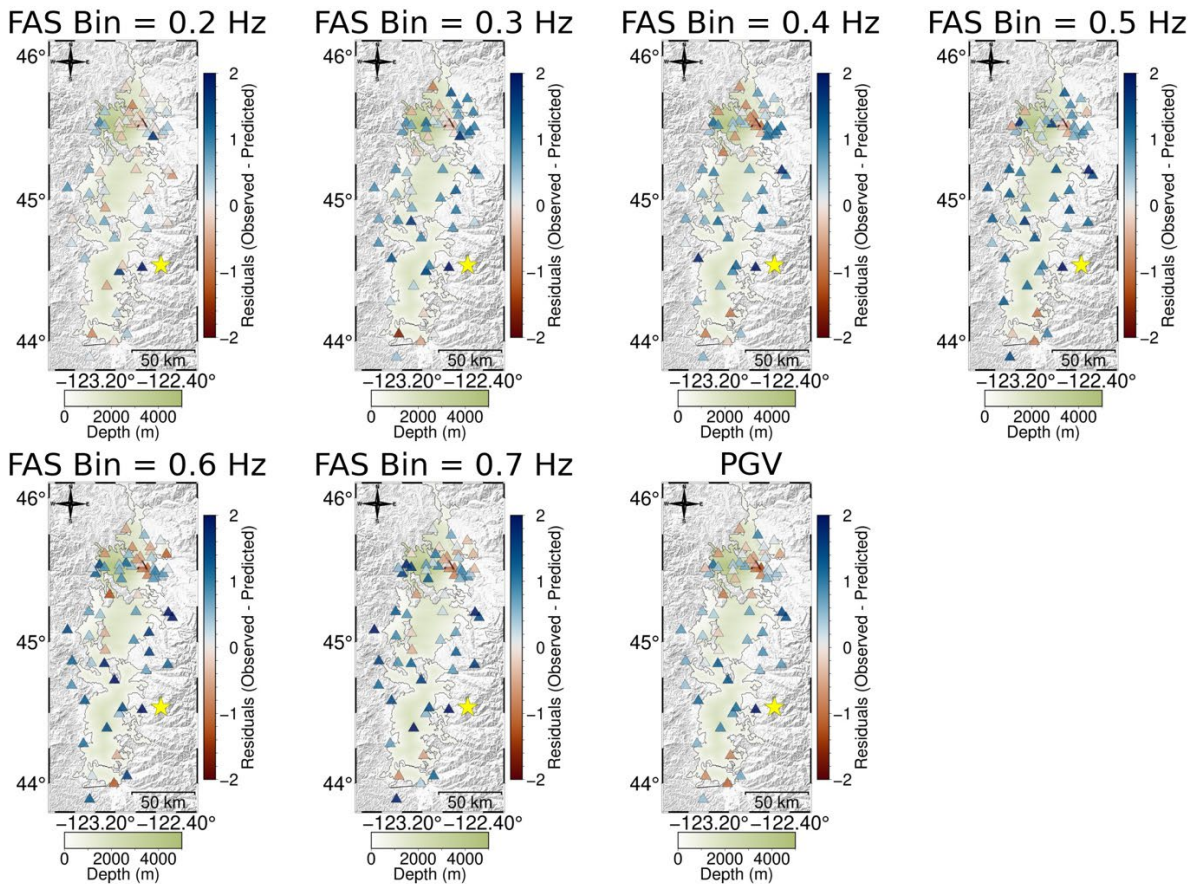


This document contains supplementary material for the manuscript: “*Effects of Willamette Valley Sedimentary Structure on Ground Motions*”

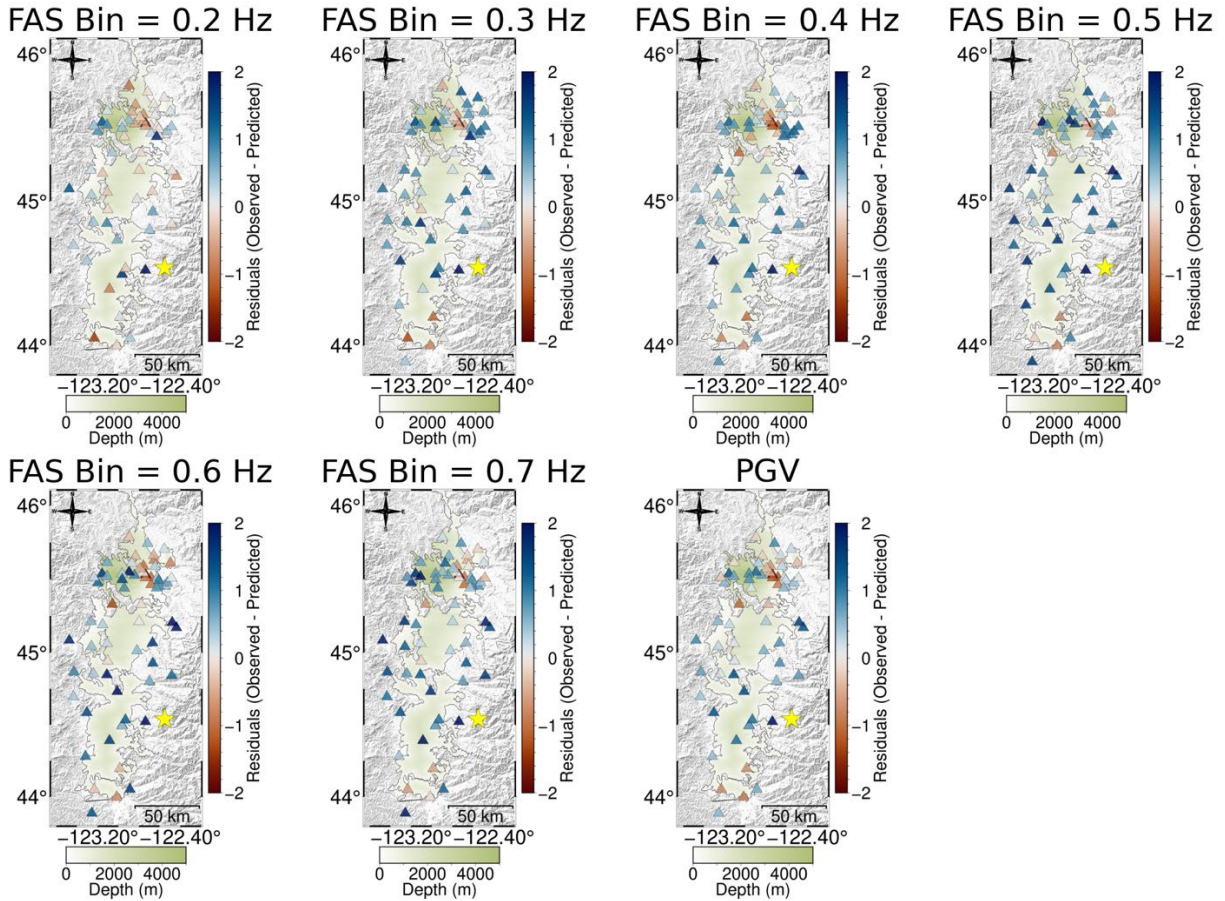
Intensity Measures (IM) Maps:

Salem EugSpe 1D



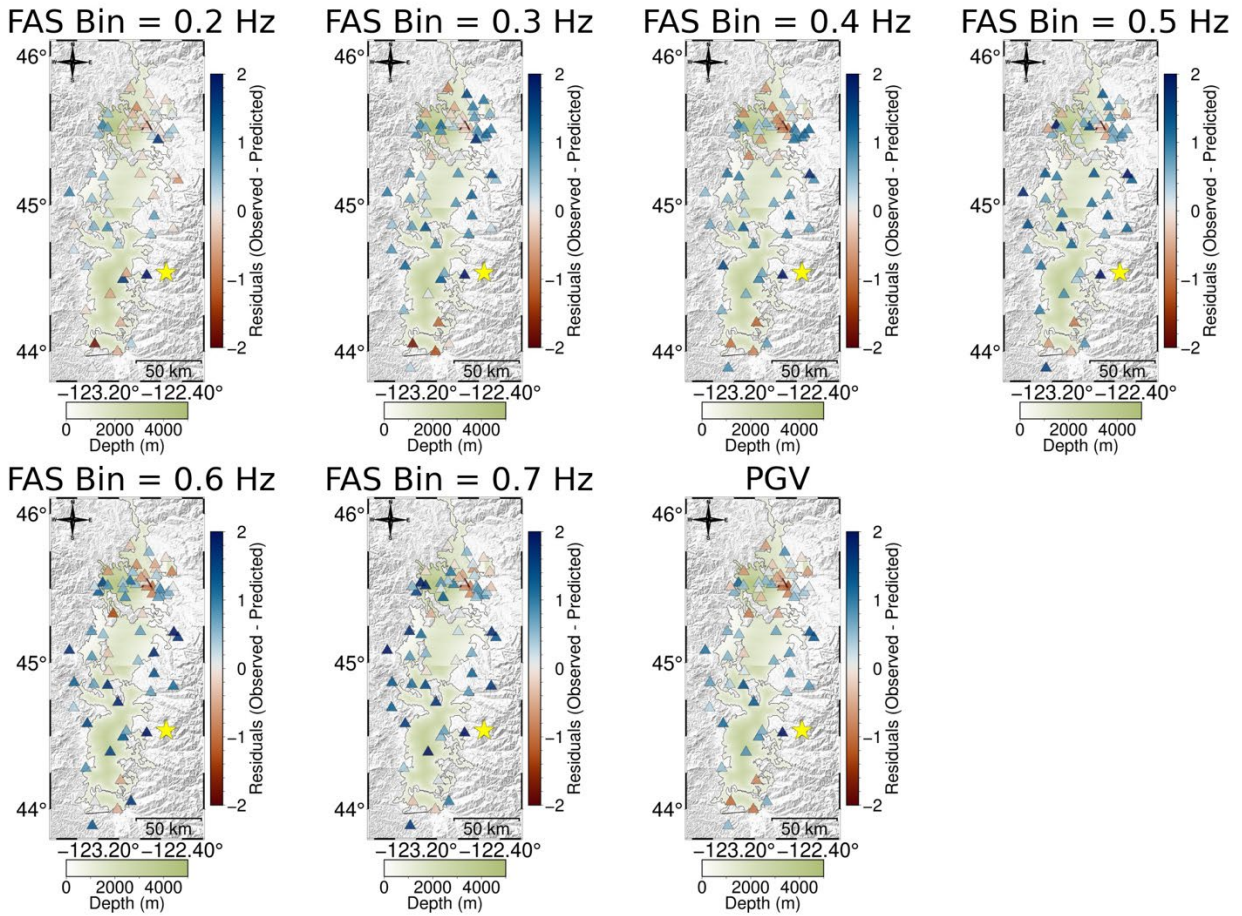
S1. Intensity Measures residuals maps from the 2022, M4.2 Salem earthquake. Stations are colored by residuals value. The maps are showing only Valley stations and are plotted on top of EugSpe 1D WV basin model, colored by depth to bottom of the basin.

