

Proposed Epistemic Weighting

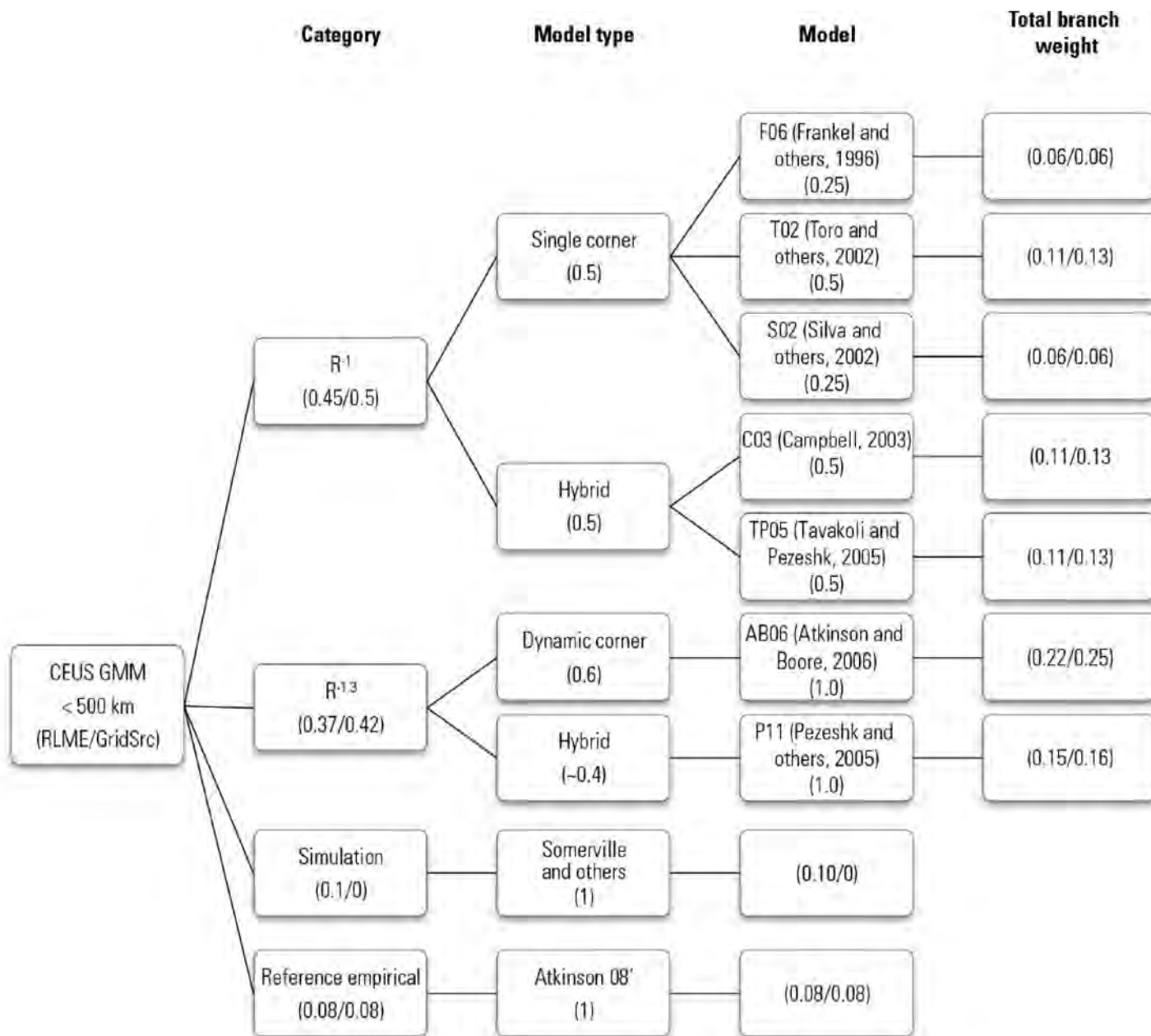
Mark Petersen

