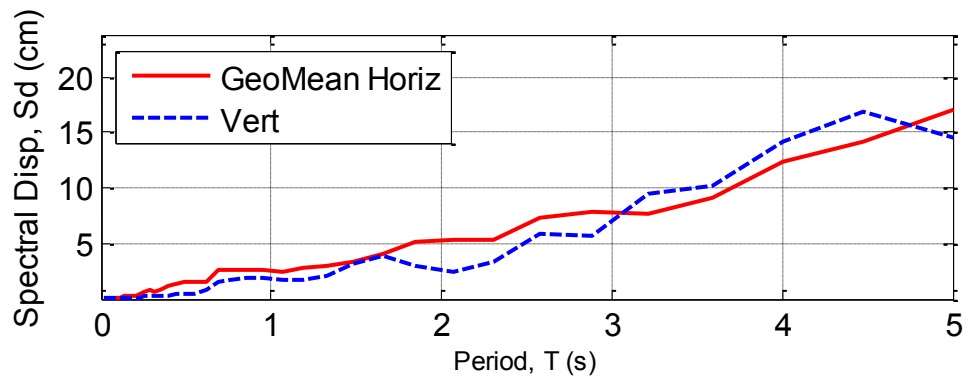
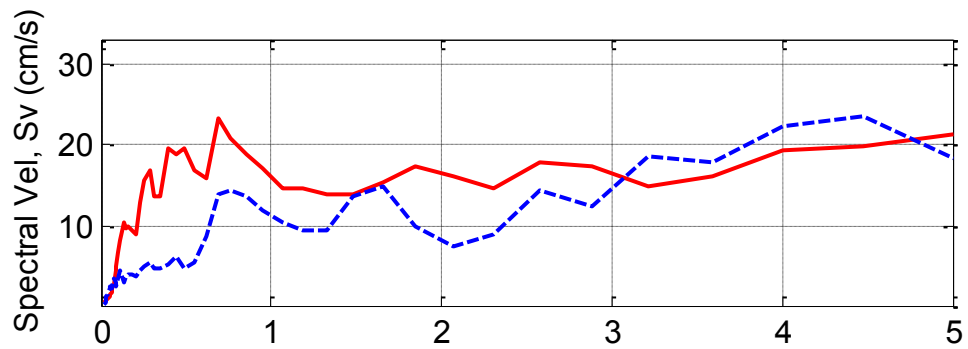
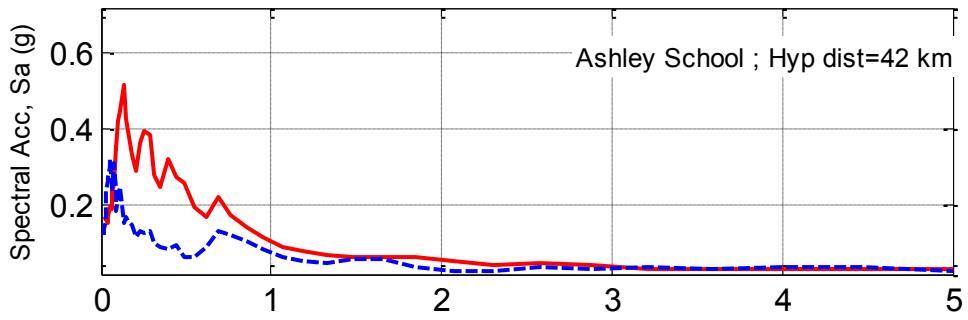
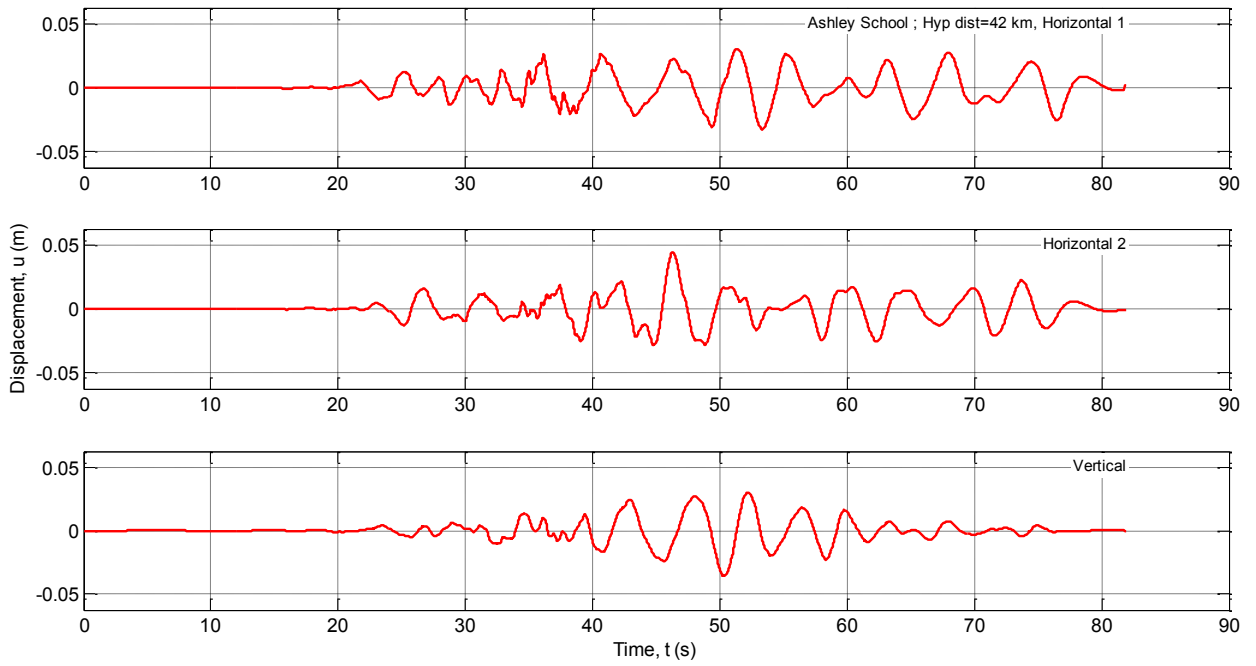


This document provides preliminary strong ground motion observations from the 4<sup>th</sup> Sept 2010 earthquake. The earthquake has a preliminary moment magnitude of 7.1 and a approximate epicentral distance to downtown Christchurch of 40km and depth 10km.