Salem EugSpe SM



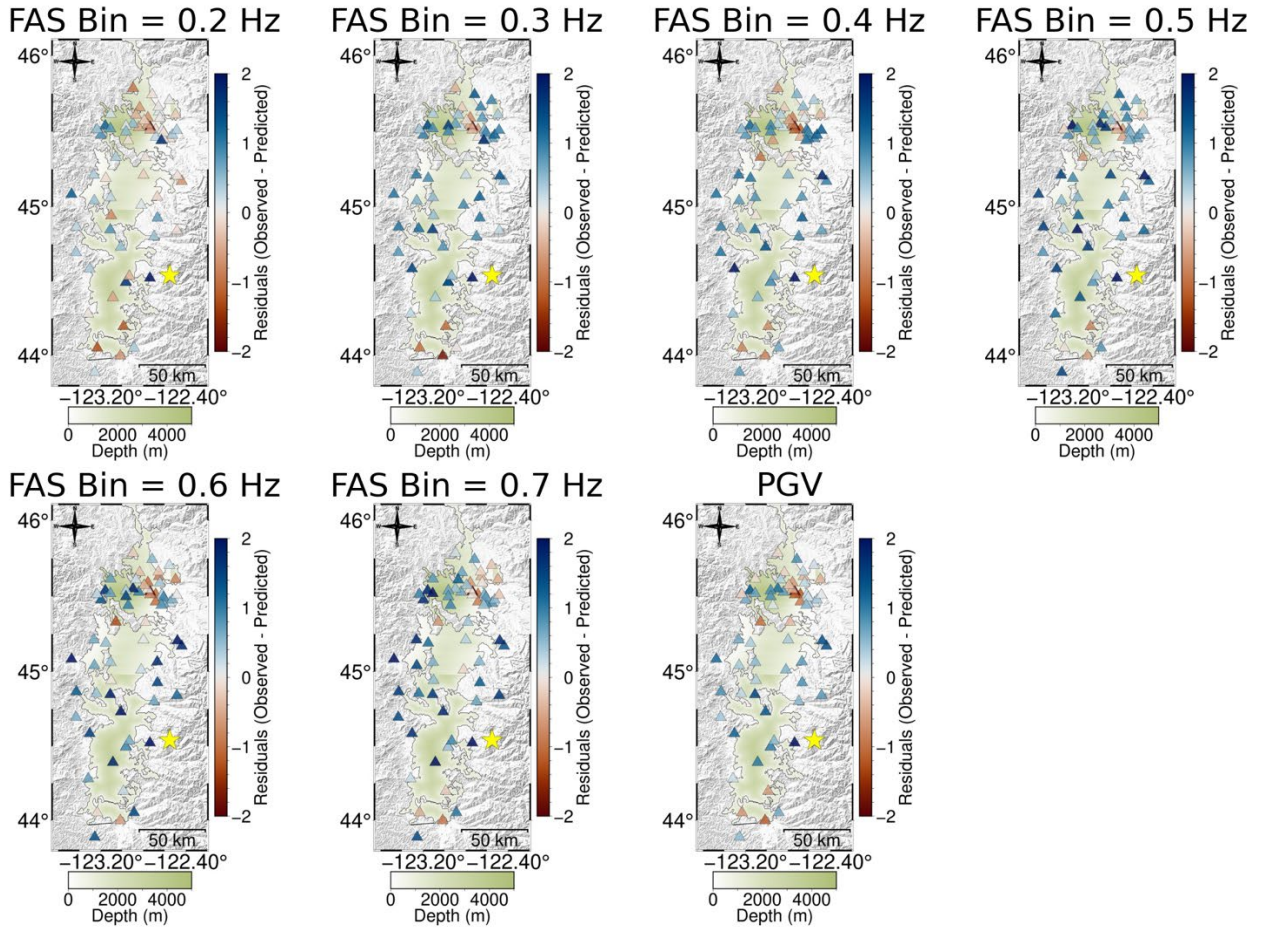
S2. Intensity Measures residuals maps from the 2022, **M4.2** Salem earthquake. Stations are colored by residuals value. The maps are showing only Valley stations and are plotted on top of EugSpe SM WV basin model, colored by depth to bottom of the basin.

Salem SRV 1D



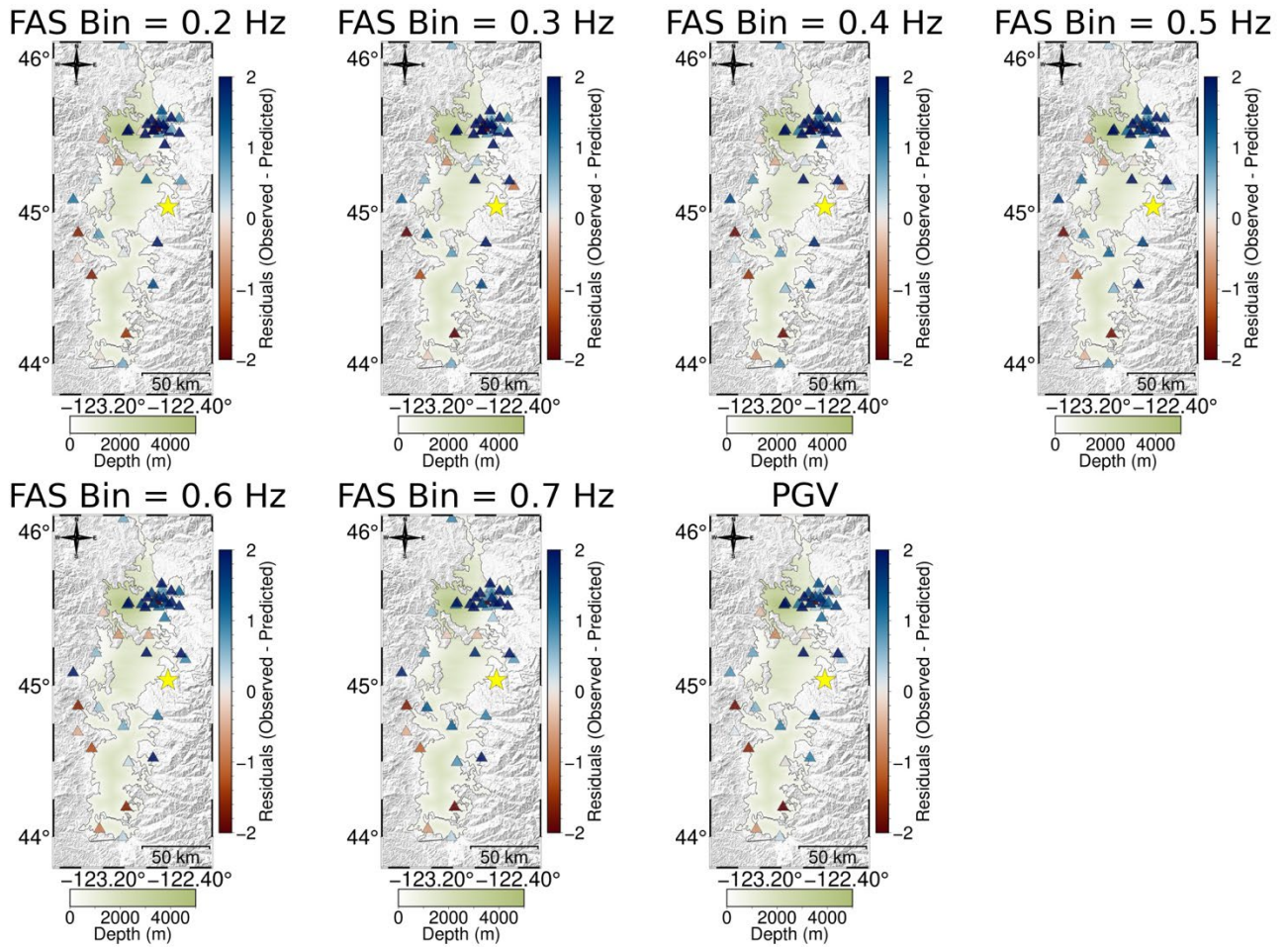
S3. Intensity Measures residuals maps from the 2022, **M**4.2 Salem earthquake. Stations are colored by residuals value. The maps are showing only Valley stations and are plotted on top of SRV 1D WV basin model, colored by depth to bottom of the basin.

Salem SRV SM



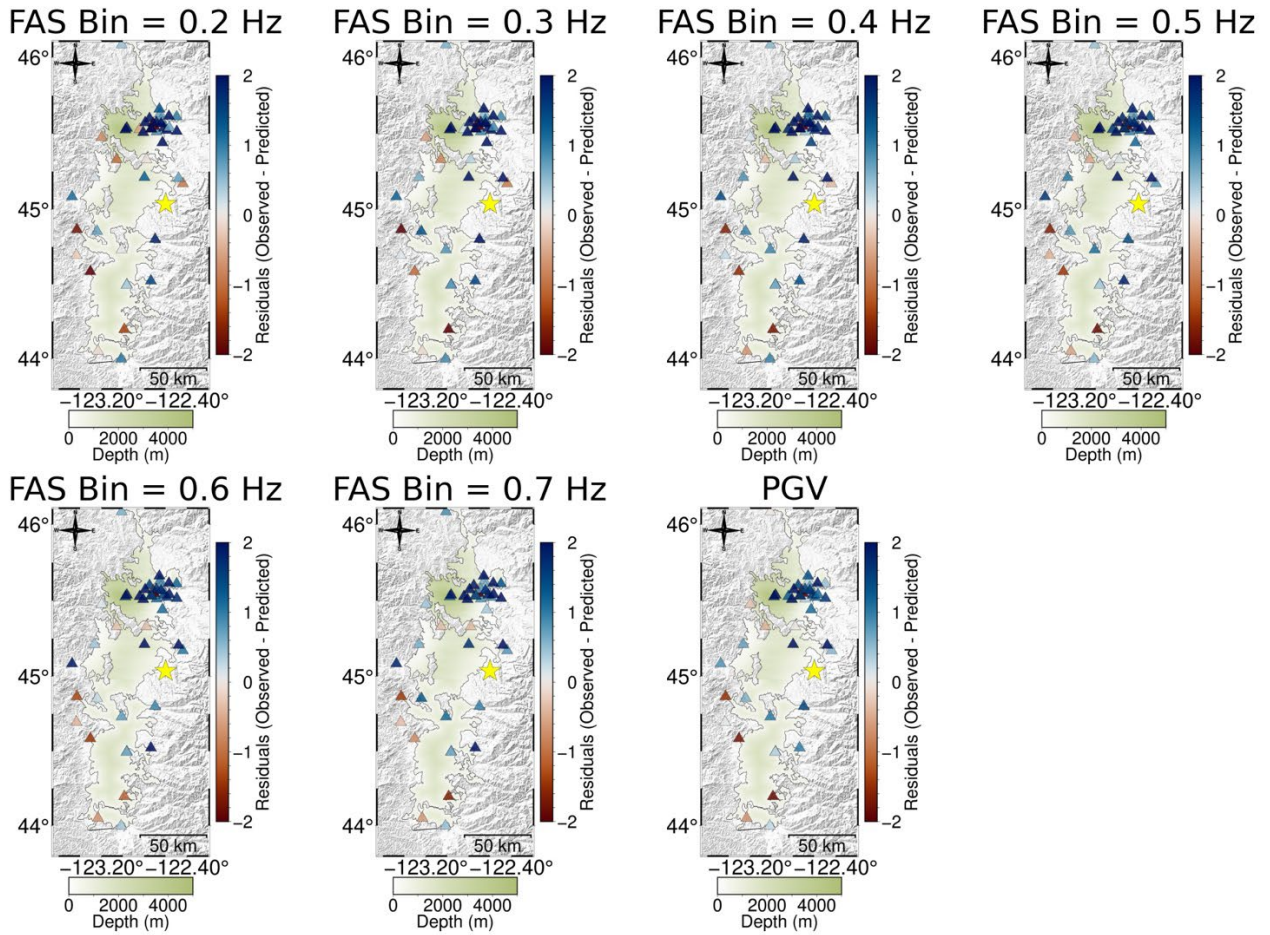
S4. Intensity Measures residuals maps from the 2022, **M4.2** Salem earthquake. Stations are colored by residuals value. The maps are showing only Valley stations and are plotted on top of SRV SM WV basin model, colored by depth to bottom of the basin.