USGS, Golden, CO

USGS 2018 NSHM Update Workshop

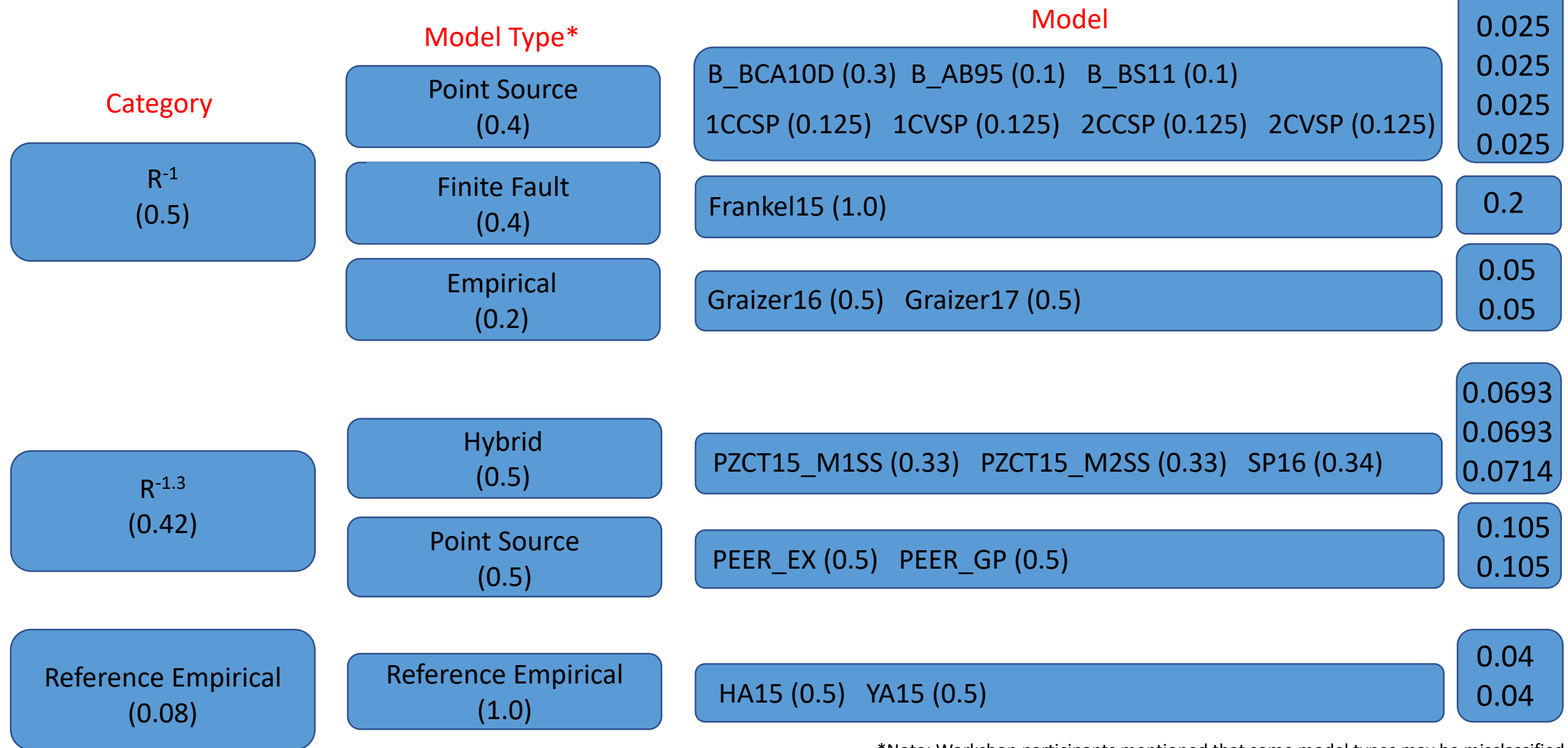