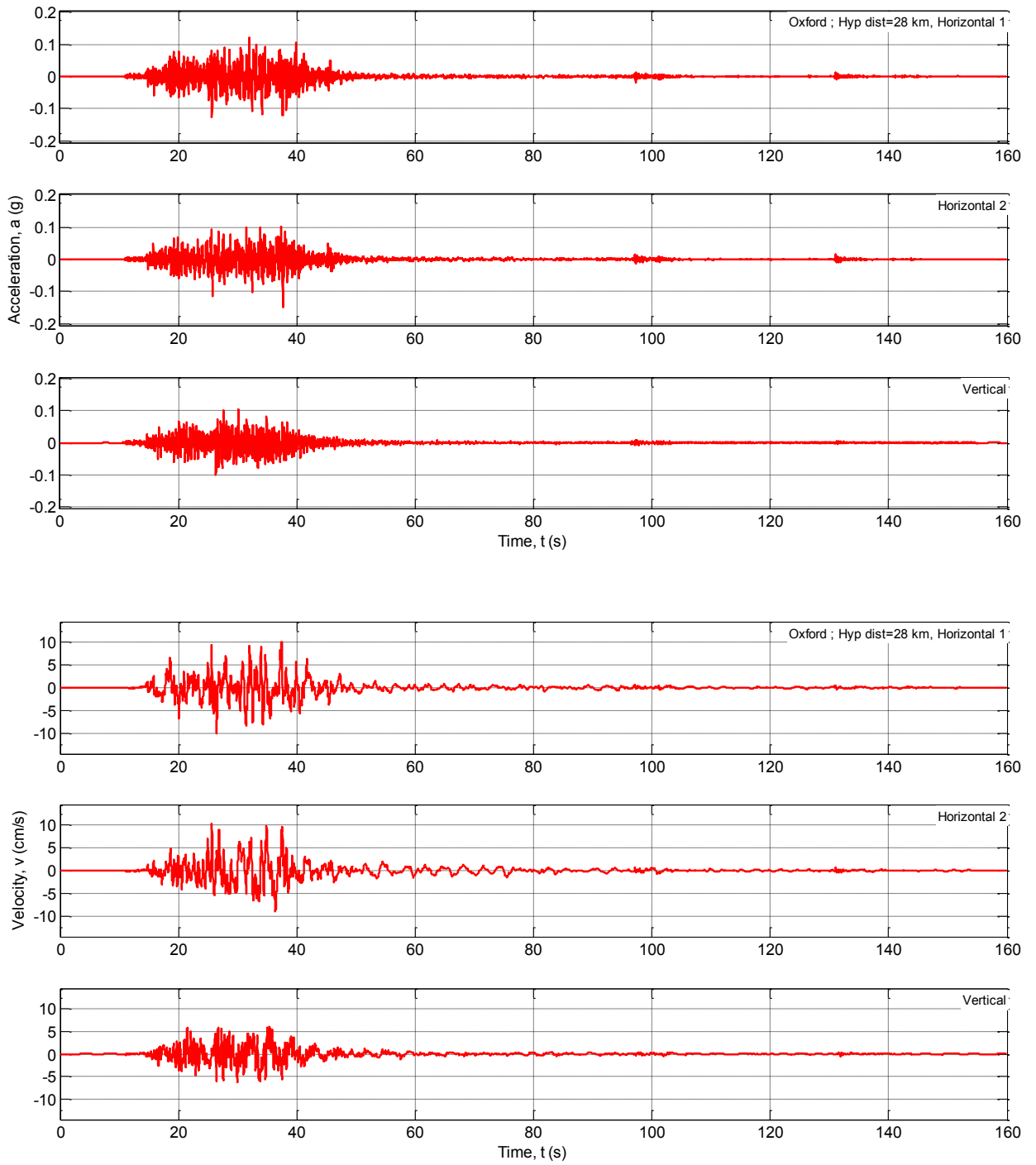
Below the three strongest motions of the GNS array are shown.

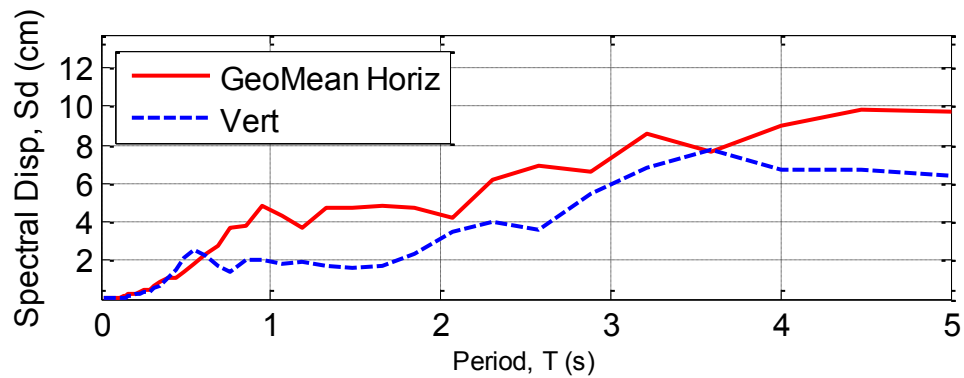
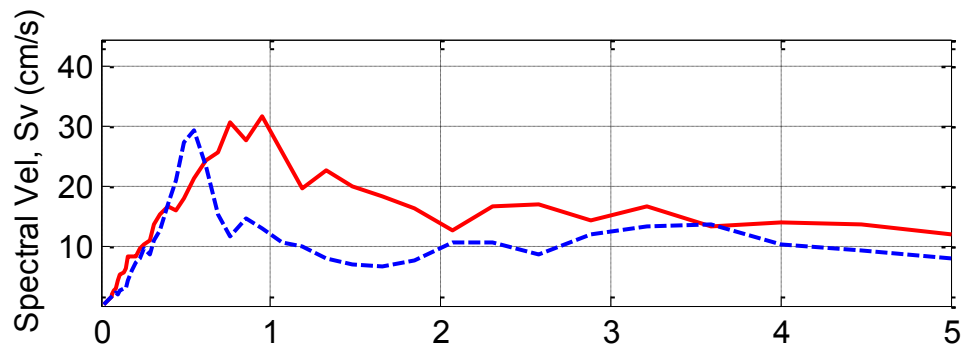
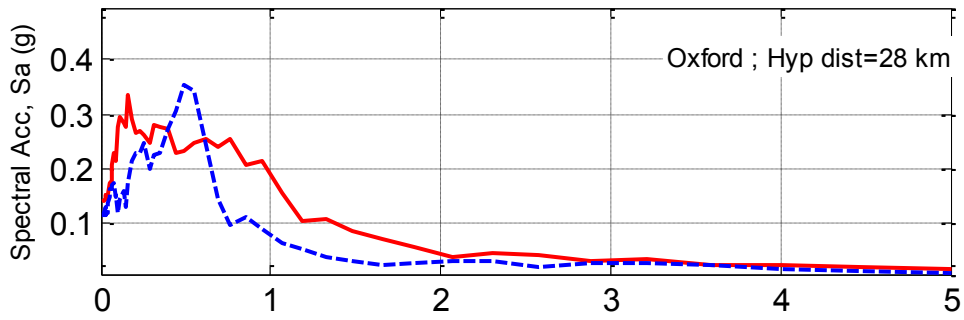
