Frank Kitts Parking Structure (FKPS)

Before utilizing the Vs profiles or the experimental dispersion data presented herein, it is strongly recommended that the user read and understand the document titled "Analysis Methodology", particularly the section titled "Limitation of Inversion Derived Vs Profiles", for a short discussion of the relevant limitations of the data presented.

Reference Location Frank Kitts Parking Structure (FKPS)

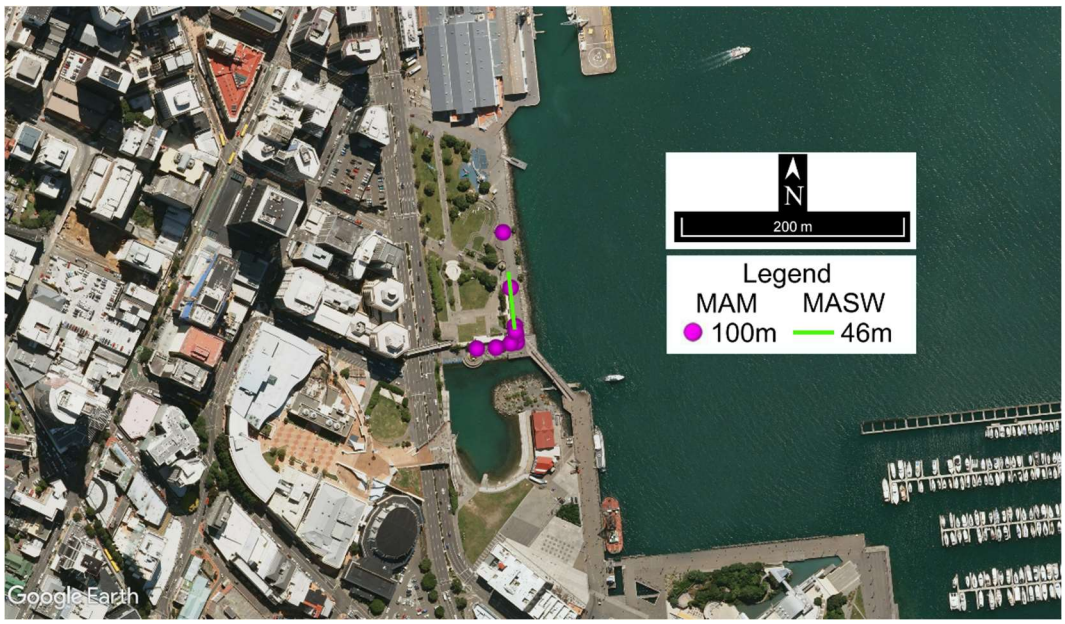

Figure 1: Site plan indicating locations of individual three-component, 20-s seismometers composing the 2D array for Microtremor Array Measurements (MAM) and the linear array of 24, 4.5-Hz geophones used for Multichannel Analysis of Surface Waves (MASW) testing. MAM and MASW arrays are denoted in the legend by their largest extent/aperture.

Table 1: Latitude and longitude coordinates for MAM seismometer locations.

Station Identifier	Latitude (°)	Longitude (°)
FKPS_L11	-41.287789	174.779374
FKPS_L12	-41.286995	174.779217
FKPS_L14	-41.287438	174.779311
FKPS_L15	-41.287745	174.779368
FKPS_L16	-41.287821	174.779386
FKPS_L17	-41.287873	174.779392
FKPS_L18	-41.287884	174.779327
FKPS_L19	-41.287920	174.779171
FKPS_L20	-41.287933	174.778966

Note: A .kmz with the location of each MAM seismometer is provided.

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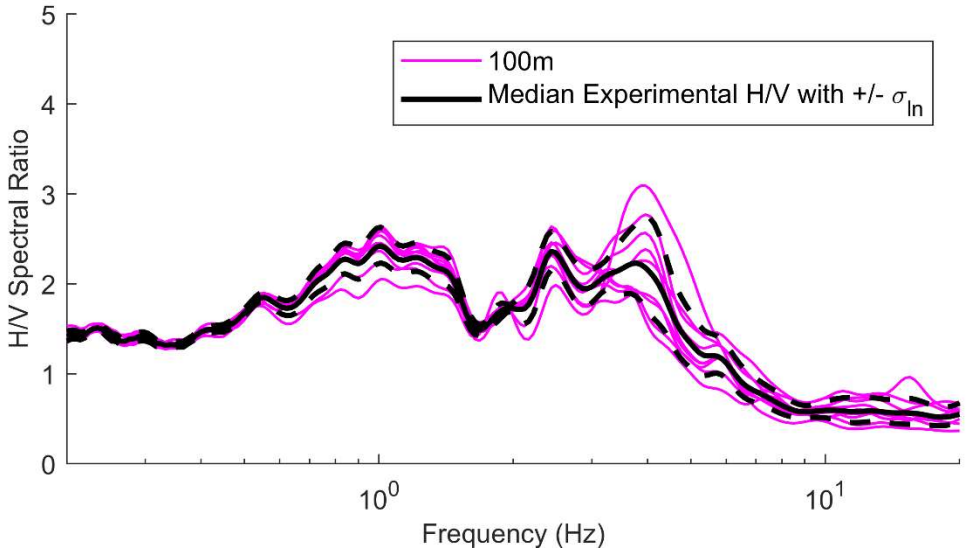