Wednesday, March 7th, 2018

2014 NSHM CEUS GMM Weighting



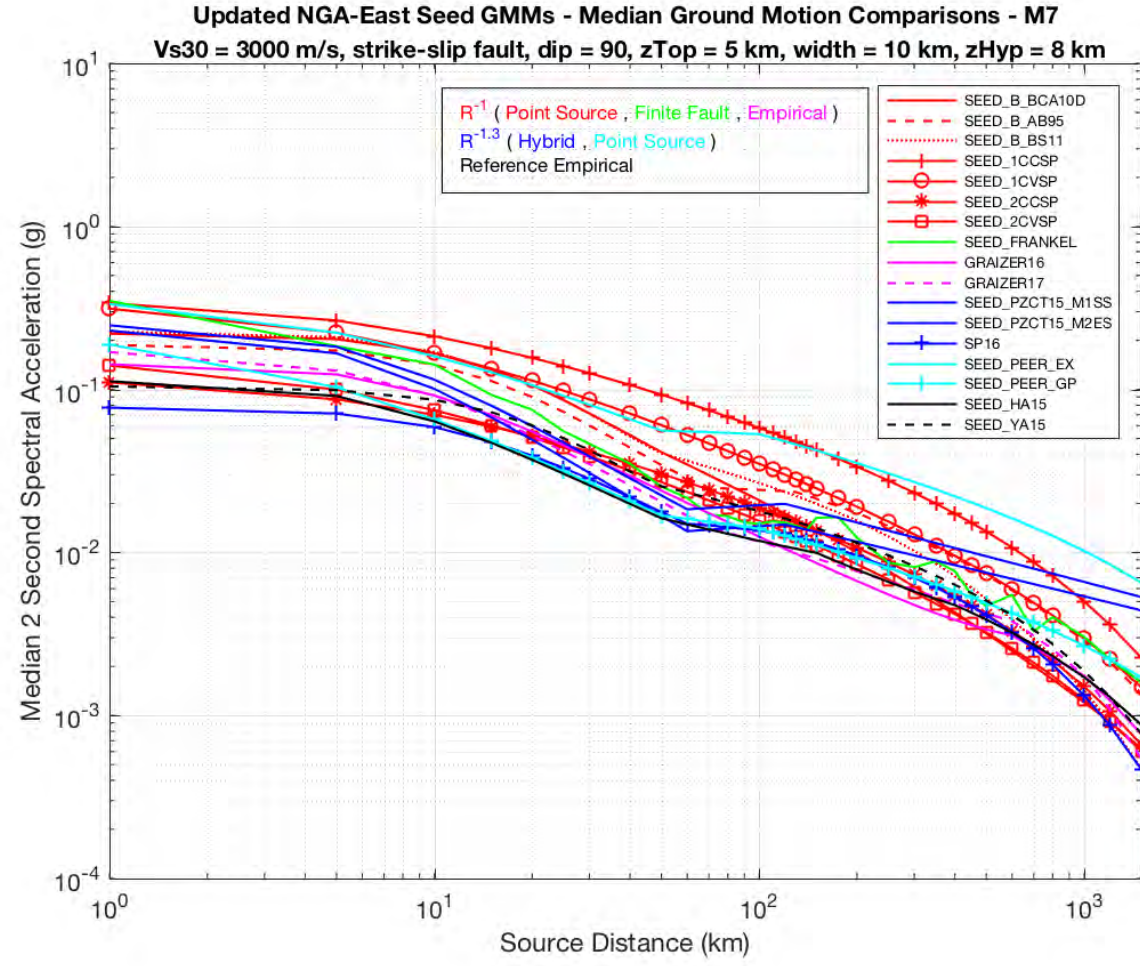