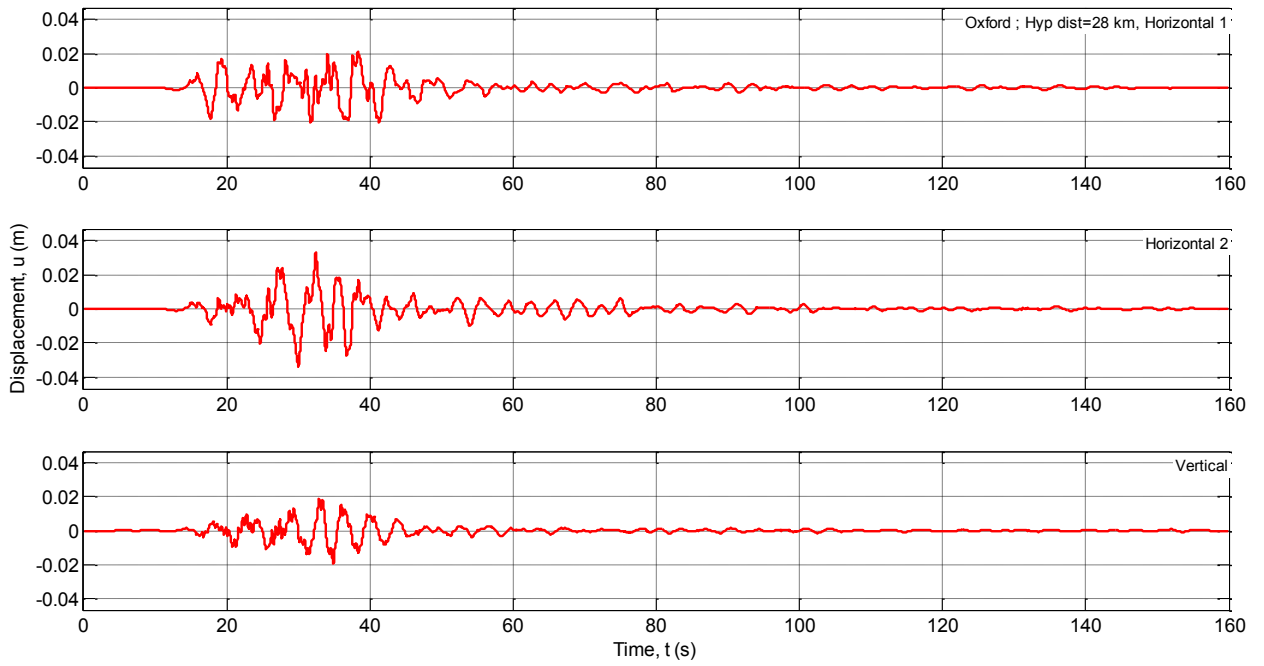
**ASHLEY SCHOOL – the velocity, displacement, and spectra clearly show significant excess pore water pressure and likely liquefaction effects.**



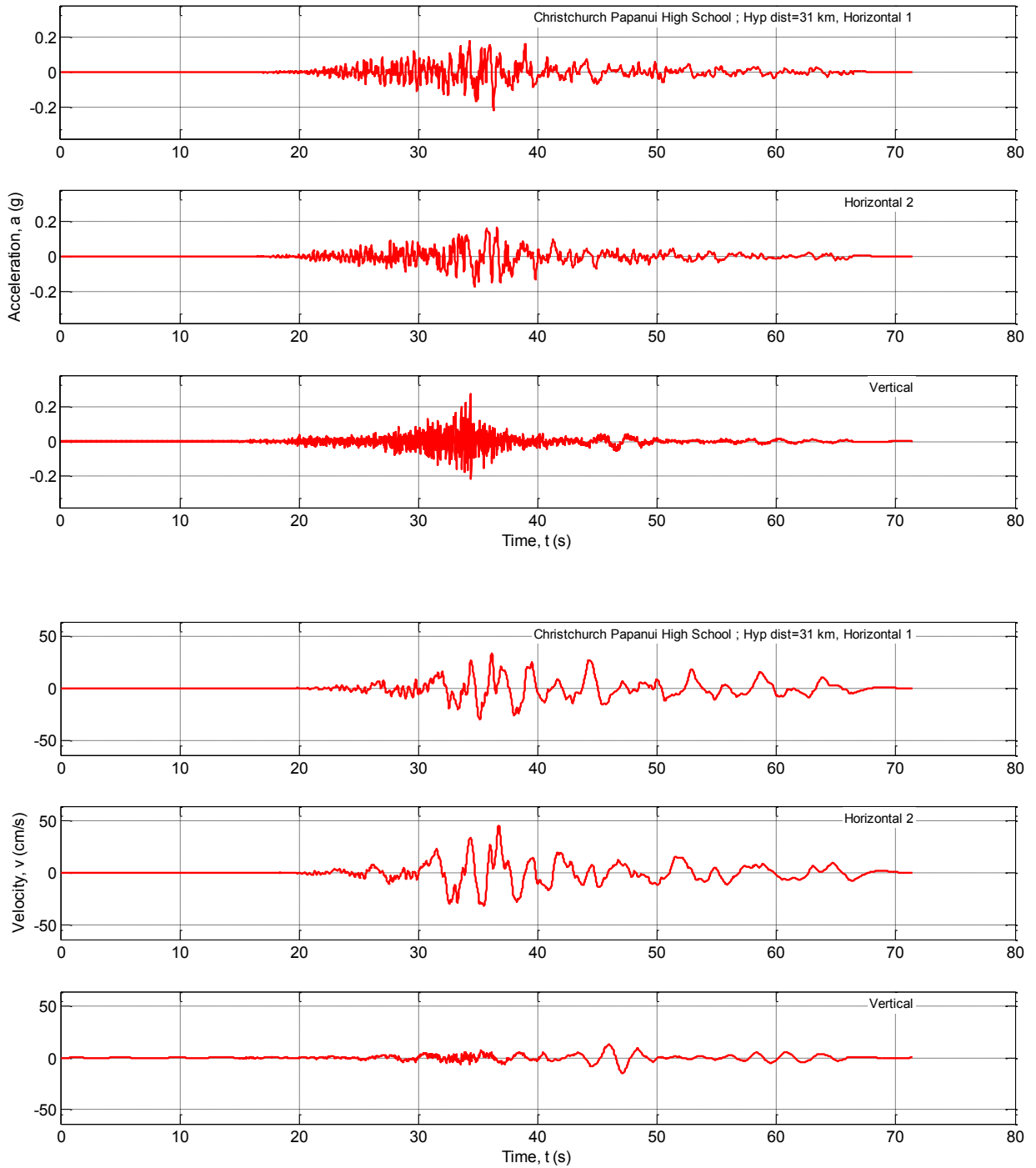