Scotts Mills EugSpe 1D



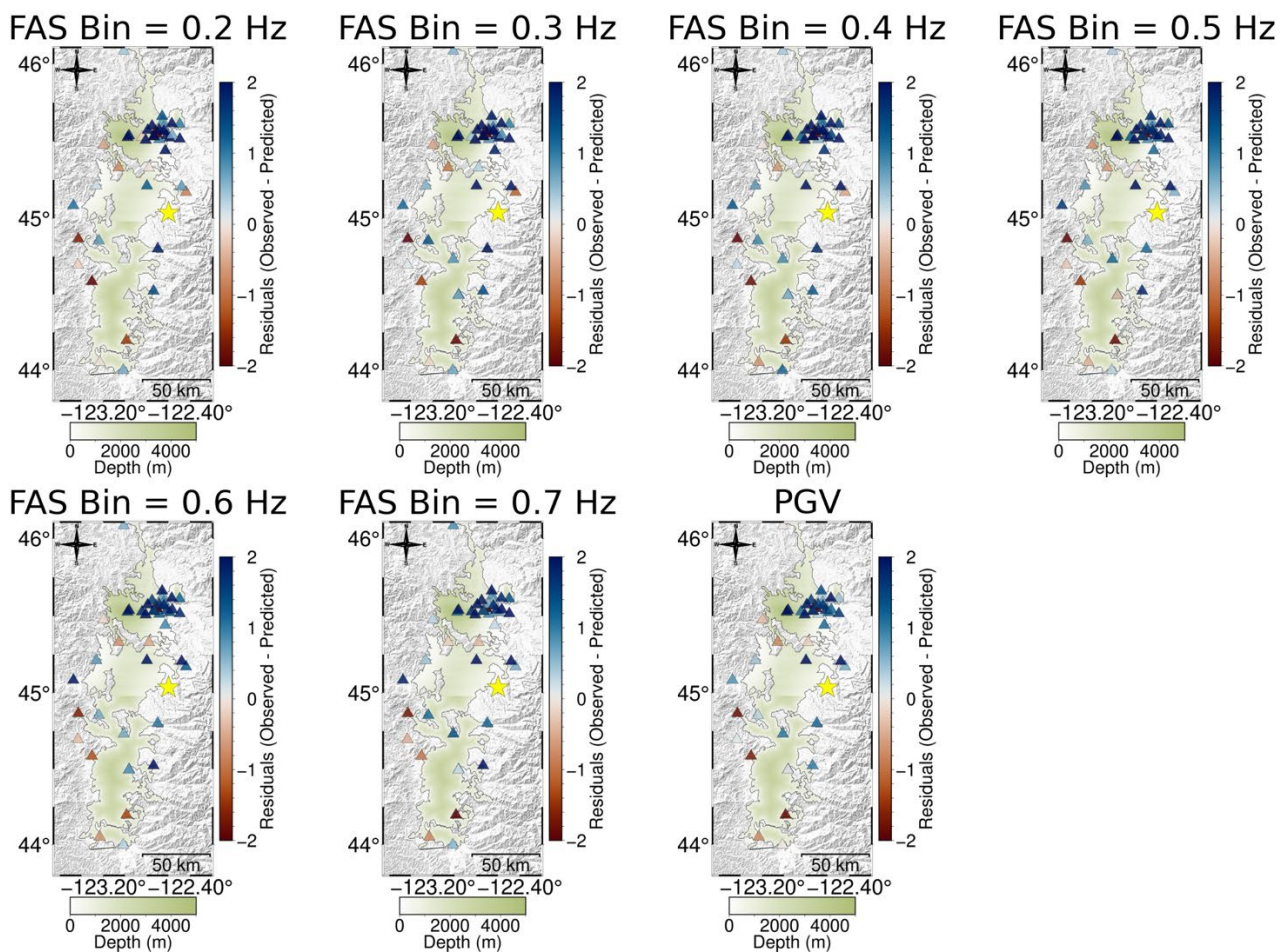
S5. Intensity Measures residuals maps from the 2017, **M3.96** Scotts Mills earthquake. Stations are colored by residuals value. The maps are showing only Valley stations and are plotted on top of EugSpe 1D WV basin model, colored by depth to bottom of the basin.

Scotts Mills EugSpe SM



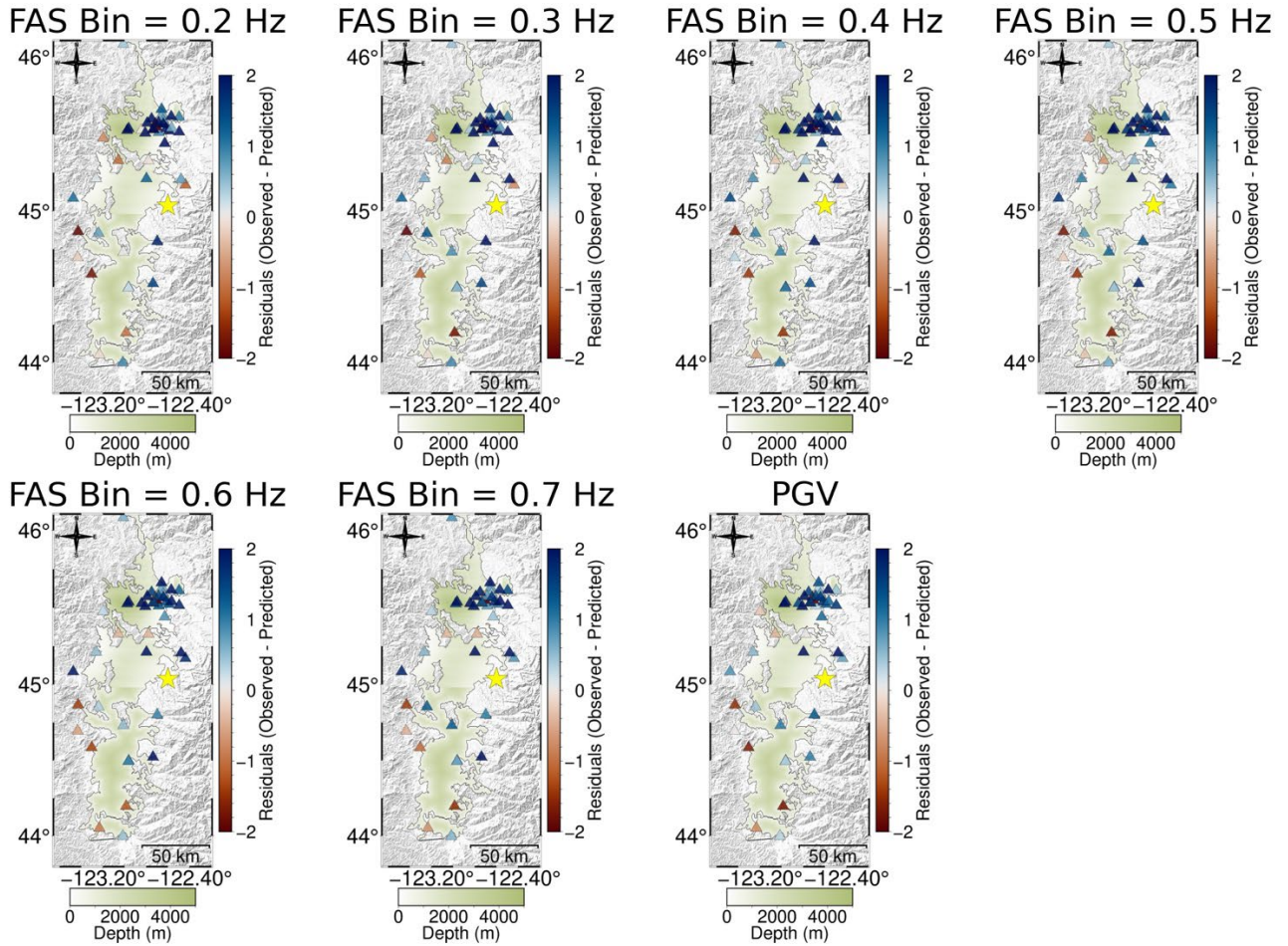
S6. Intensity Measures residuals maps from the 2017, **M3.96** Scotts Mills earthquake. Stations are colored by residuals value. The maps are showing only Valley stations and are plotted on top of EugSpe SM WV basin model, colored by depth to bottom of the basin.

Scotts Mills SRV 1D



S7. Intensity Measures residuals maps from the 2017, **M3.96** Scotts Mills earthquake. Stations are colored by residuals value. The maps are showing only Valley stations and are plotted on top of SRV 1D WV basin model, colored by depth to bottom of the basin.

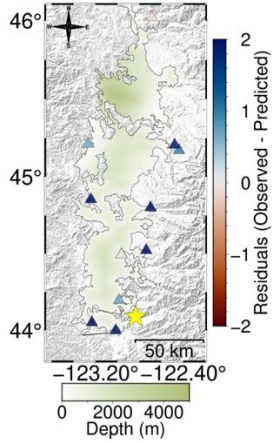
Scotts Mills SRV SM



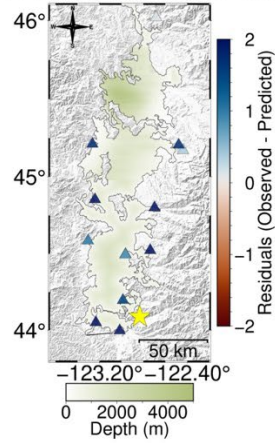
S8. Intensity Measures residuals maps from the 2017, **M3.96** Scotts Mills earthquake. Stations are colored by residuals value. The maps are showing only Valley stations and are plotted on top of SRV SM WV basin model, colored by depth to bottom of the basin.