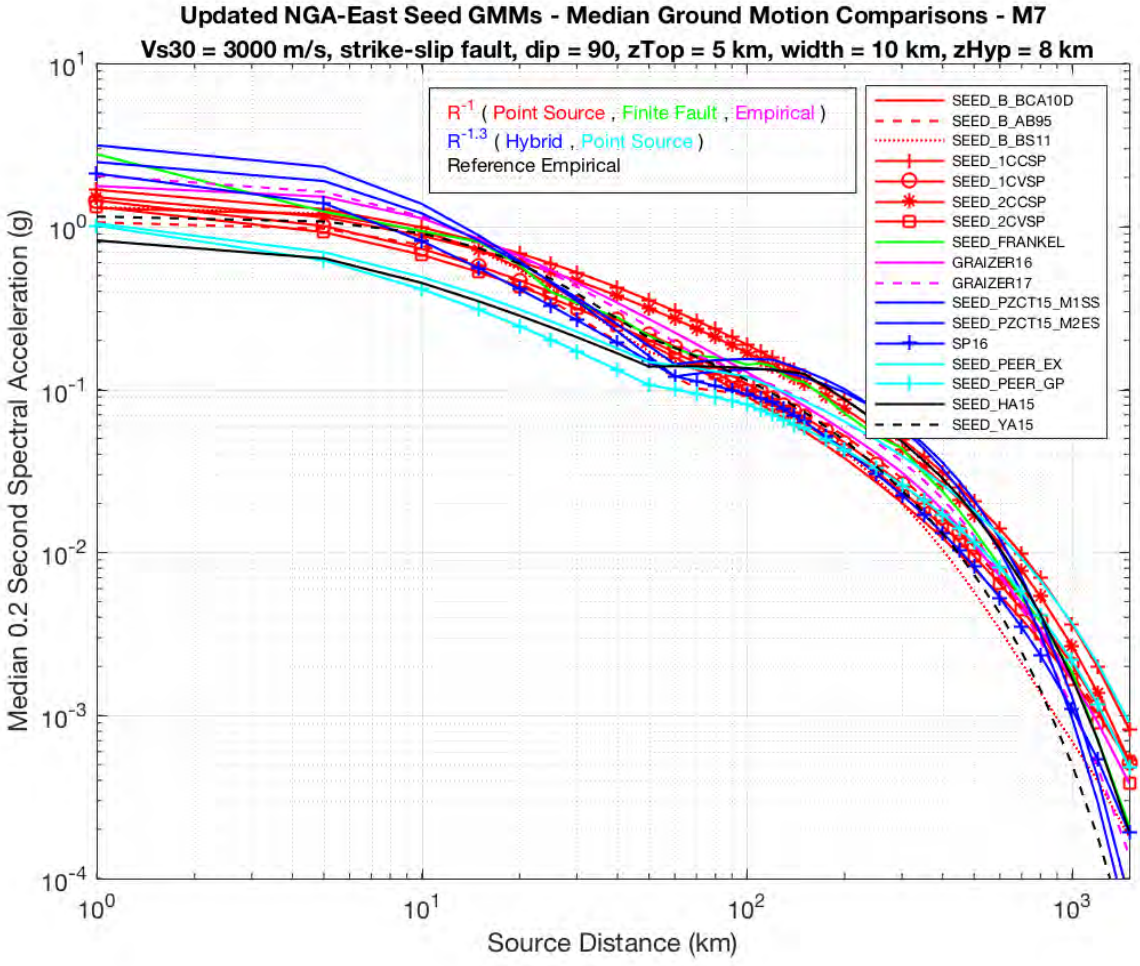
Updated NGA-East Seed GMMs Logic Tree #1