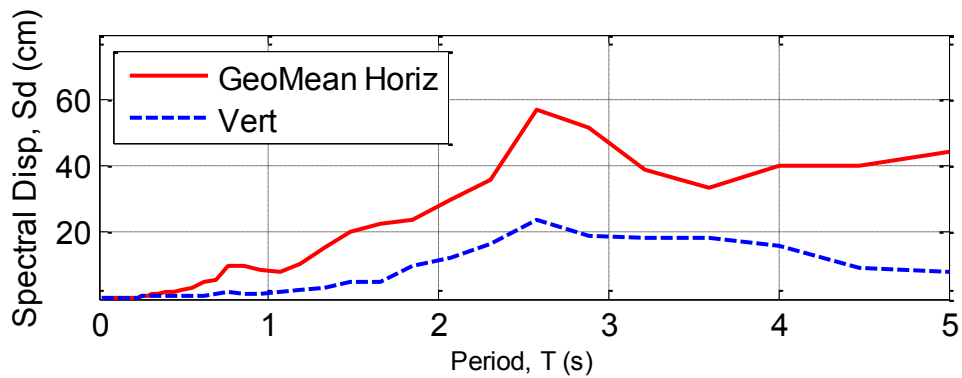
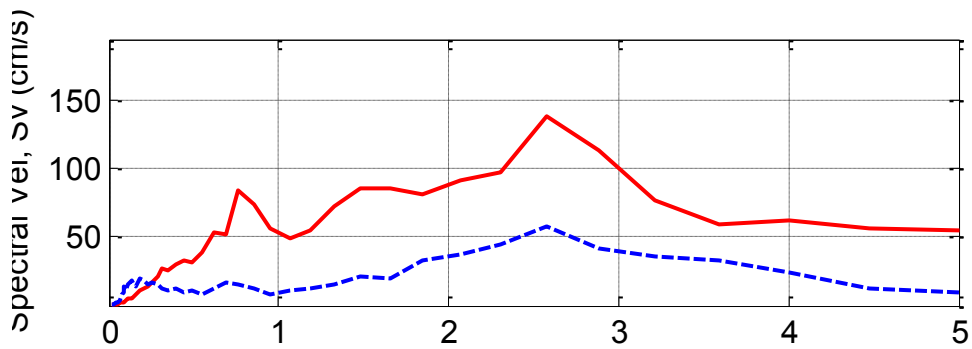
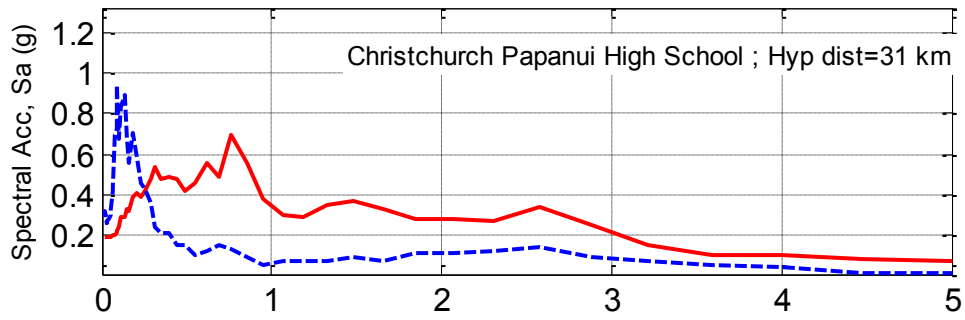
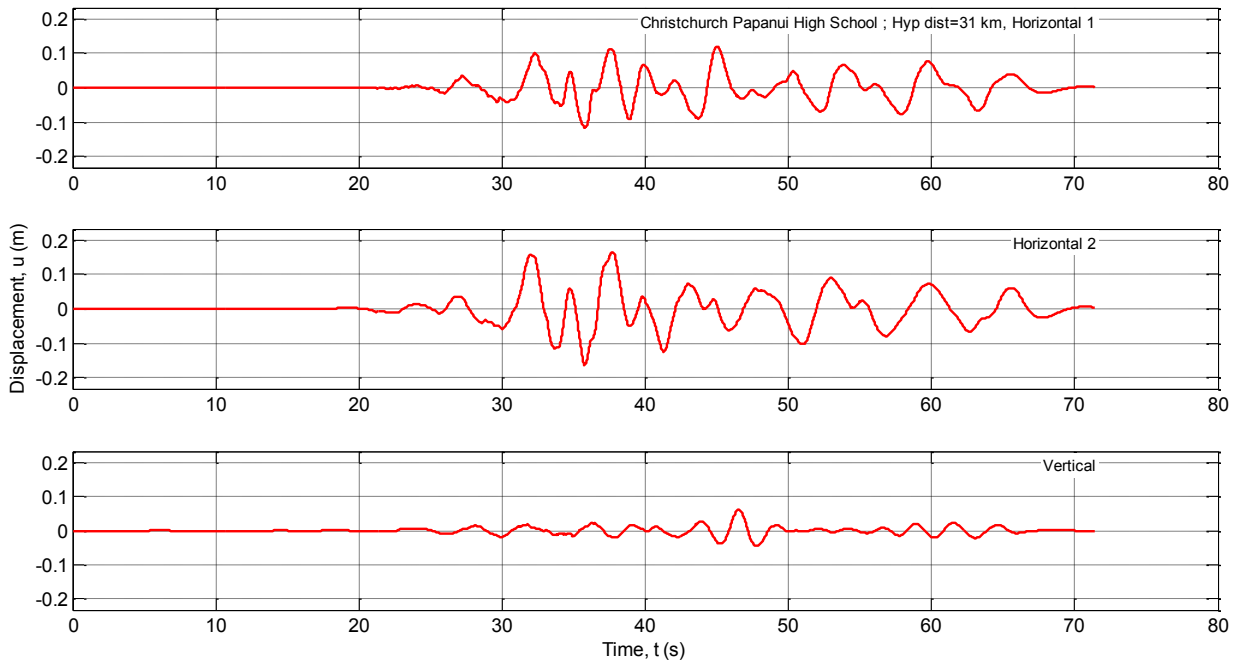
# OXFORD





## PAPANUI HIGH SCHOOL – also large