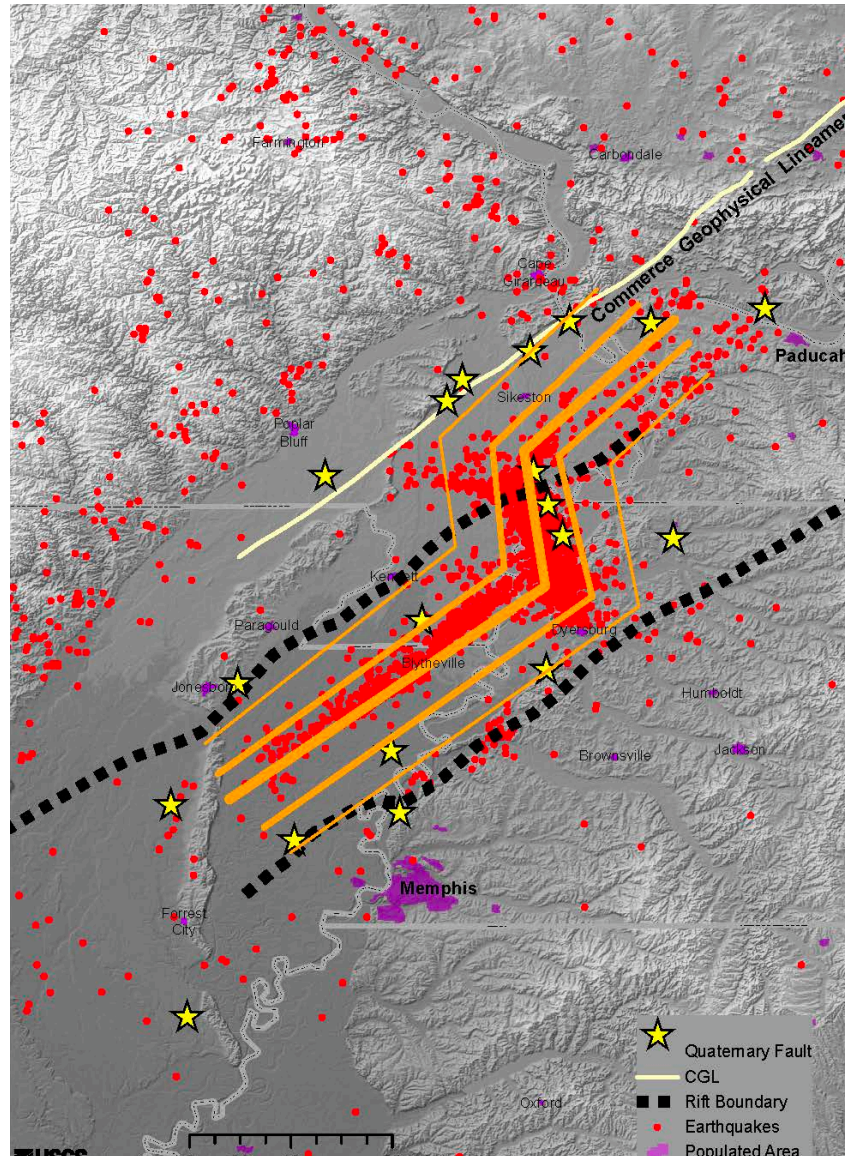


# New Madrid fault sources: RATE

CEUS workshop  
2014 National Seismic Hazard Maps  
February 22–23, 2012  
Memphis, TN