Same Method as 2014 NSHM



*Note: Workshop participants mentioned that some model types may be misclassified.

Updated NGA-East Seed Ground Motions (Logic Tree #1)



Note: Workshop participants mentioned that some model types may be misclassified.

Updated NGA-East Seed GMMs Logic Tree #2

Alternative Categories, no Model Type

Category*

Model*

R⁻¹
(0.35)

B_BCA10D (0.204) B_AB95 (0.068) B_BS11 (0.068)
1CCSP (0.0825) 1CVSP (0.0825) 2CCSP (0.0825) 2CVSP (0.0825)
Graizer16 (0.165) Graizer17 (0.165)

0.0714
0.0238
0.0238
0.028875
0.028875
0.028875
0.028875
0.05775
0.05775

R^{-1.3}
(0.35)

PZCT15_M1SS (0.165) PZCT15_M2ES (0.165)
PEER_EX (0.165) PEER_GP (0.165)
SP16 (0.34)

0.05575
0.05575
0.05775
0.05775
0.119

Finite Fault
(0.2)

Frankel15 (1.0)

0.2

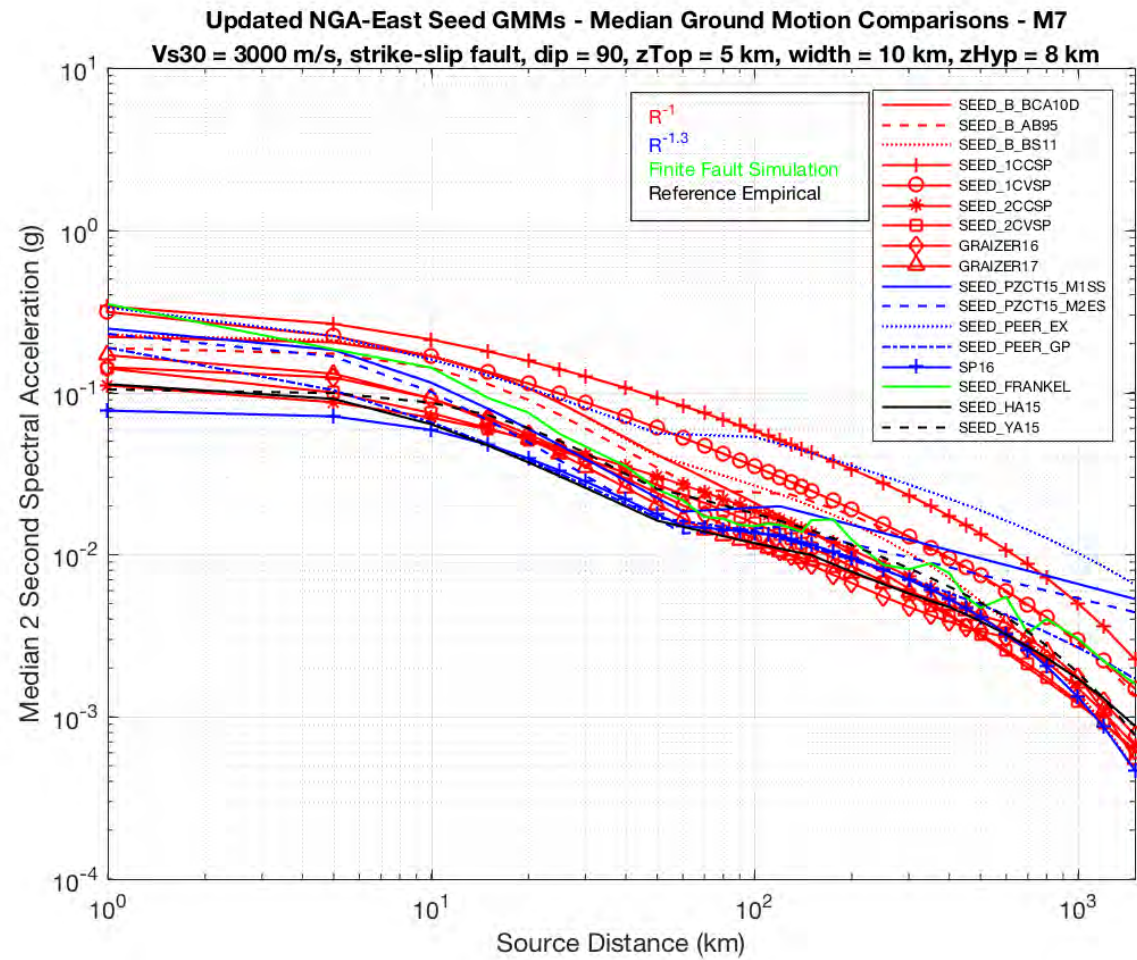
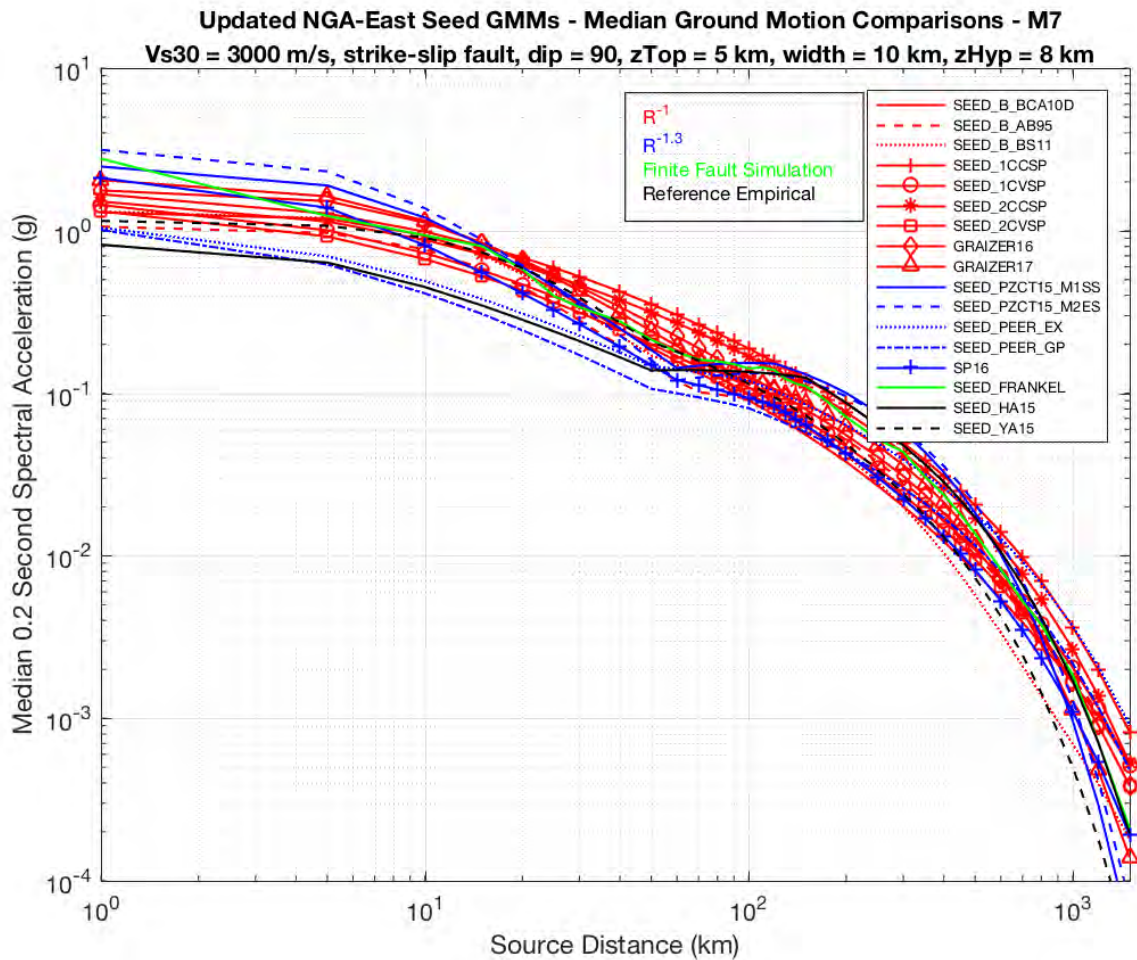
Reference Empirical
(0.1)

HA15 (0.5) YA15 (0.5)

0.05
0.05

*Note: Workshop participants mentioned that some model types/categories may be misclassified.