Springfield EugSpe 1D

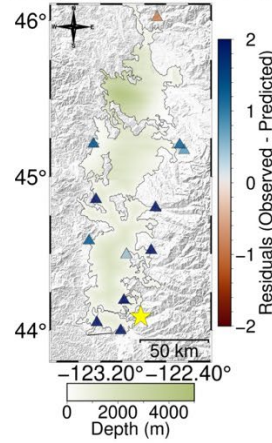
FAS Bin = 0.2 Hz



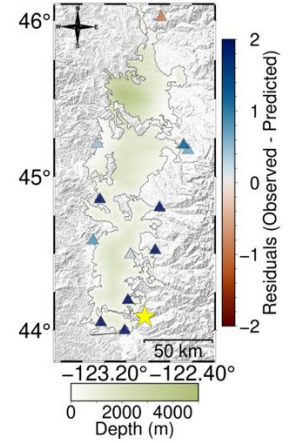
FAS Bin = 0.3 Hz



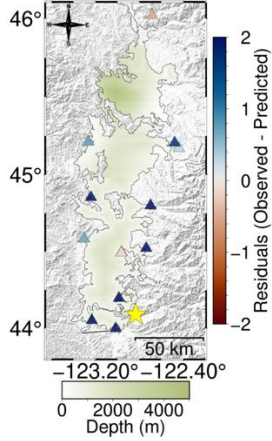
FAS Bin = 0.4 Hz



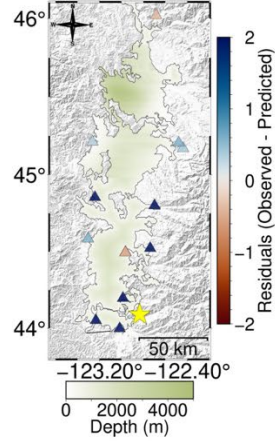
FAS Bin = 0.5 Hz



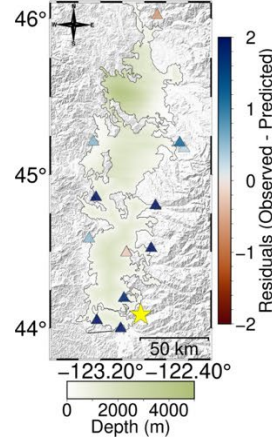
FAS Bin = 0.6 Hz



FAS Bin = 0.7 Hz

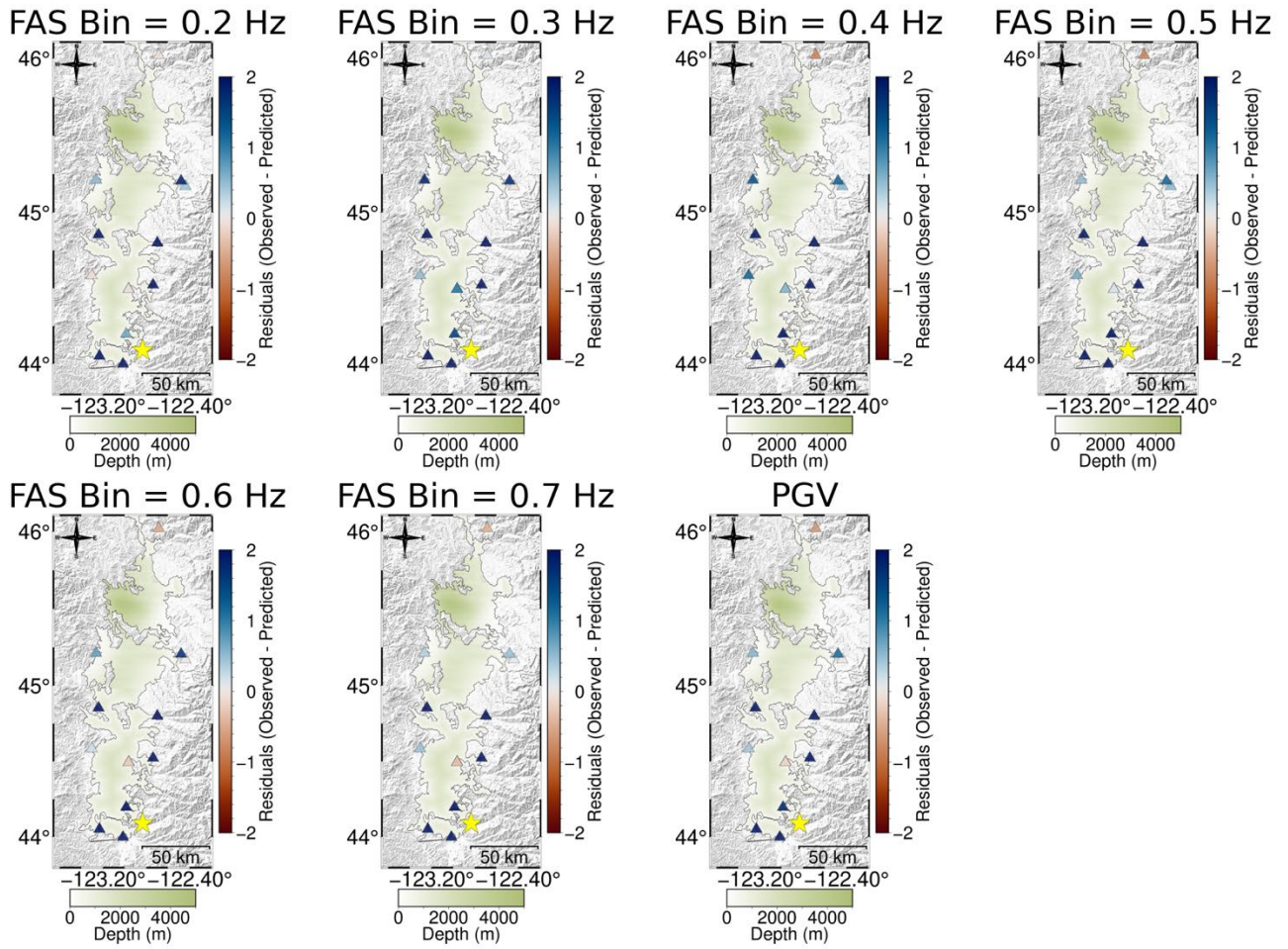


PGV



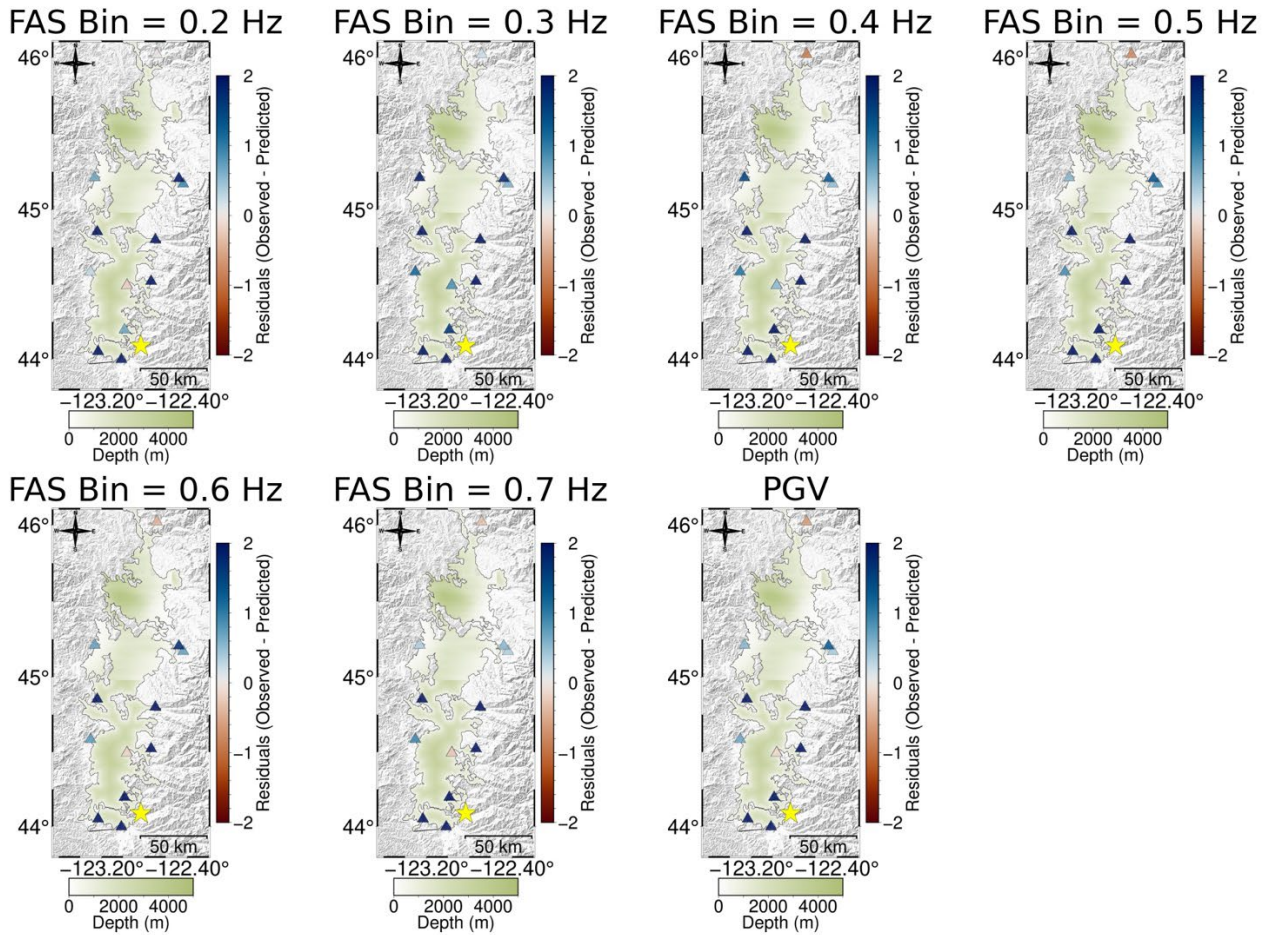
S9. Intensity Measures residuals maps from the 2015, **M4.1** Springfield earthquake. Stations are colored by residuals value. The maps are showing only Valley stations and are plotted on top of EugSpe 1D WV basin model, colored by depth to bottom of the basin.

Springfield EugSpe SM



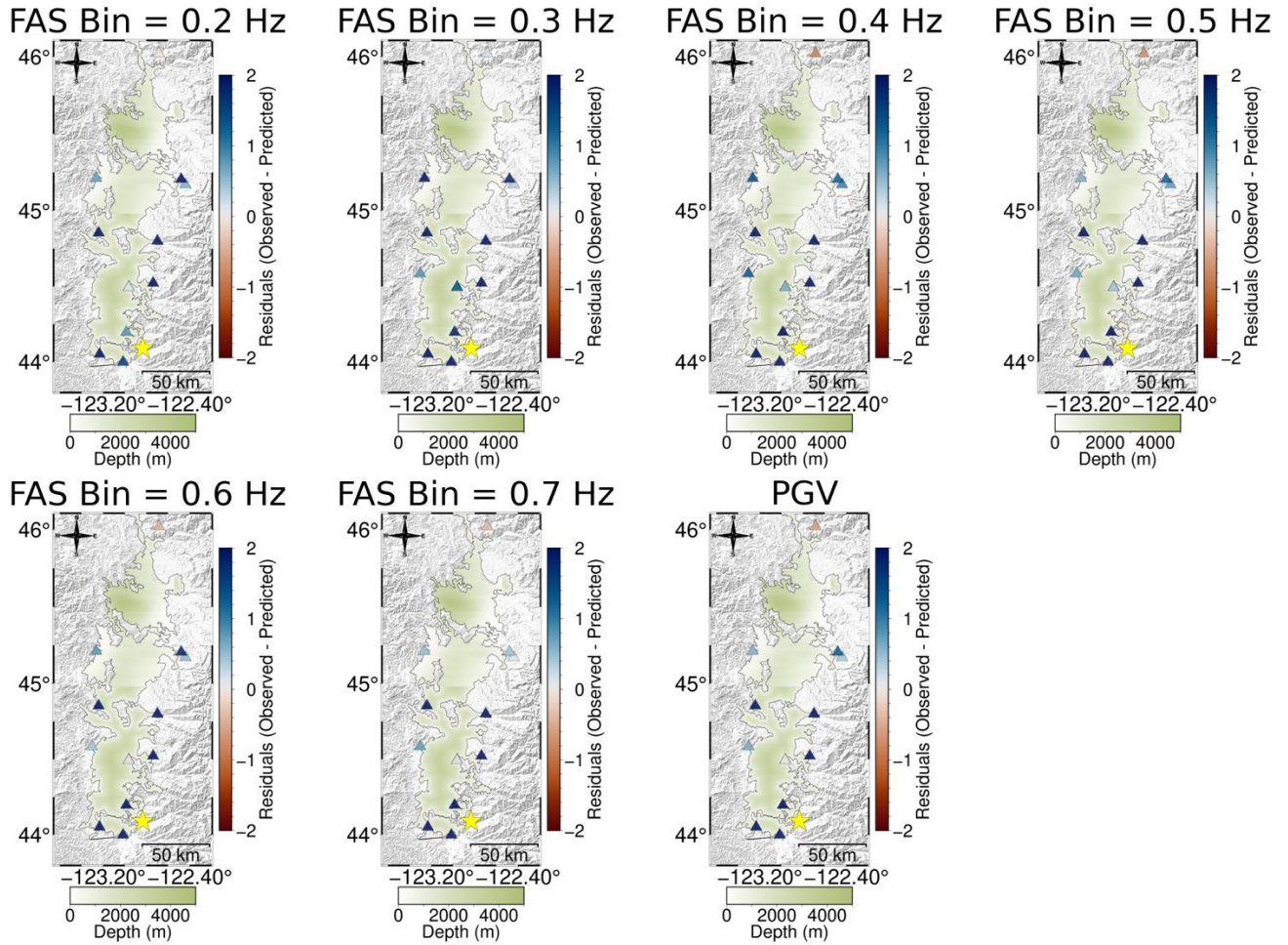
S10. Intensity Measures residuals maps from the 2015, **M4.1** Springfield earthquake. Stations are colored by residuals value. The maps are showing only Valley stations and are plotted on top of EugSpe SM WV basin model, colored by depth to bottom of the basin.

Springfield SRV 1D



S11. Intensity Measures residuals maps from the 2015, **M4.1** Springfield earthquake. Stations are colored by residuals value. The maps are showing only Valley stations and are plotted on top of SRV 1D WV basin model, colored by depth to bottom of the basin.

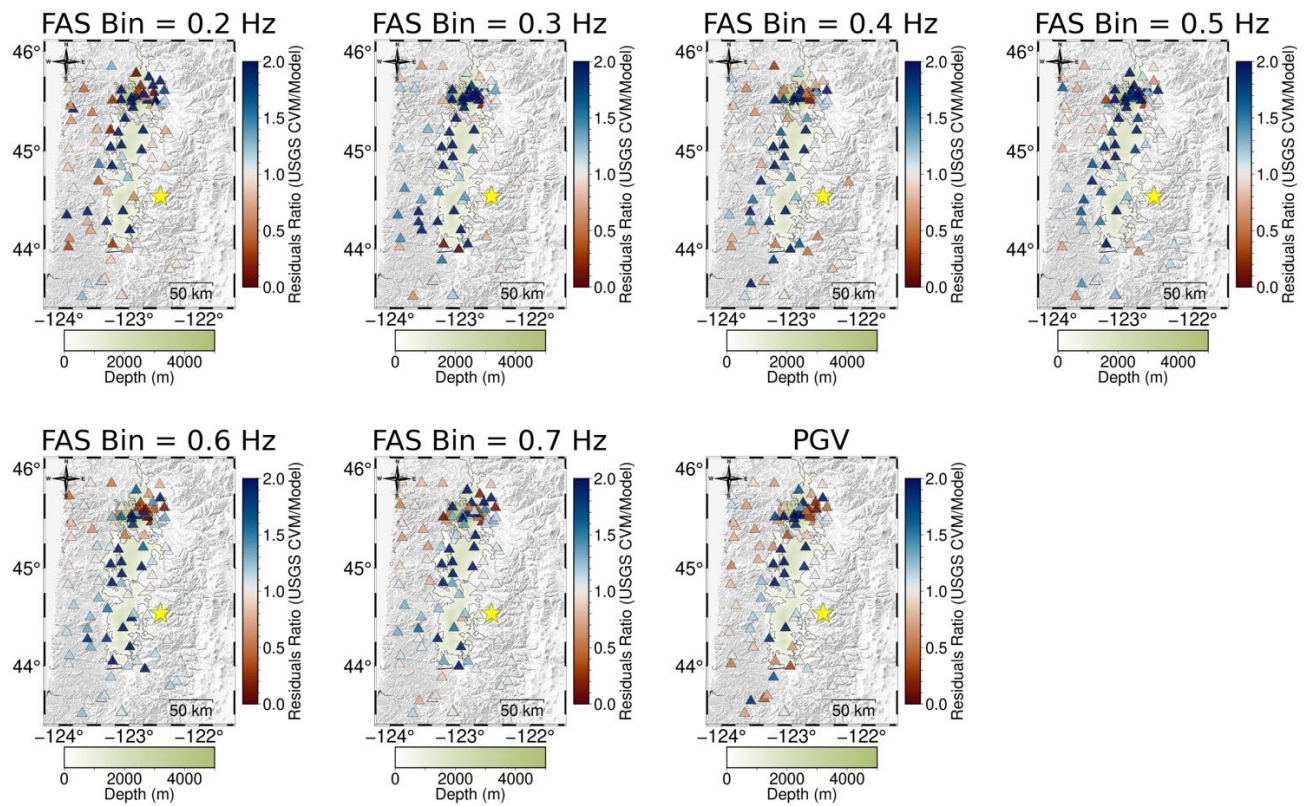
Springfield SRV SM



S12. Intensity Measures residuals maps from the 2015, M4.1 Springfield earthquake. Stations are colored by residuals value. The maps are showing only Valley stations and are plotted on top of SRV SM WV basin model, colored by depth to bottom of the basin.