Figure 2: Horizontal-to-Vertical (H/V) Spectral Ratio curves derived from all single station seismometer recordings from the MAM array. The lognormal median experimental H/V curve with +/- one standard deviation curves determined from all single station measurements are shown. Due to the unclear nature of the H/V curve at this location, a reliable estimate of the fundamental frequency for the site ($f_{0\_H/V}$) could not be obtained. Thus, we decided to report only inversion results which did not use the low-quality $f_{0\_H/V}$ peak as a target.

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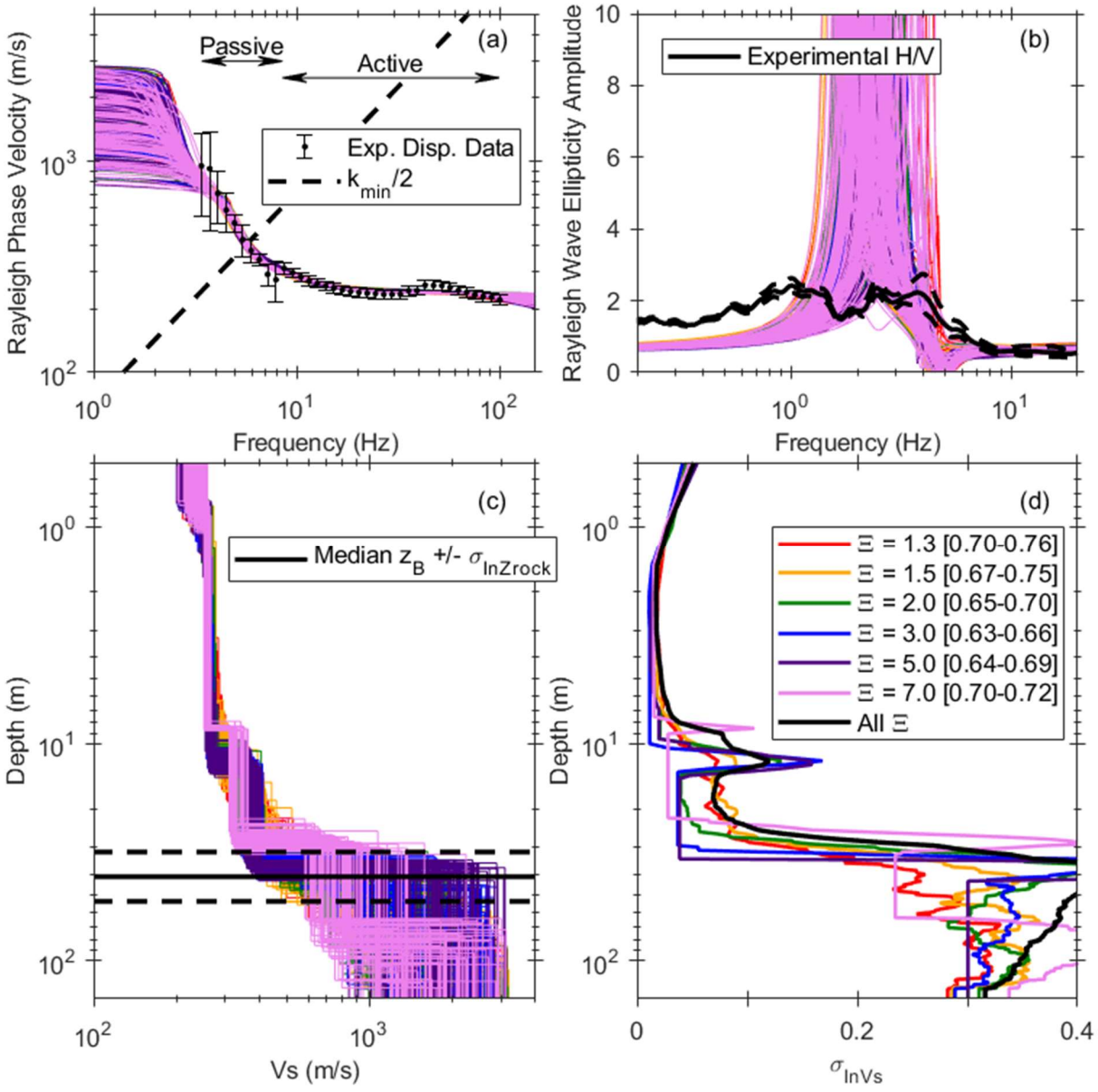