# New Madrid Seismic Zone



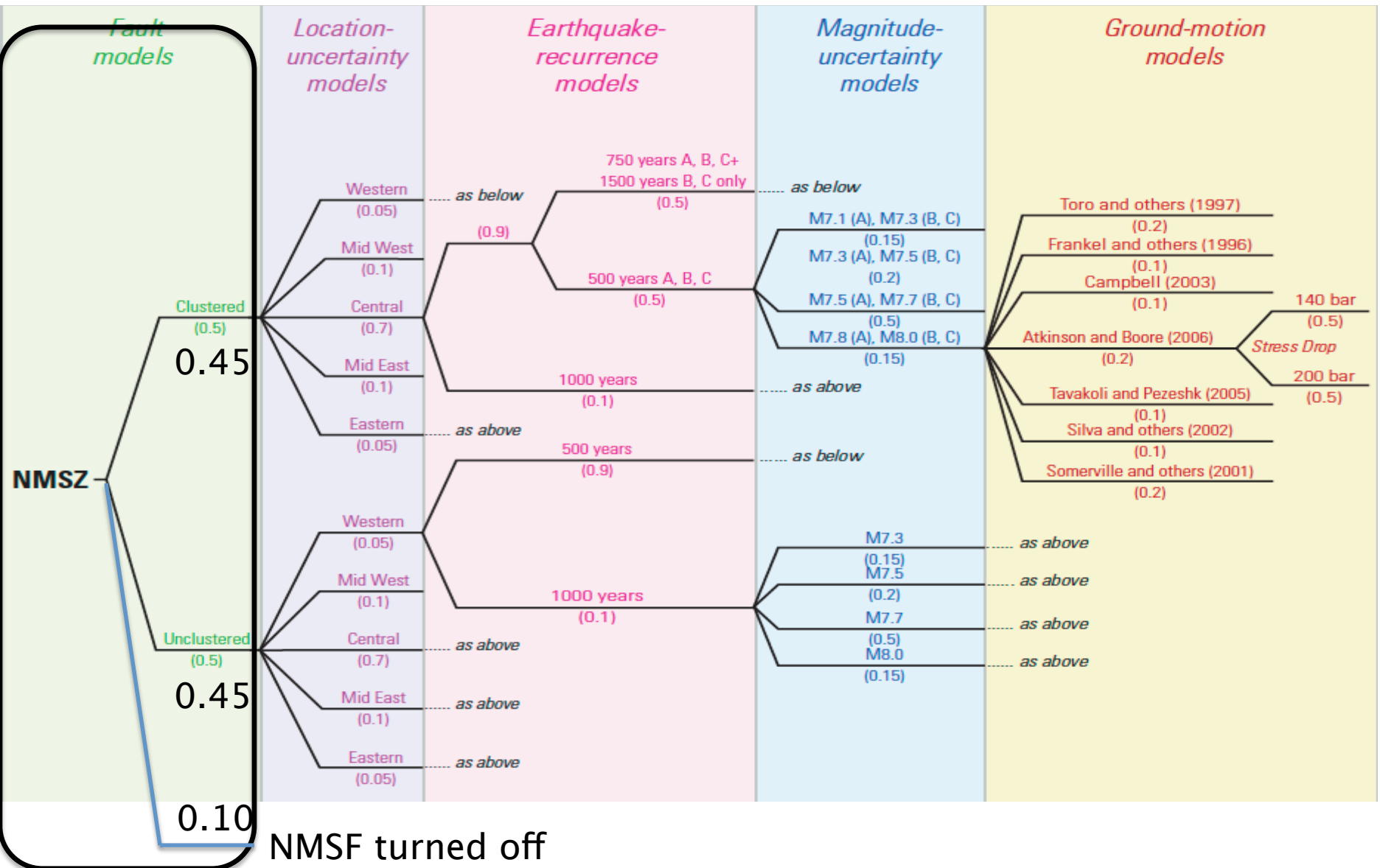
Quaternary Fault Localities

M2.0 and greater quakes since 1974

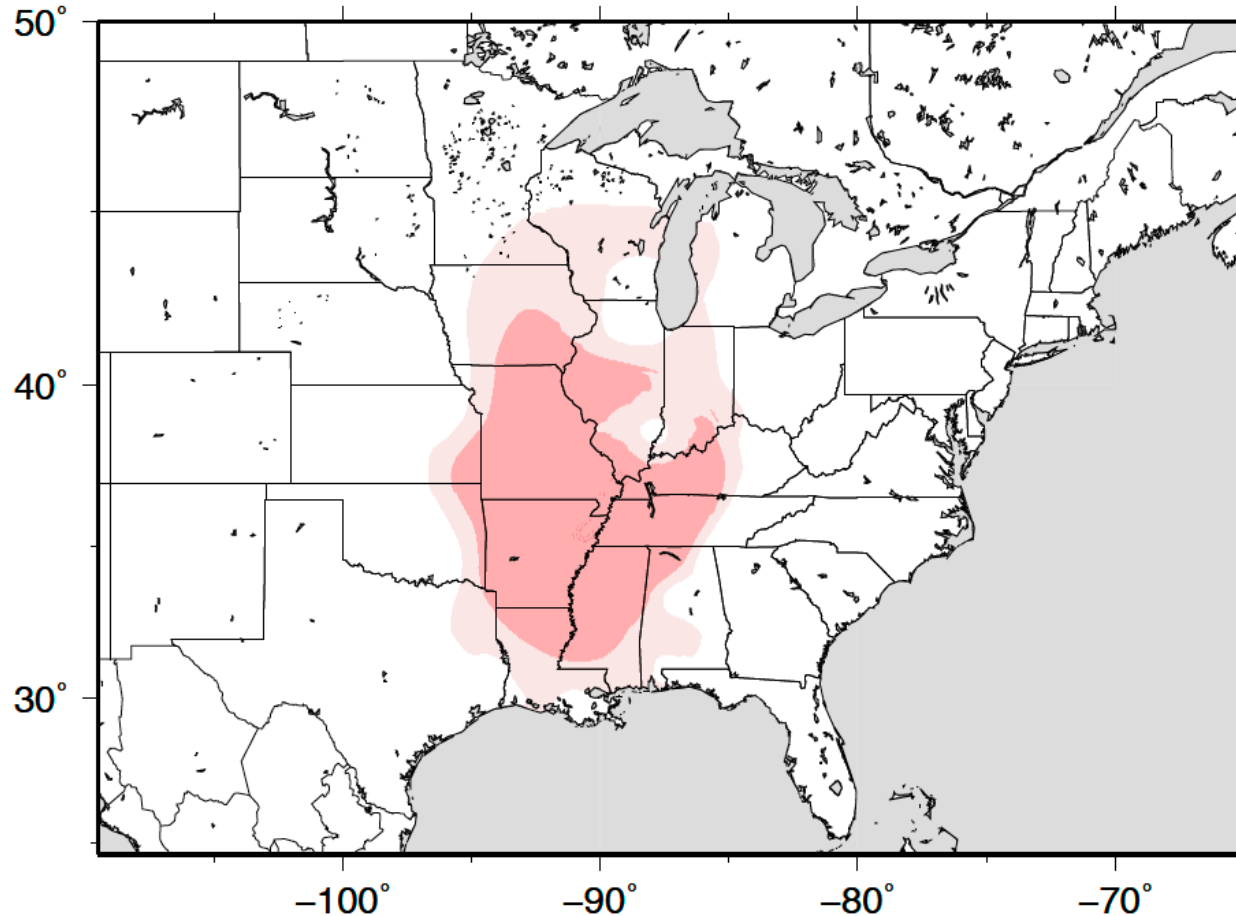
# New Madrid fault source (NM): sensitivity tests to seismic hazard

- Sensitivity tests for recurrence model:
  - 10% branch for “New Madrid turned-off” model?
  - Remove unclustered branch?
  - CEUS–SSC NM recurrence model

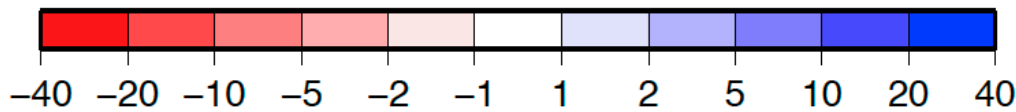
# Sensitivity test 1: weighted branch for turned-off NMFS