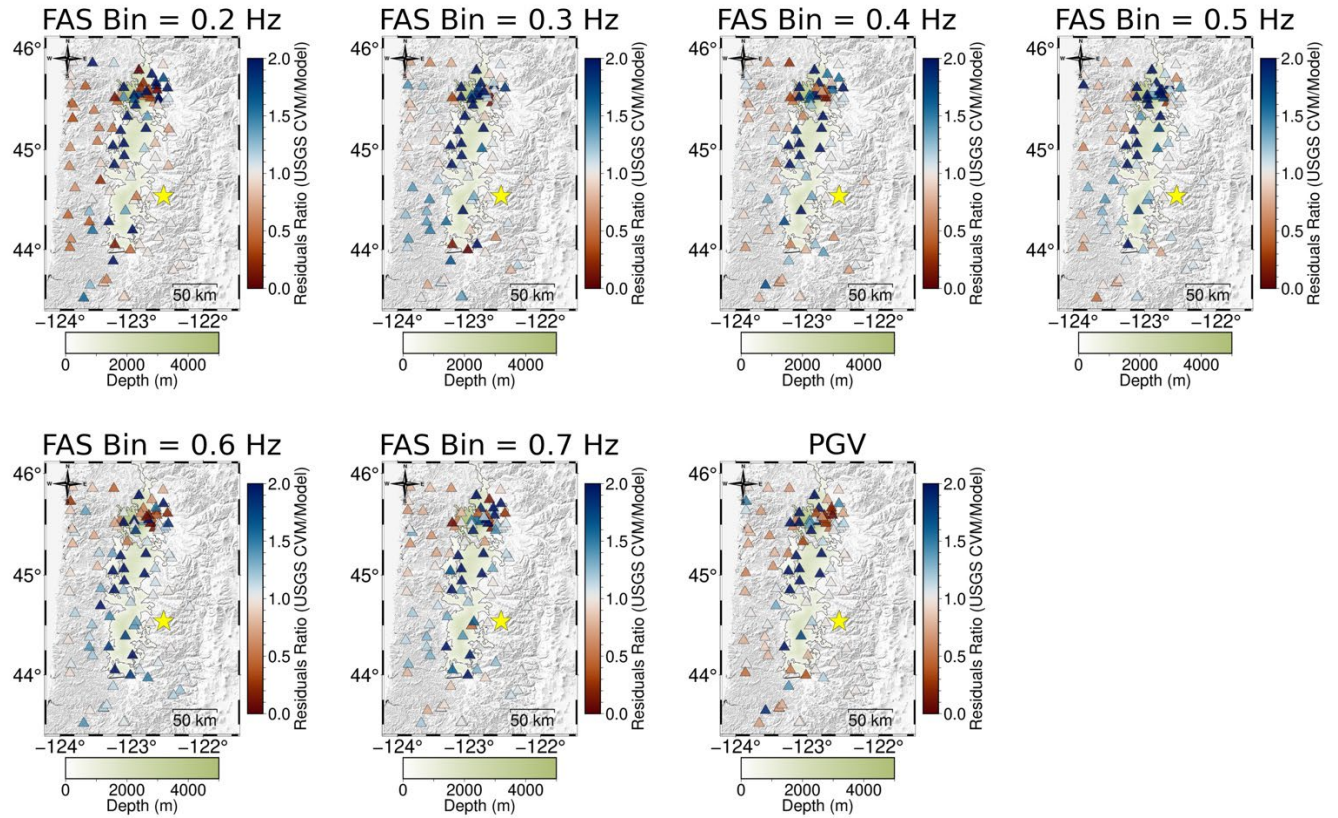
Intensity Measures (IM) Ratio Maps:

Salem EugSpe 1D



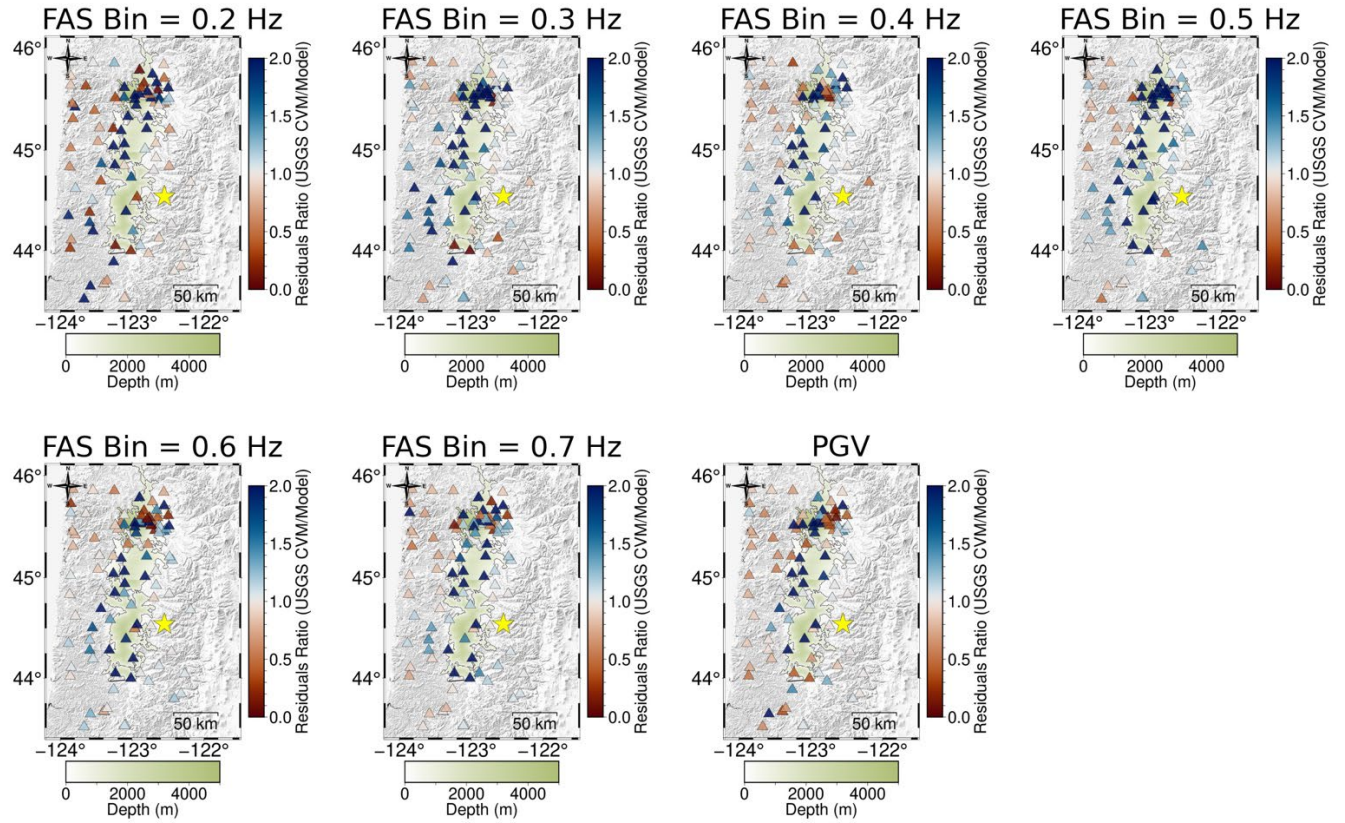
S13. Intensity Measures residuals ratio maps from the 2022, **M4.2** Salem earthquake. Stations are colored by ratio value. The maps are showing all stations (including mountain stations) and are plotted on top of EugSpe 1D WV basin model, colored by depth to bottom of the basin.

Salem EugSpe SM



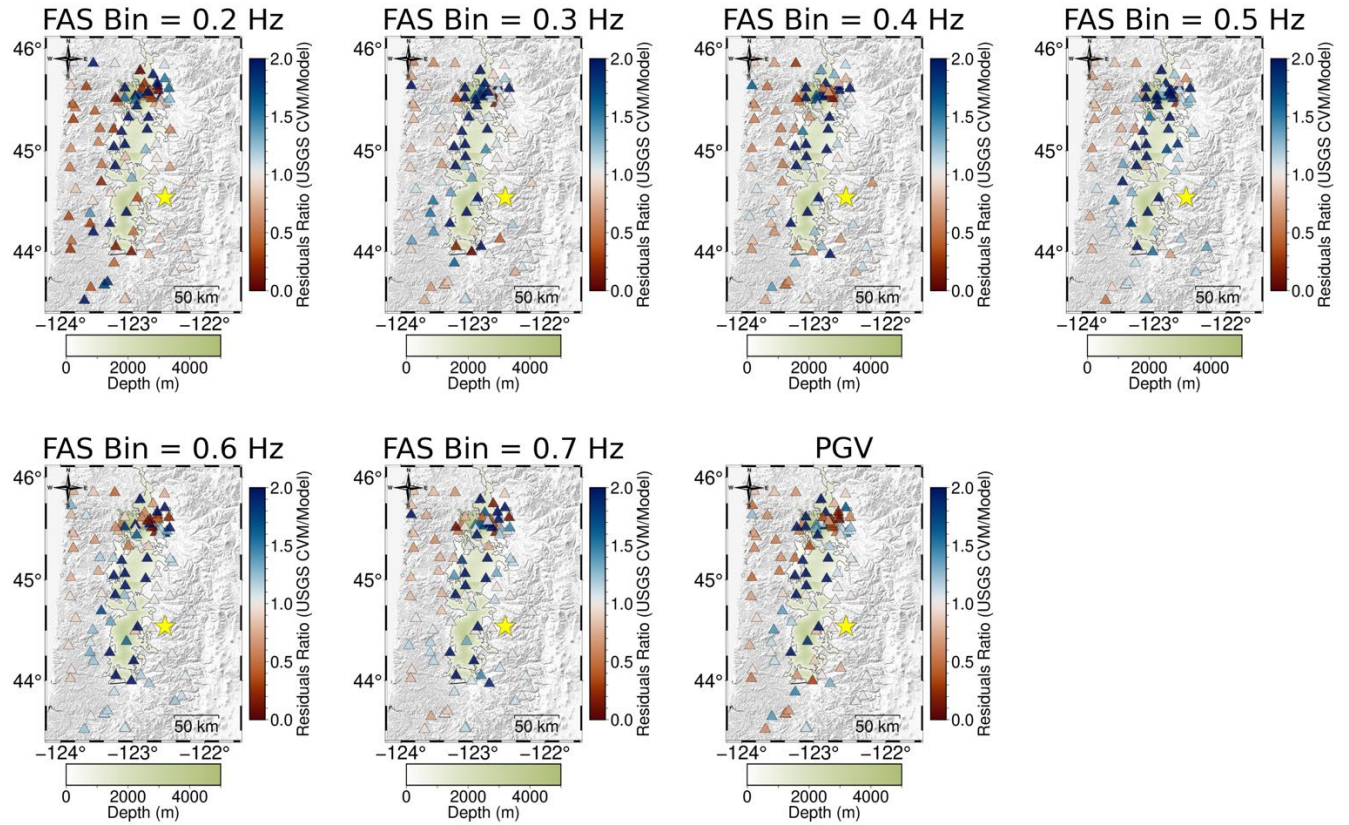
S14. Intensity Measures residuals ratio maps from the 2022, **M4.2 Salem** earthquake. Stations are colored by ratio value. The maps are showing all stations (including mountain stations) and are plotted on top of EugSpe SM WV basin model, colored by depth to bottom of the basin.