soil nonlinearities likely at this site

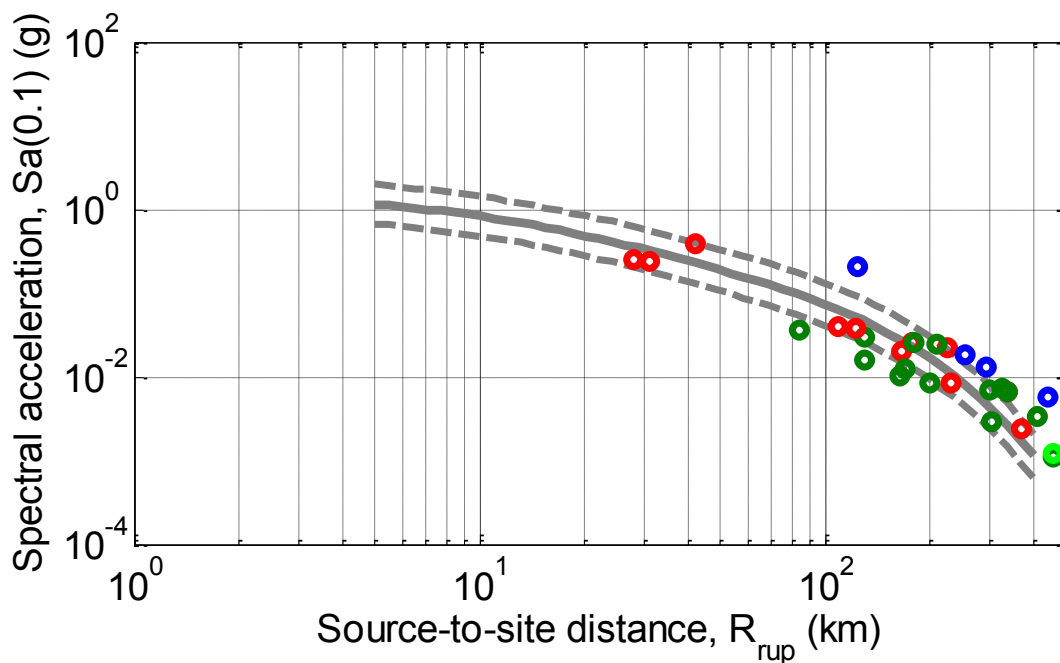
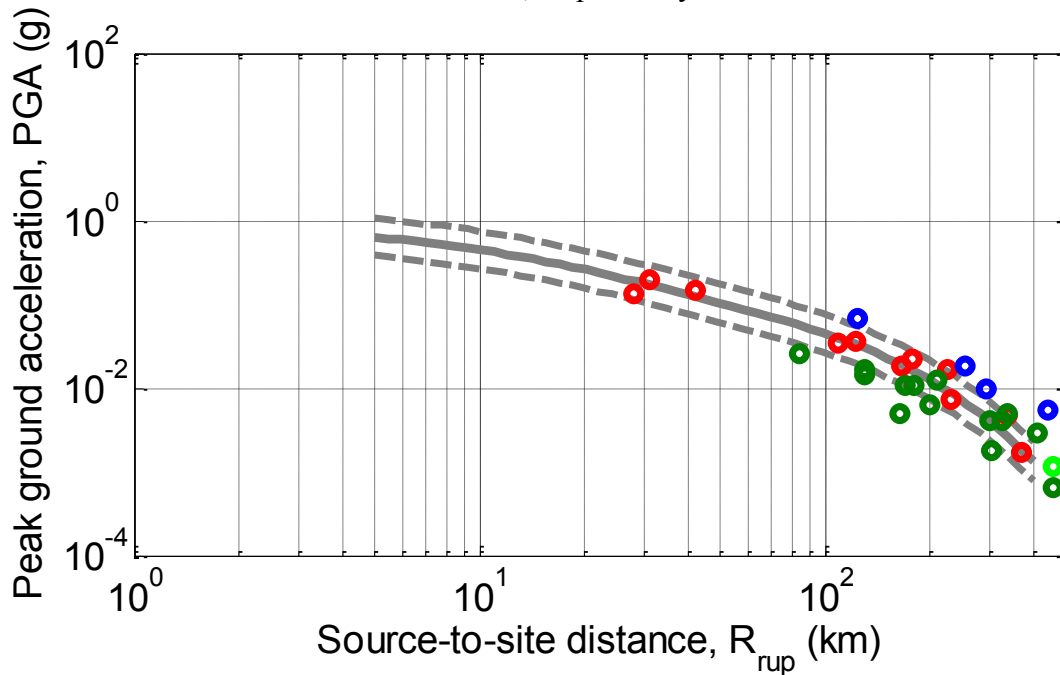


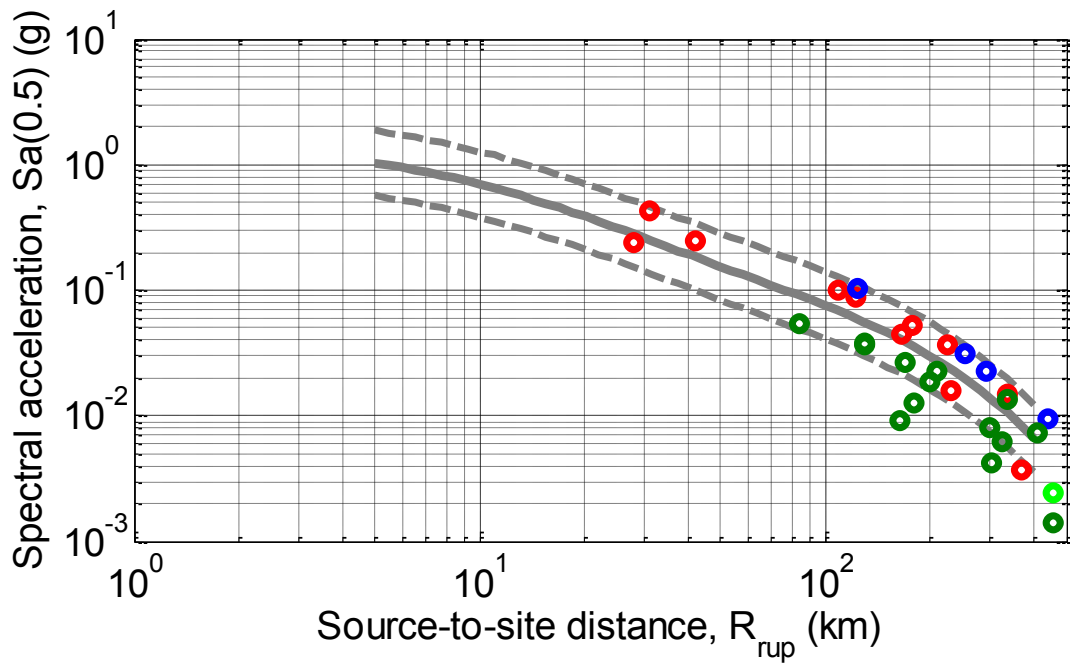
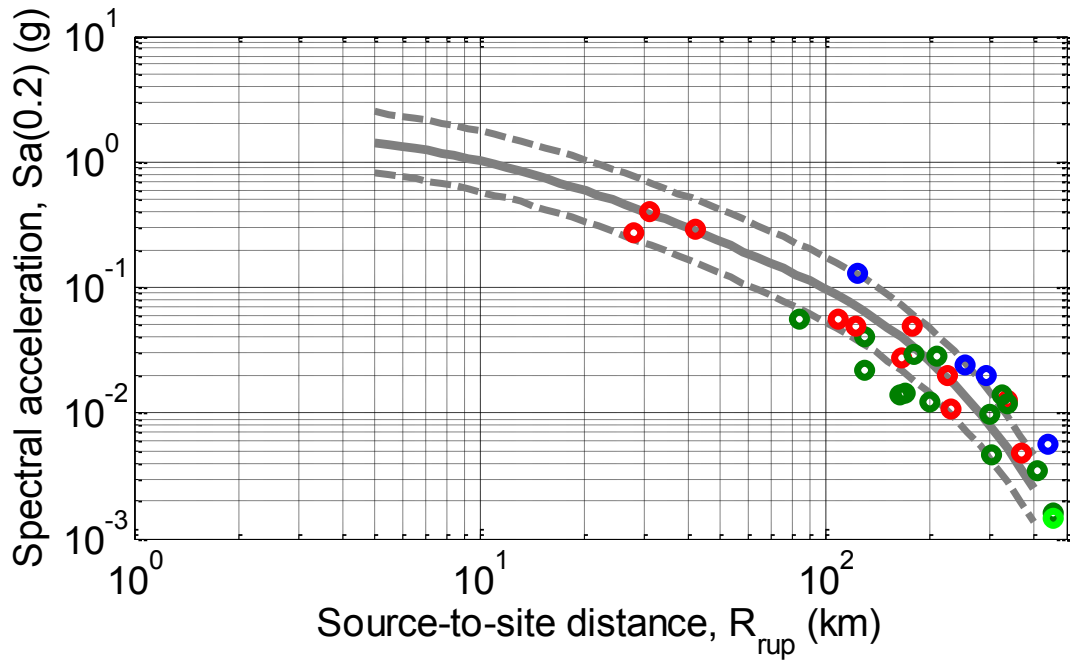