Updated NGA-East Seed Ground Motions (Logic Tree #2)



*Note: Workshop participants mentioned that some model types may be misclassified.

NGA-East USGS GMMs Logic Tree

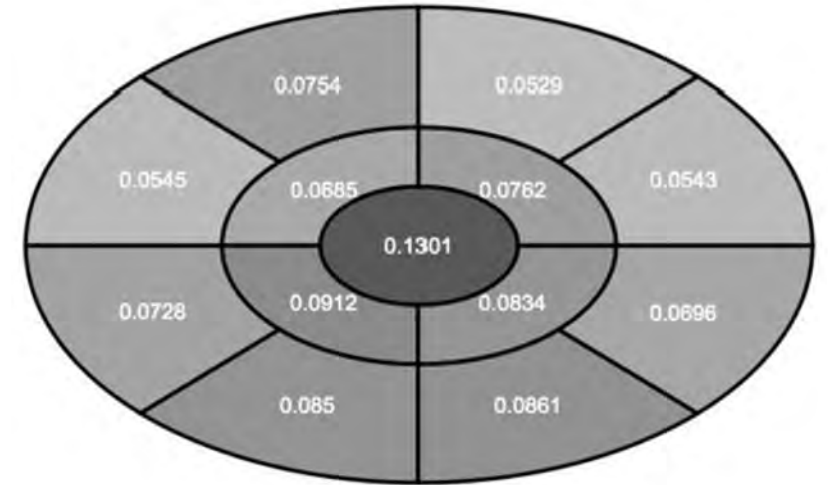
Model

NGA_EAST_USGS_1
NGA_EAST_USGS_2
NGA_EAST_USGS_3
NGA_EAST_USGS_4
NGA_EAST_USGS_5
NGA_EAST_USGS_6
NGA_EAST_USGS_7
NGA_EAST_USGS_8
NGA_EAST_USGS_9
NGA_EAST_USGS_10
NGA_EAST_USGS_11
NGA_EAST_USGS_12
NGA_EAST_USGS_13