Salem SRV 1D



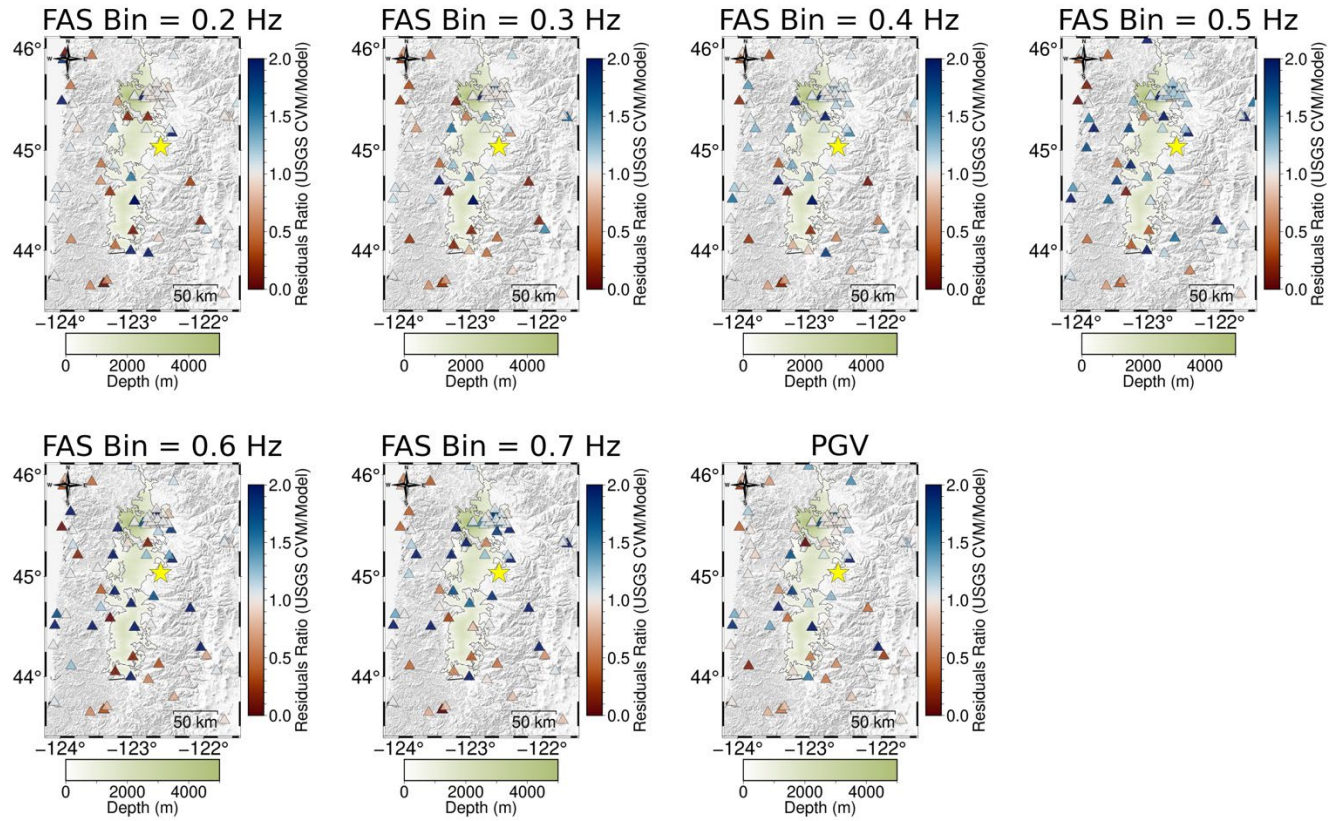
S15. Intensity Measures residuals ratio maps from the 2022, **M4.2** Salem earthquake. Stations are colored by ratio value. The maps are showing all stations (including mountain stations) and are plotted on top of SRV 1D WV basin model, colored by depth to bottom of the basin.

Salem SRV SM



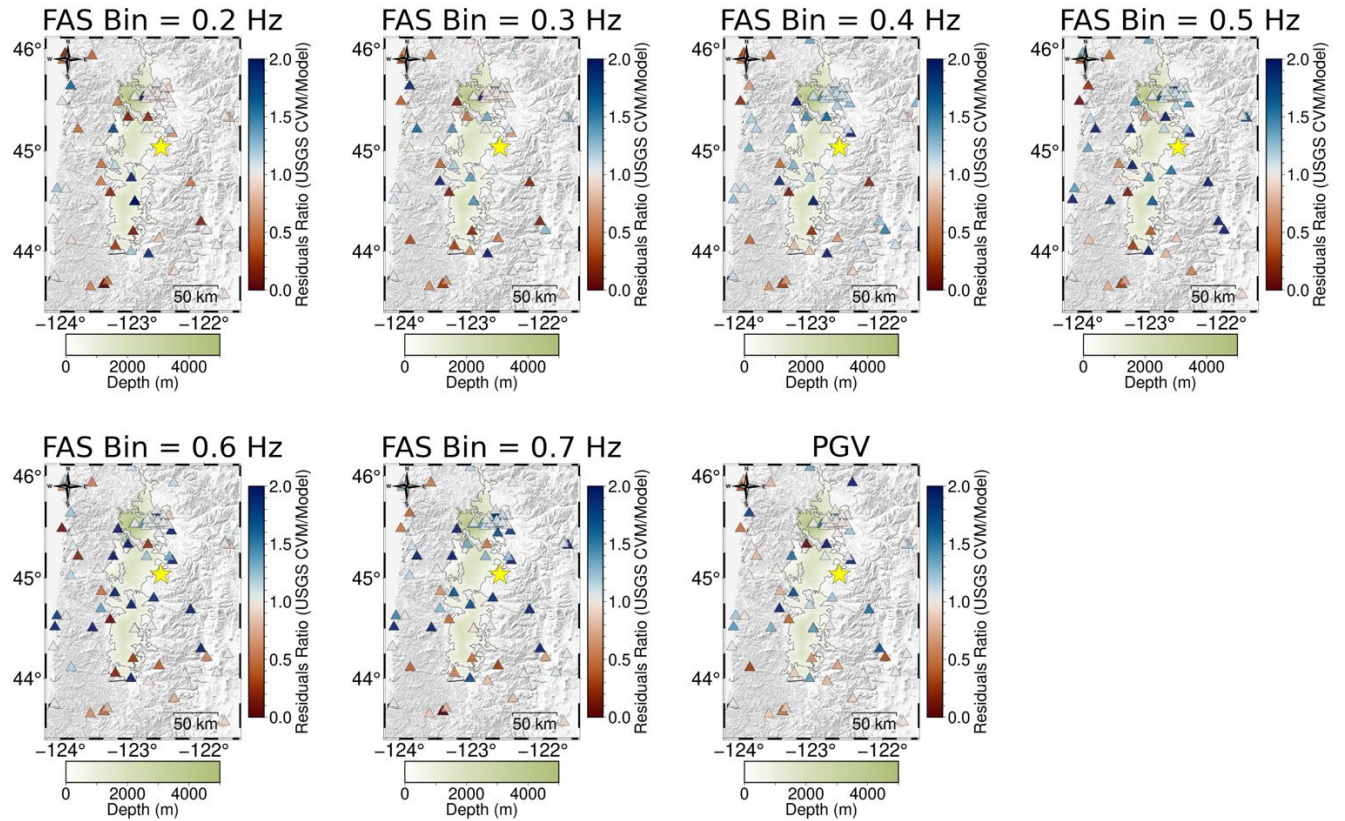
S16. Intensity Measures residuals ratio maps from the 2022, **M4.2** Salem earthquake. Stations are colored by ratio value. The maps are showing all stations (including mountain stations) and are plotted on top of SRV SM WV basin model, colored by depth to bottom of the basin.

Scotts Mills EugSpe 1D



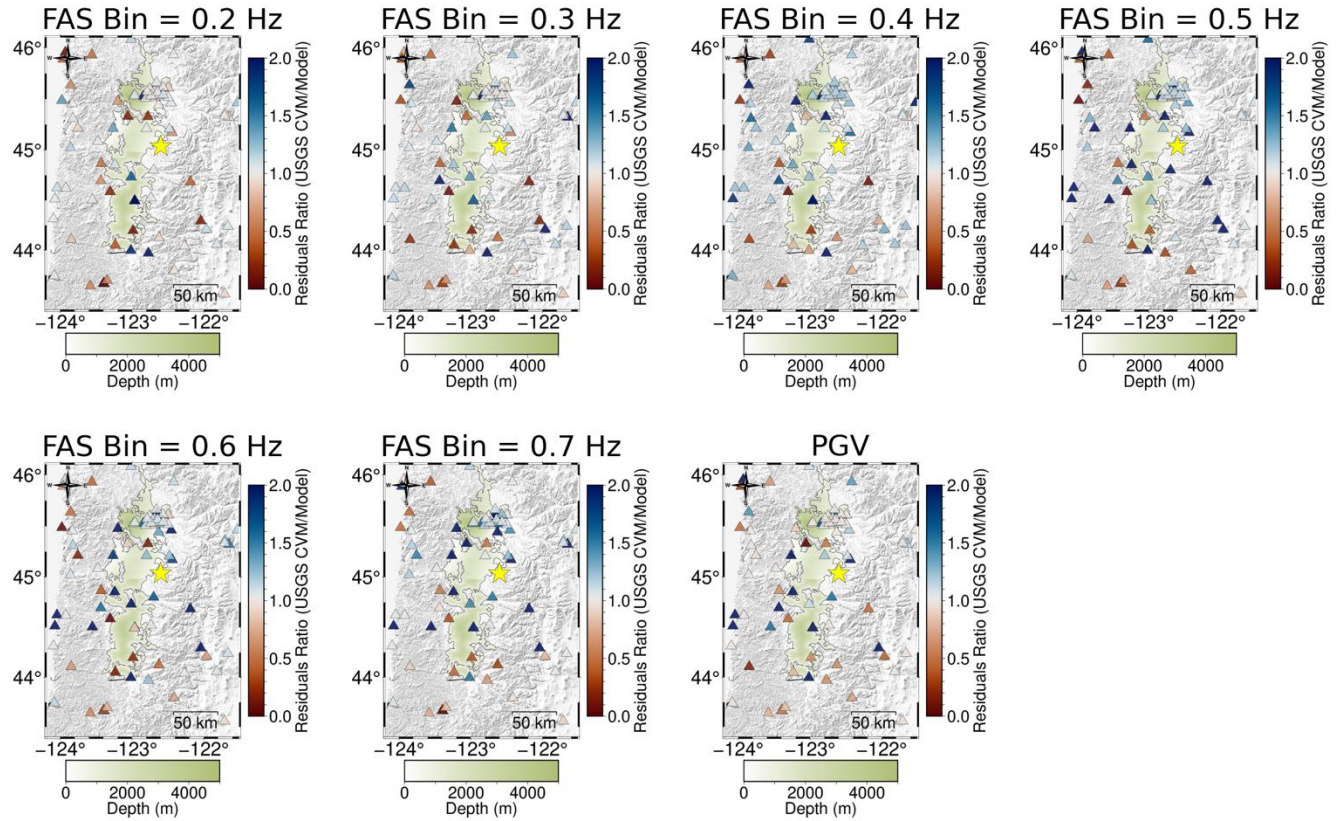
S17. Intensity Measures residuals ratio maps from the 2017, **M3.96** Scotts Mills earthquake. Stations are colored by ratio value. The maps are showing all stations (including mountain stations) and are plotted on top of EugSpe 1D WV basin model, colored by depth to bottom of the basin.