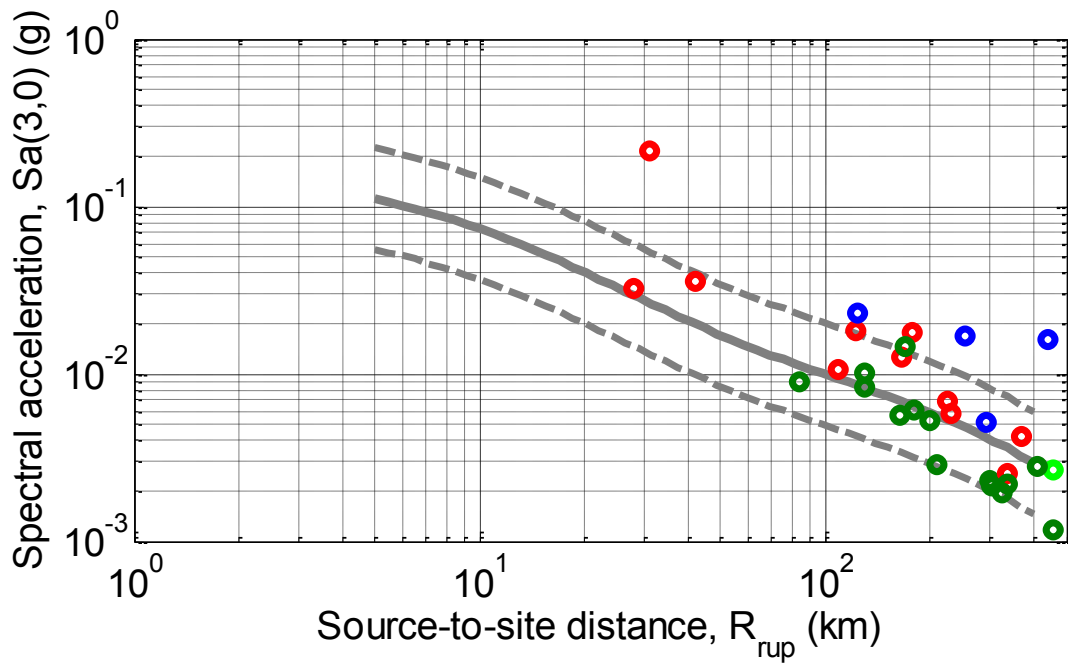
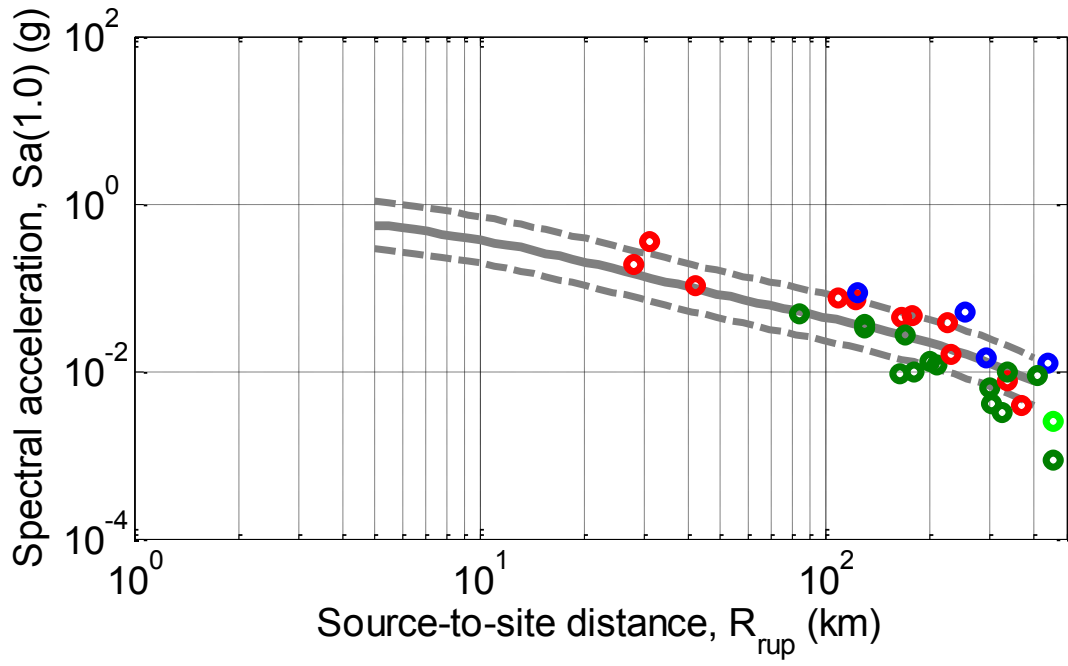
## COMPARISON OF GROUND MOTION INTENSITY MEASURES WITH EMPIRICAL PREDICTION MODELS\

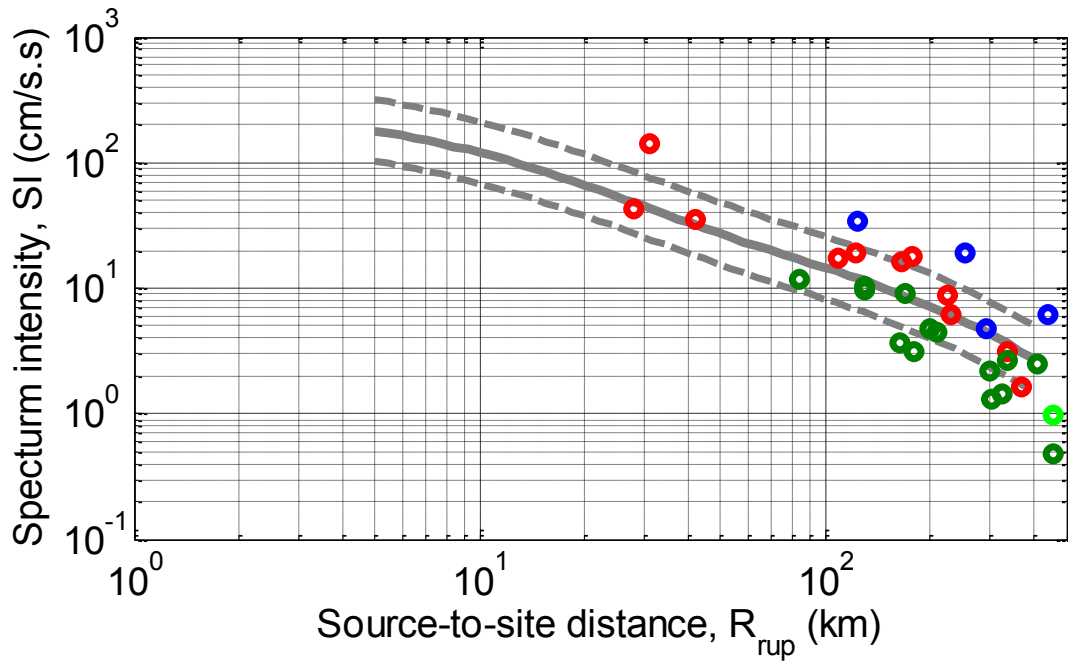
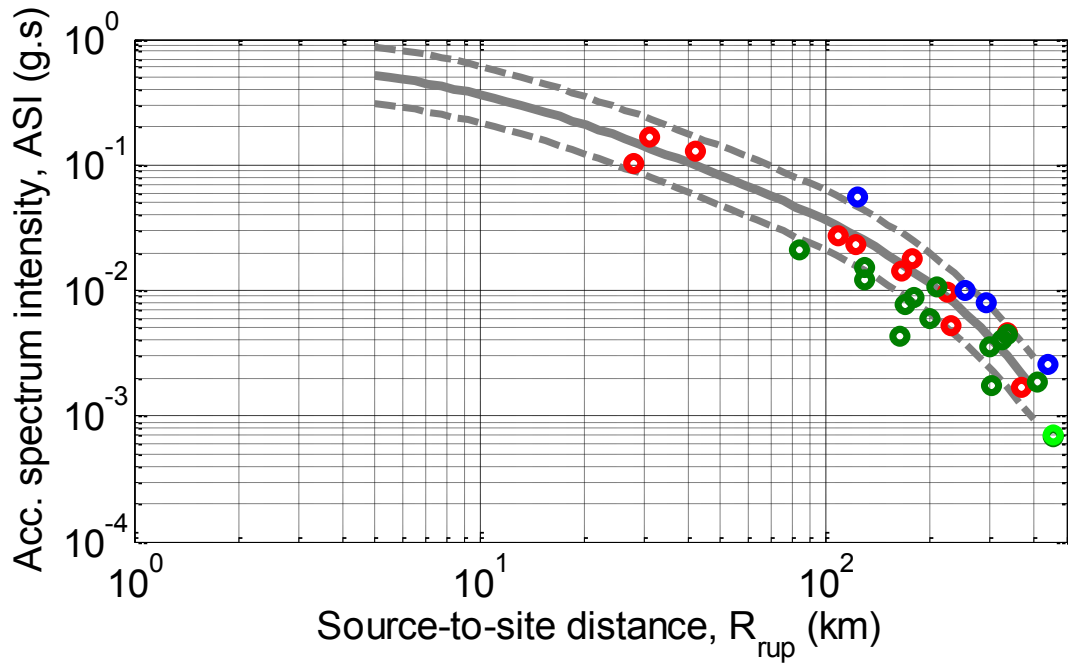
(Using a preliminary Mw of 7.1, depth 10km and reverse focal mechanism)  
(predictions shown for site class C using the Bradley 2010 active shallow crustal model, based on the CY08 model with NZ-specific modifications.)