Figure 3: Inversion results. Shown for each layering ratio (Ξ) inversion parameterization are the 100 lowest misfit: (a) theoretical fundamental mode Rayleigh wave dispersion curves with the experimental dispersion data; (b) theoretical Rayleigh wave ellipticity with the lognormal median and +/- one standard deviation experimental H/V data; (c) shear wave velocity (Vs) profiles with the lognormal median depth to soft (Vs>760m/s) rock; and (d) standard deviation of the natural logarithm of Vs (σ_{lnVs}). The range of misfit values associated with the 100 lowest misfit velocity profiles for each Ξ inversion parameterization are shown in brackets in the figure's legend. Note the 1000 lowest misfit and statistical median Vs profiles for each Ξ inversion parameterization and reference location are provided in text format in the sub-directory Vs Profiles.

Table 2: Resolution depth (d_{res}) and maximum depth (d_{max}) for the Vs profiles as determined by the array geometry and experimental dispersion data. See document Analysis Methodology for details.

Resolution Depth (d_{res})	Maximum Depth (d_{max})
36m	150m

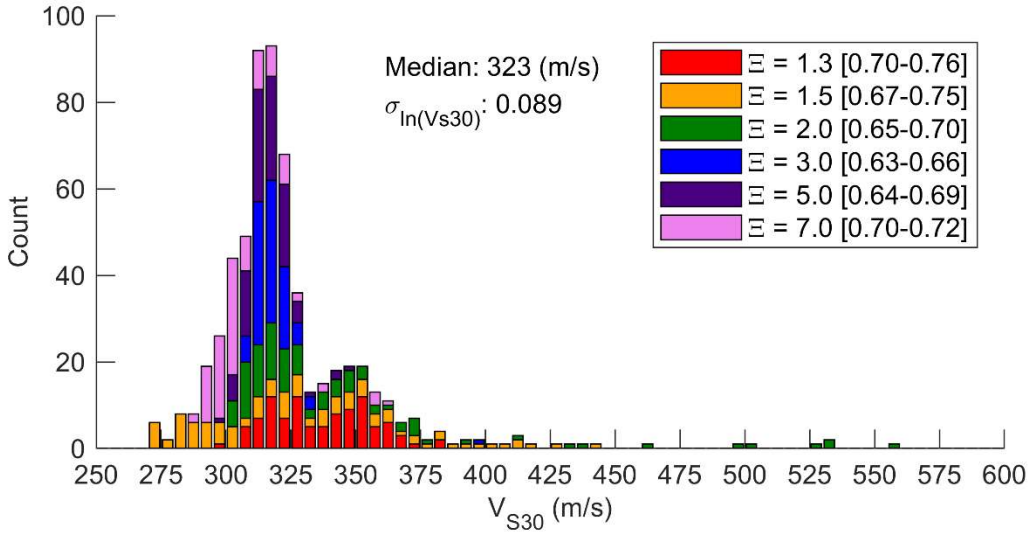

Figure 4: Distribution of the time averaged shear wave velocity in the upper thirty meters (Vs30) for the 100 lowest misfit velocity profiles from each layering ratio (Ξ) inversion parameterization. The lognormal median Vs30 value and corresponding standard deviation of the natural logarithm of Vs30 (σ_{lnVs30}) are provided in the figure.

Table 3: Experimental dispersion data in the form of the mean and standard deviation Rayleigh phase velocity discretized in terms of frequency. The approximate intersection of the theoretical array resolution limit ($k_{min}/2$) for the largest MAM array and the fundamental mode Rayleigh experimental dispersion data has been indicated with a dashed line. Dispersion data with frequencies below the dashed line are less certain and should be used with caution. See document Analysis Methodology for more information.

Frequency (Hz)	Rayleigh Phase Velocity (m/s)	Velocity Standard Deviation (m/s)
100	220	11
91	227	11
83	229	11
75	234	12
69	239	12
63	245	12
57	253	13
52	258	13

47	258	13
43	259	16
39	244	12
36	244	12
32	235	12
29	234	12
27	234	12
24	236	12
22	237	12
20	239	12
18	242	12
17	246	12
15	251	13
14	257	13
13	264	13
12	272	14
10	283	14
9.5	297	15
8.7	311	20
7.9	275	60
7.2	292	33
6.6	342	20
6.0	378	46
5.4	426	71
4.9	510	47
4.5	588	124
4.1	705	199
3.7	924	454
3.4	953	403

Table 4: Lognormal median depth to the National Earthquake Hazards Reduction Program (NHERP) Site Class B ("soft rock" = 760 m/s) boundary determined from surface wave inversion Vs profiles.

	Lognormal Median (m)	Lognormal Standard Deviation (#)
BC Boundary	41	0.26