Scotts Mills EugSpe SM



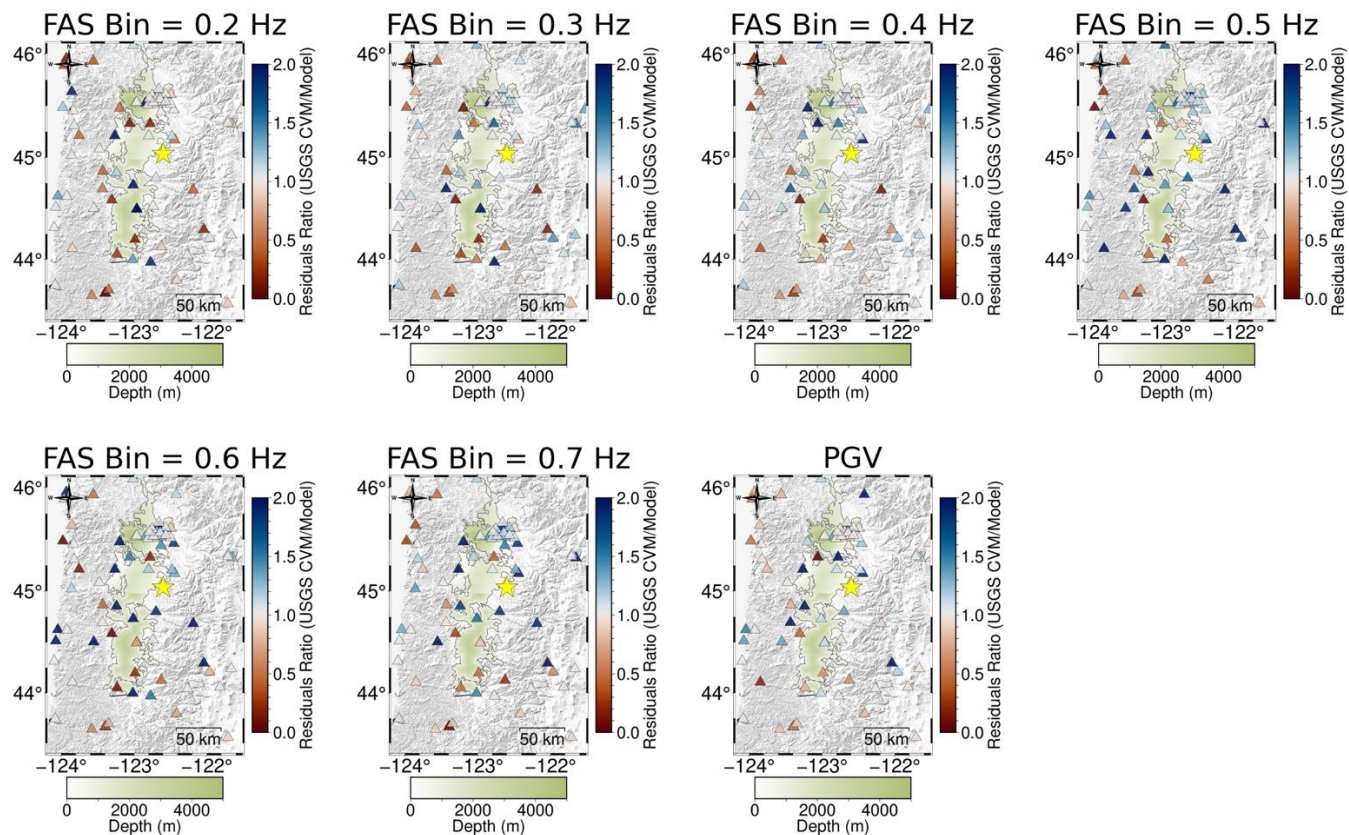
S18. Intensity Measures residuals ratio maps from the 2017, **M3.96** Scotts Mills earthquake. Stations are colored by ratio value. The maps are showing all stations (including mountain stations) and are plotted on top of EugSpe SM WV basin model, colored by depth to bottom of the basin.

Scotts Mills SRV 1D



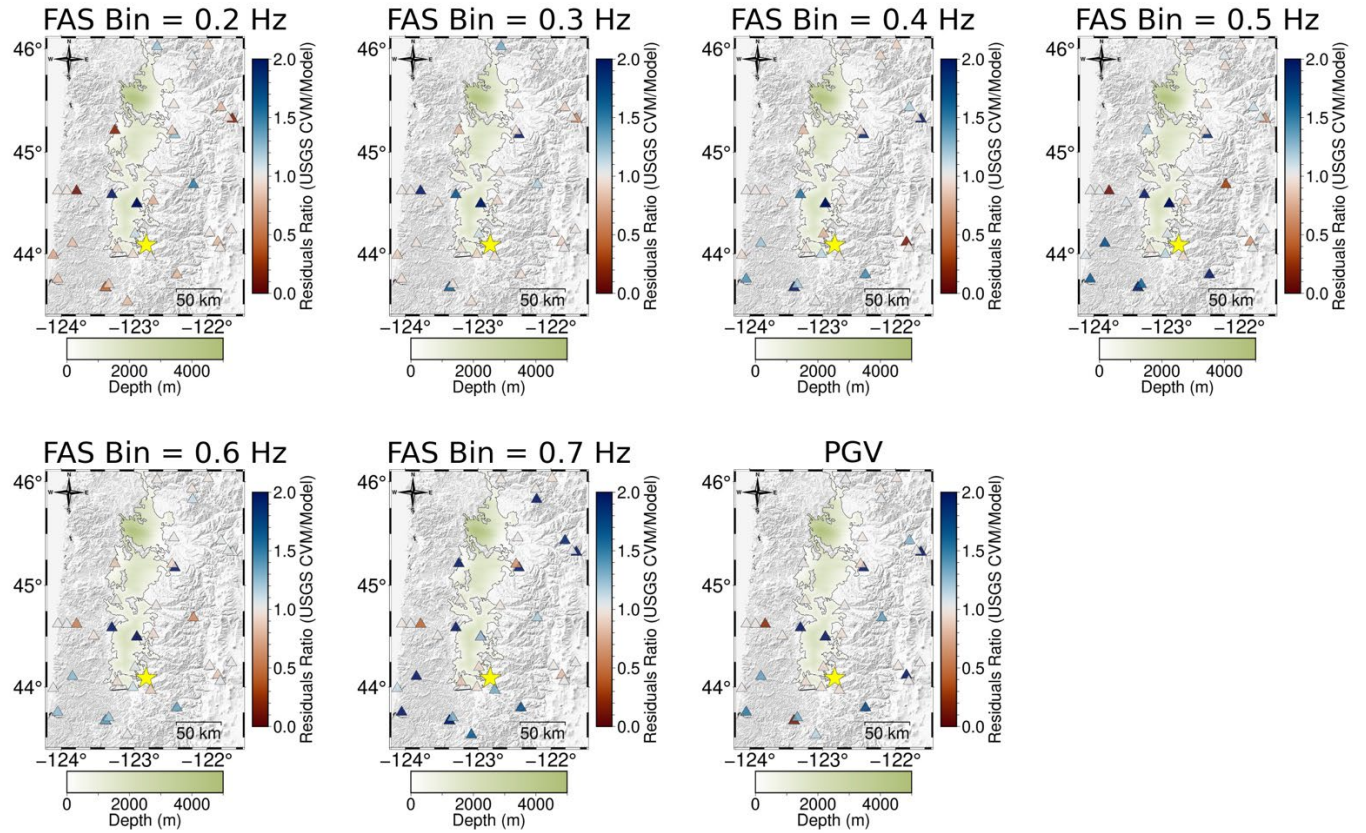
S19. Intensity Measures residuals ratio maps from the 2017, **M3.96** Scotts Mills earthquake. Stations are colored by ratio value. The maps are showing all stations (including mountain stations) and are plotted on top of SRV 1D WV basin model, colored by depth to bottom of the basin.

Scotts Mills SRV SM



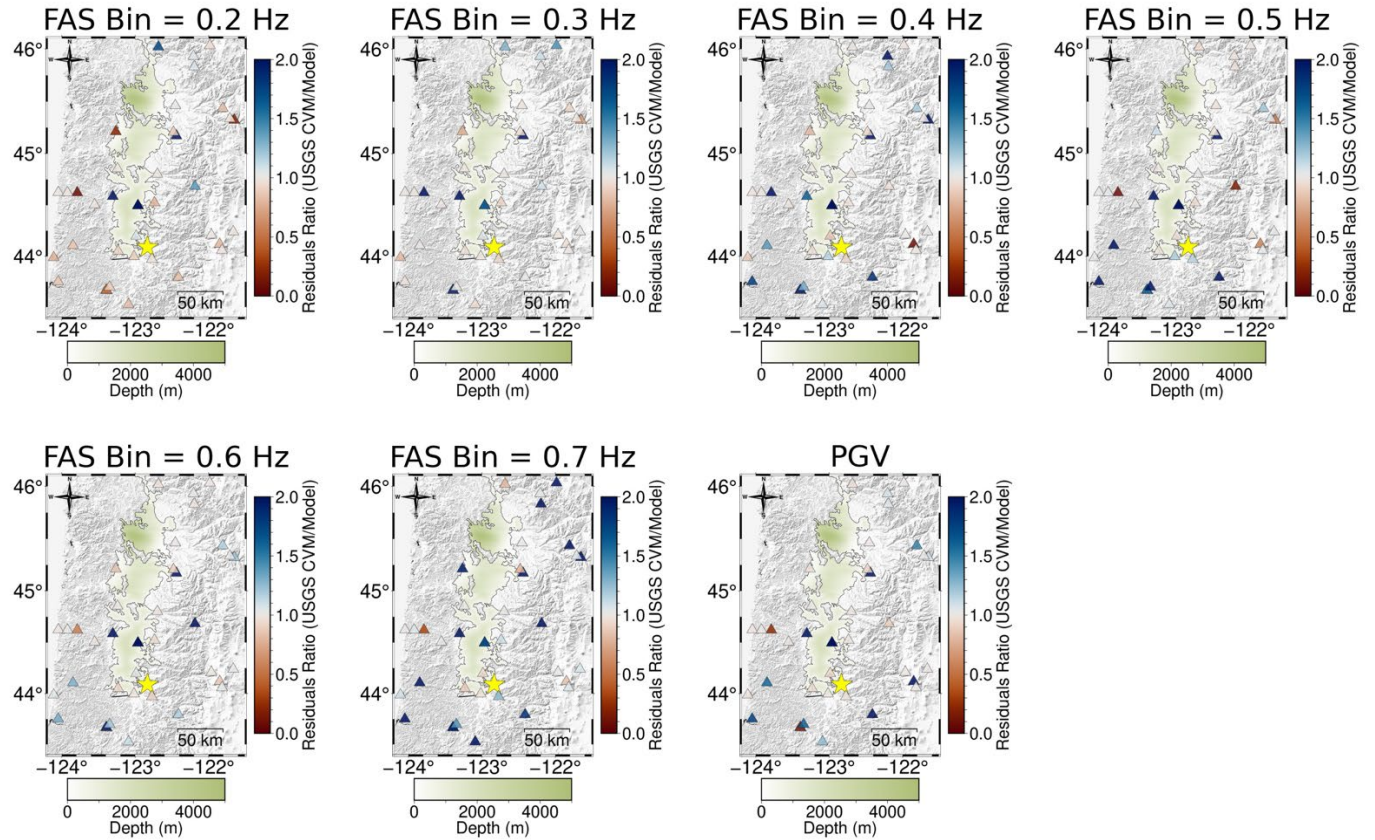
S20. Intensity Measures residuals ratio maps from the 2017, **M3.96** Scotts Mills earthquake. Stations are colored by ratio value. The maps are showing all stations (including mountain stations) and are plotted on top of SRV SM WV basin model, colored by depth to bottom of the basin.