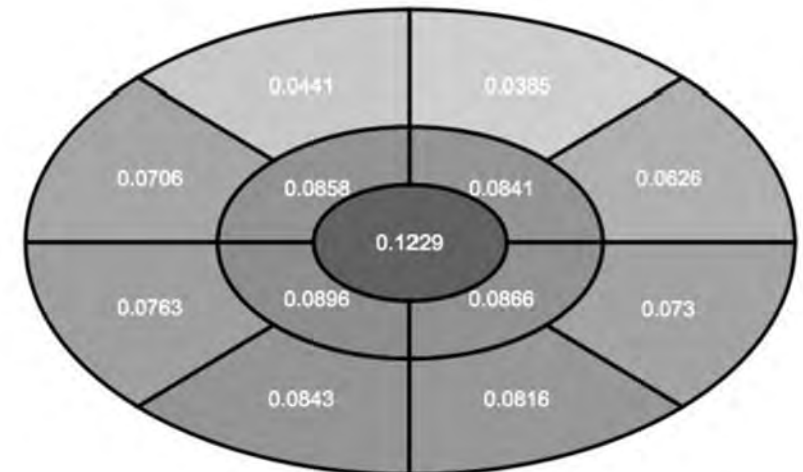
Model Weights

Sammon's mapping weights are period and magnitude dependent

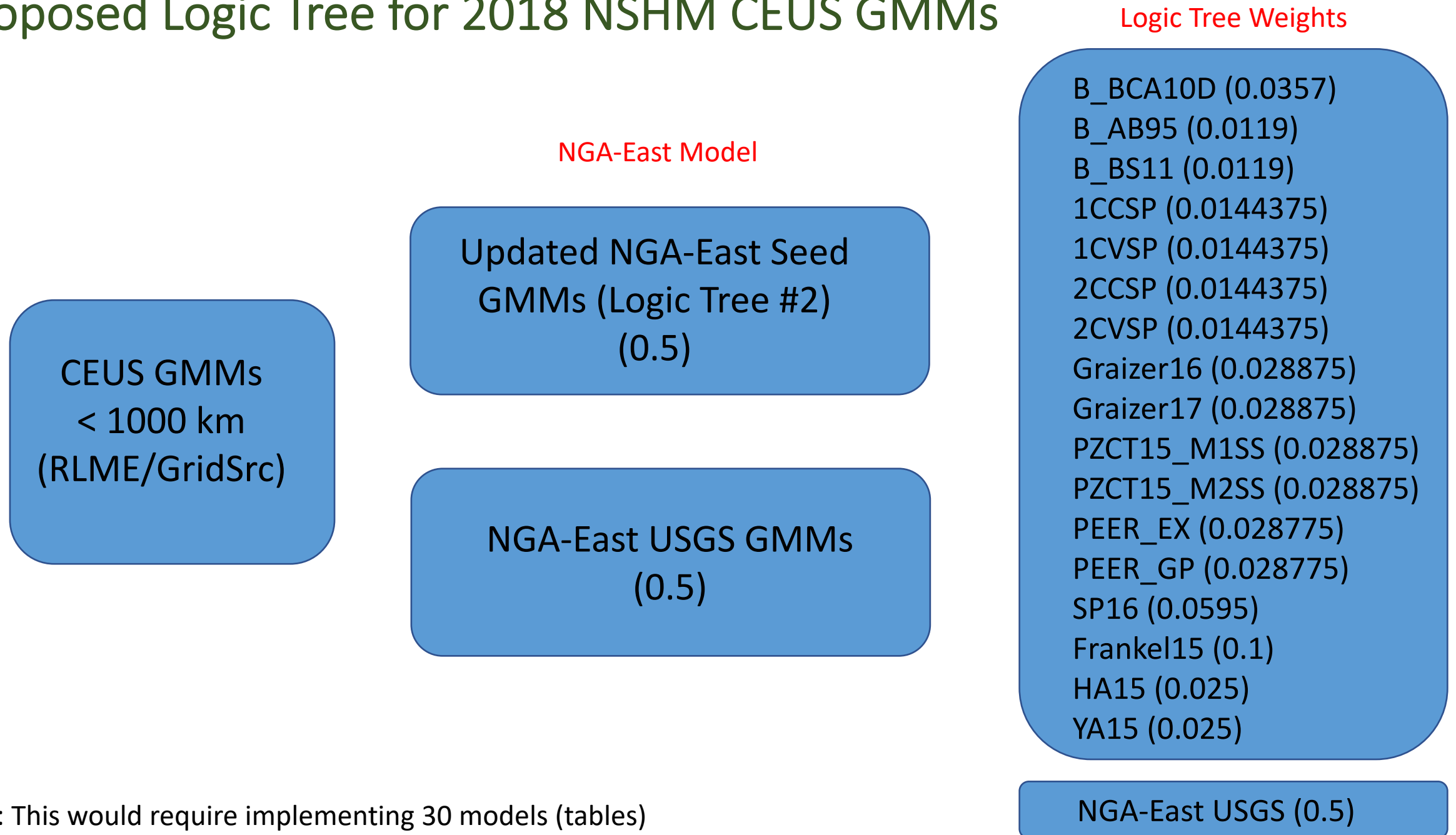
0.2 Sec (5 Hz)



2 Sec (0.5 Hz)



Proposed Logic Tree for 2018 NSHM CEUS GMMs



Note: This would require implementing 30 models (tables)