Summary: For all of the preliminary amplitude-based strong motion intensity measures the empirical prediction is very similar to the observed values. The CUSP array will be processed to enable significantly more recording in the near-source region. The different coloured observations – light green, green, red, blue, maroon are for site classes A, B, C, D, and E, respectively.









## Tabulated values of the intensity measures at all of the recorded sites

Station	hypdist	SiteClas	s PGA_gm	PGV_gm	ASl_gm	Sl_gm	Sa_gm 0.1	0.2	0.5	1.0	3.0
ARPS	131	2	0.016246	2.302554	0.015129	10.1895	0.029426	0.04069	0.037645	0.033592	0.008289
ASHS	42	4	0.145093	8.021665	0.128523	35.30336	0.388238	0.29391	0.247132	0.10436	0.035361
BFZ	459	2	0.000655	0.244546	0.00068	0.486928	0.001078	0.00159	0.001407	0.000881	0.001161
DCZ	457	1	0.001129	0.364722	0.000698	0.983286	0.001218	0.001436	0.002448	0.002469	0.002666
DGNS	292	3	0.009702	1.292156	0.008001	4.815019	0.012759	0.019853	0.022542	0.014707	0.005196
DSZ	202	2	0.006355	1.142803	0.005905	4.694764	0.008636	0.012182	0.018454	0.013188	0.005312
EAZ	299	2	0.004095	0.525578	0.003541	2.163718	0.006949	0.009804	0.007971	0.006273	0.00233
FGPS	179	4	0.022599	3.926986	0.017952	17.80011	0.02566	0.04959	0.052457	0.045009	0.017588
FJDS	166	4	0.018189	3.33535	0.014372	16.37492	0.020103	0.027111	0.044418	0.043614	0.012518
HSES	123	4	0.036232	4.826364	0.023414	18.91149	0.038067	0.048356	0.08676	0.071846	0.017917
ICCS	442	3	0.00558	1.879375	0.002564	6.201767	0.005618	0.005723	0.009472	0.012217	0.015923
IFPS	109	4	0.0339	4.516292	0.027106	17.14153	0.040337	0.055361	0.101618	0.076343	0.010616
KHZ	164	2	0.004987	1.10687	0.00429	3.656014	0.010226	0.01387	0.009055	0.009131	0.005648
KIKS	171	2	0.010642	2.574948	0.007842	9.148141	0.012273	0.014604	0.026575	0.027233	0.014539
LHUS	337	4	0.004765	0.624939	0.004658	3.169398	0.00653	0.012483	0.015066	0.00758	0.002529
LPLS	227	4	0.016839	2.236668	0.009778	8.767888	0.022475	0.019566	0.03695	0.037349	0.006812
LTZ	84	2	0.026365	3.960988	0.020753	11.87961	0.035449	0.055004	0.053302	0.048093	0.008892
MAVS	371	4	0.001728	0.530183	0.001691	1.643061	0.00235	0.00482	0.003649	0.003816	0.004273
MECS	253	3	0.018014	4.25035	0.010062	18.95801	0.018395	0.024164	0.031184	0.051382	0.017033
MOLS	182	2	0.01069	0.822367	0.00876	3.109644	0.025931	0.029643	0.012671	0.009991	0.006129
ODZ	210	2	0.012147	1.125584	0.010588	4.46849	0.024442	0.028138	0.022685	0.011641	0.002893
OXZ	28	4	0.136141	10.21231	0.103357	42.52521	0.248909	0.268666	0.235674	0.188568	0.032546
PPHS	31	4	0.193737	39.1288	0.167188	141.1591	0.234906	0.405918	0.421611	0.346125	0.214552
PXZ	547	2	0.000906	0.382955	0.000838	0.948603	0.000963	0.002106	0.002531	0.001643	0.002639
QRZ	302	2	0.001772	0.401909	0.001741	1.296369	0.002929	0.004577	0.00416	0.004119	0.002124
SYZ	413	2	0.002932	0.659688	0.001839	2.479517	0.003299	0.003466	0.00737	0.008775	0.002777
TRCS	124	3	0.069496	7.084743	0.055117	33.7472	0.209503	0.129599	0.103786	0.084616	0.023342
TUZ	338	2	0.00491	0.656271	0.004393	2.696614	0.006532	0.012039	0.013287	0.009886	0.002194
WEL	326	2	0.003984	0.406455	0.004026	1.44228	0.007166	0.014019	0.006215	0.003171	0.001926
WVFS	232	4	0.007209	1.237384	0.00516	6.093578	0.008623	0.010866	0.015727	0.015561	0.005772
WVZ	131	2	0.01413	2.465802	0.012123	9.640047	0.015733	0.021668	0.036318	0.03671	0.010026