Springfield EugSpe 1D



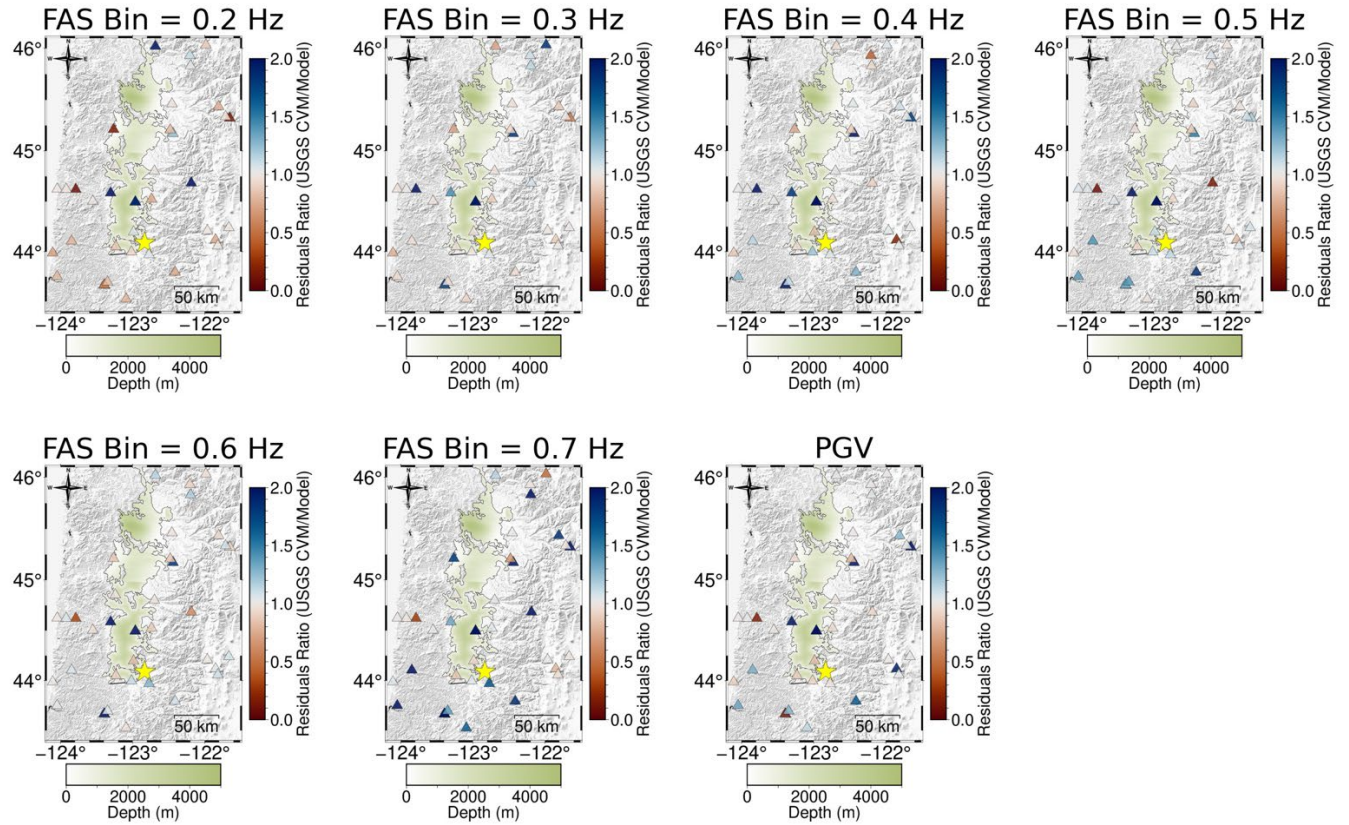
S21. Intensity Measures residuals ratio maps from the 2015, **M4.1** Springfield earthquake. Stations are colored by ratio value. The maps are showing all stations (including mountain stations) and are plotted on top of EugSpe 1D WV basin model, colored by depth to bottom of the basin.

Springfield EugSpe SM



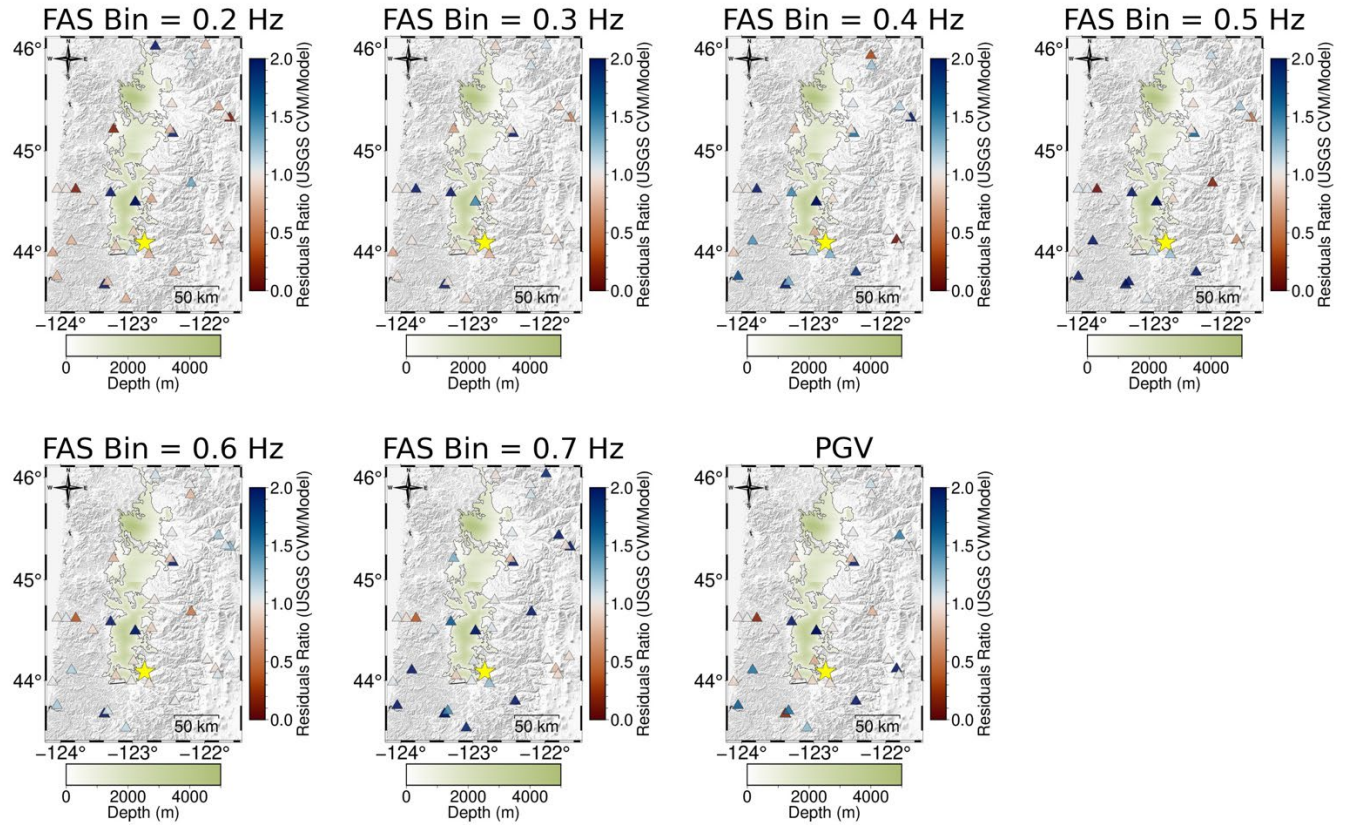
S22. Intensity Measures residuals ratio maps from the 2015, **M4.1** Springfield earthquake. Stations are colored by ratio value. The maps are showing all stations (including mountain stations) and are plotted on top of EugSpe SM WV basin model, colored by depth to bottom of the basin.

Springfield SRV 1D



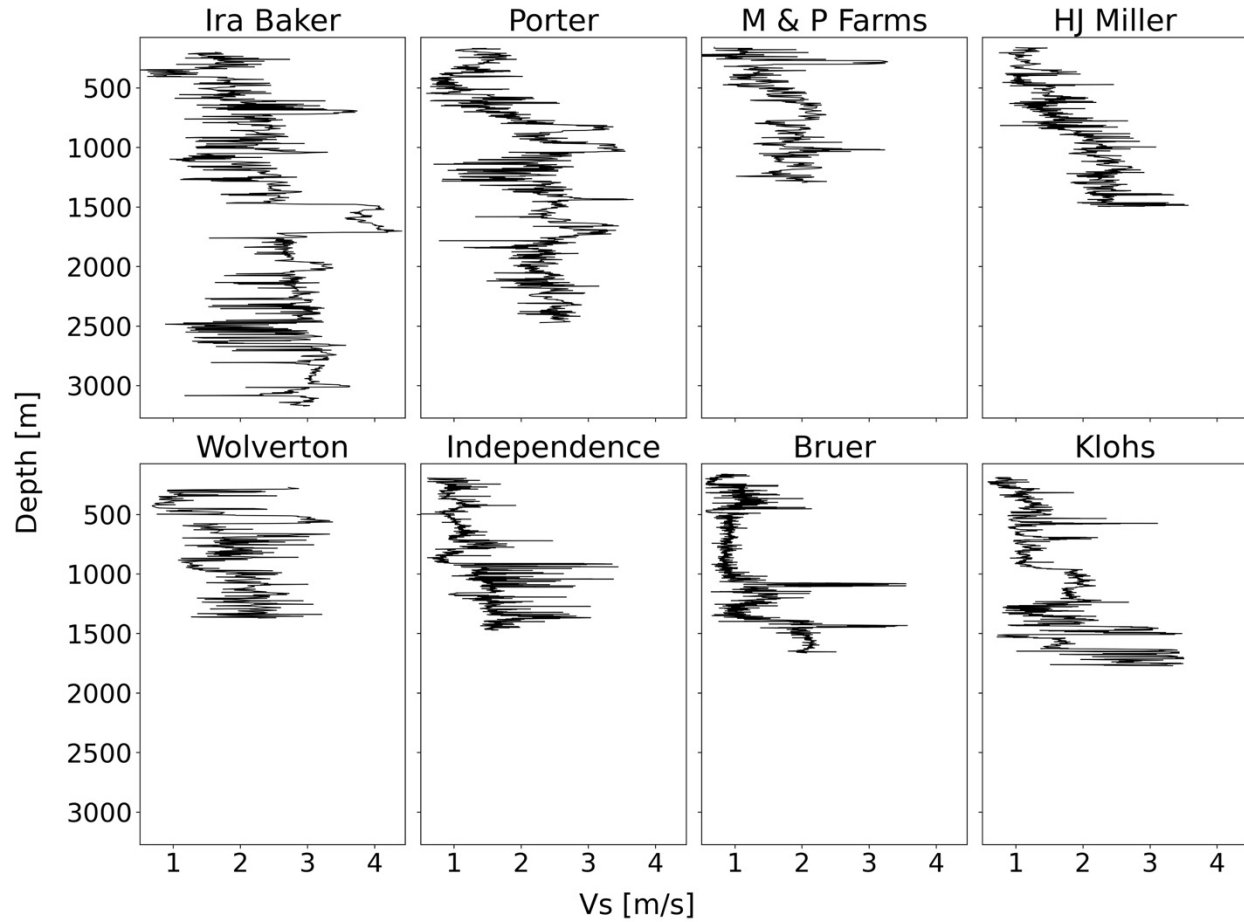
S23. Intensity Measures residuals ratio maps from the 2015, **M4.1** Springfield earthquake. Stations are colored by ratio value. The maps are showing all stations (including mountain stations) and are plotted on top of SRV 1D WV basin model, colored by depth to bottom of the basin.

Springfield SRV SM



S24. Intensity Measures residuals ratio maps from the 2015, **M4.1** Springfield earthquake. Stations are colored by ratio value. The maps are showing all stations (including mountain stations) and are plotted on top of SRV SM WV basin model, colored by depth to bottom of the basin.

Digitized Well Logs:



S25. Digitized well logs converted into Vs velocity profiles.

Wells Depths Data:

Site Name	Latitude [°]	Longitude [°]	Depth to SRV [m]	Depth to EugSpe [m]
Merle	44.1452751	-123.23124		739
Cindy	44.1666183	-123.26003		385
Ira Baker	44.2408295	-123.05583		479
Porter	44.4129219	-123.16003	2159	789
Esmond	44.5372887	-122.86206		838
Wetgen	44.413071	-123.1375		254
Hickey	44.5431213	-122.94222		747
Corvallis	44.5477982	-123.2629		37
M & P Farms	44.565731	-123.1825		51
Barr	44.5767097	-122.84056		283
Henschel	44.6969185	-123.07648		42

Wolverton	44.7053299	-122.99583		346
HJ Miller	44.7120018	-123.033	1392	19
Schermacher	44.7653999	-122.9069		220
Wiederkehr	44.7762489	-123.12917		13
N. Gilmour	44.7783318	-123.11372		99
Independence	44.8459396	-123.12961		789
John Stump	44.8492088	-123.27083		218
Merrill	44.8603249	-123.12228		872
Gath	44.8698883	-122.92916		919
Francis Wicks	44.9790001	-122.646		15
Bursell	44.8783302	-123.27279		37
Bliven	44.8864594	-123.2757		15
Bruer	45.0077095	-123.22018	1387	178
Finn	45.046669	-123.20834	1084	127
Anderson	45.104641	-122.71825		128
Bagdanoff	45.1078415	-122.94034		668
Werner	45.1161804	-122.9341		687
Werner	45.1172905	-122.94663		845
Deshazer	45.1200943	-122.92529		675
Stauffer Farms	45.1847801	-122.78125		675
Klohs	45.3462486	-122.97292		1246
Cooper Mountain	45.4538918	-122.86979	2635	863
Barber	45.5549583	-122.76782	626	

S26. All wells' data table. Table includes site name, location and depth to SRV and/or EugSpe surface.