# Sensitivity test 1: 10% branch for turned-off NMFS

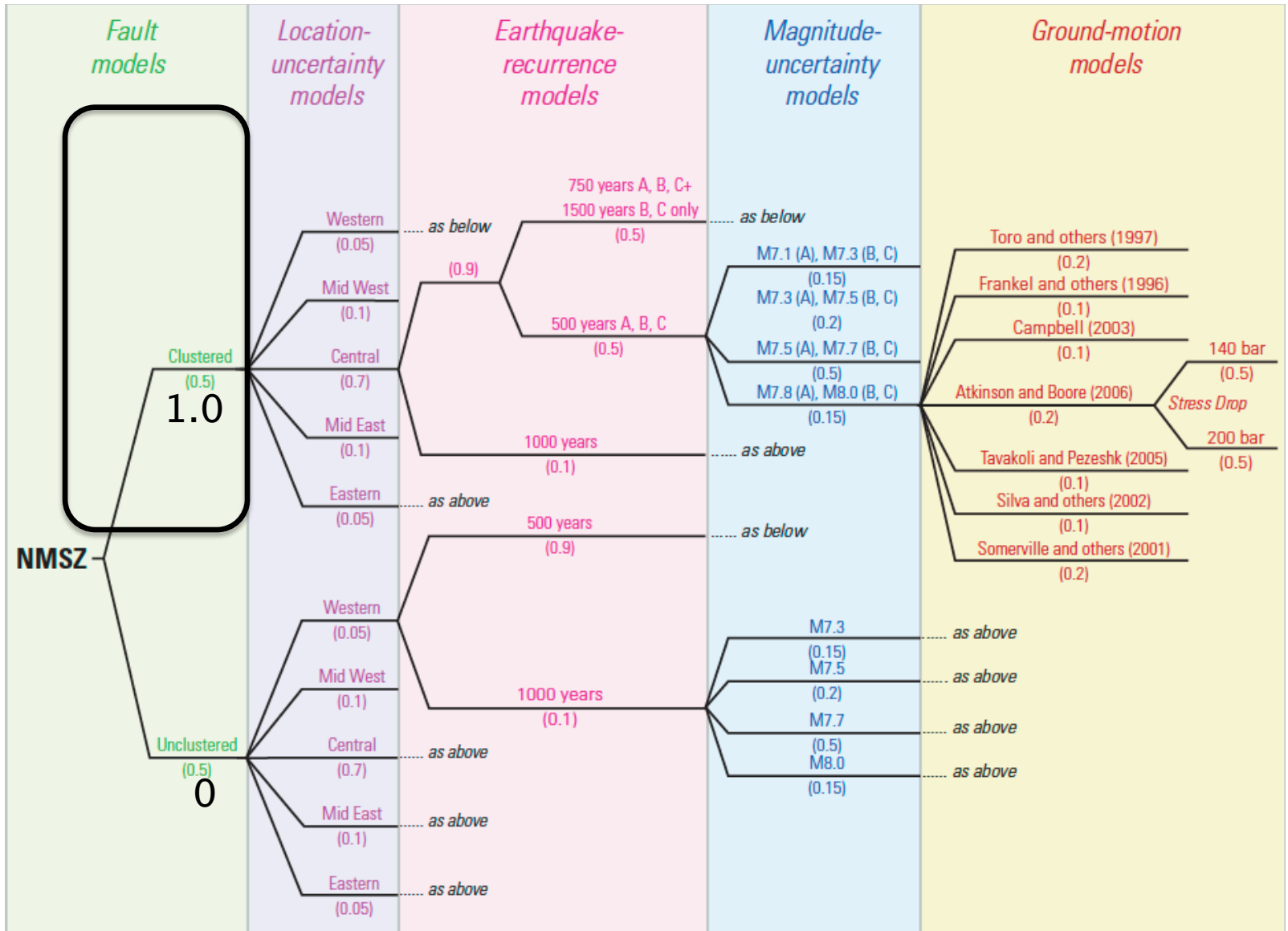


- 10% reduction in NMFS weighting results in ~2–5% reduction in PGA

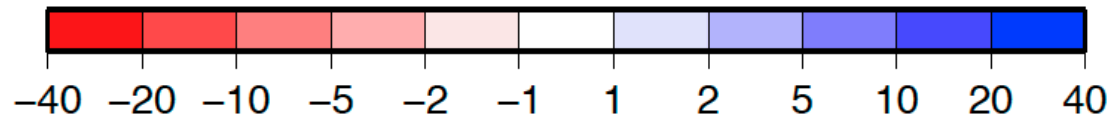
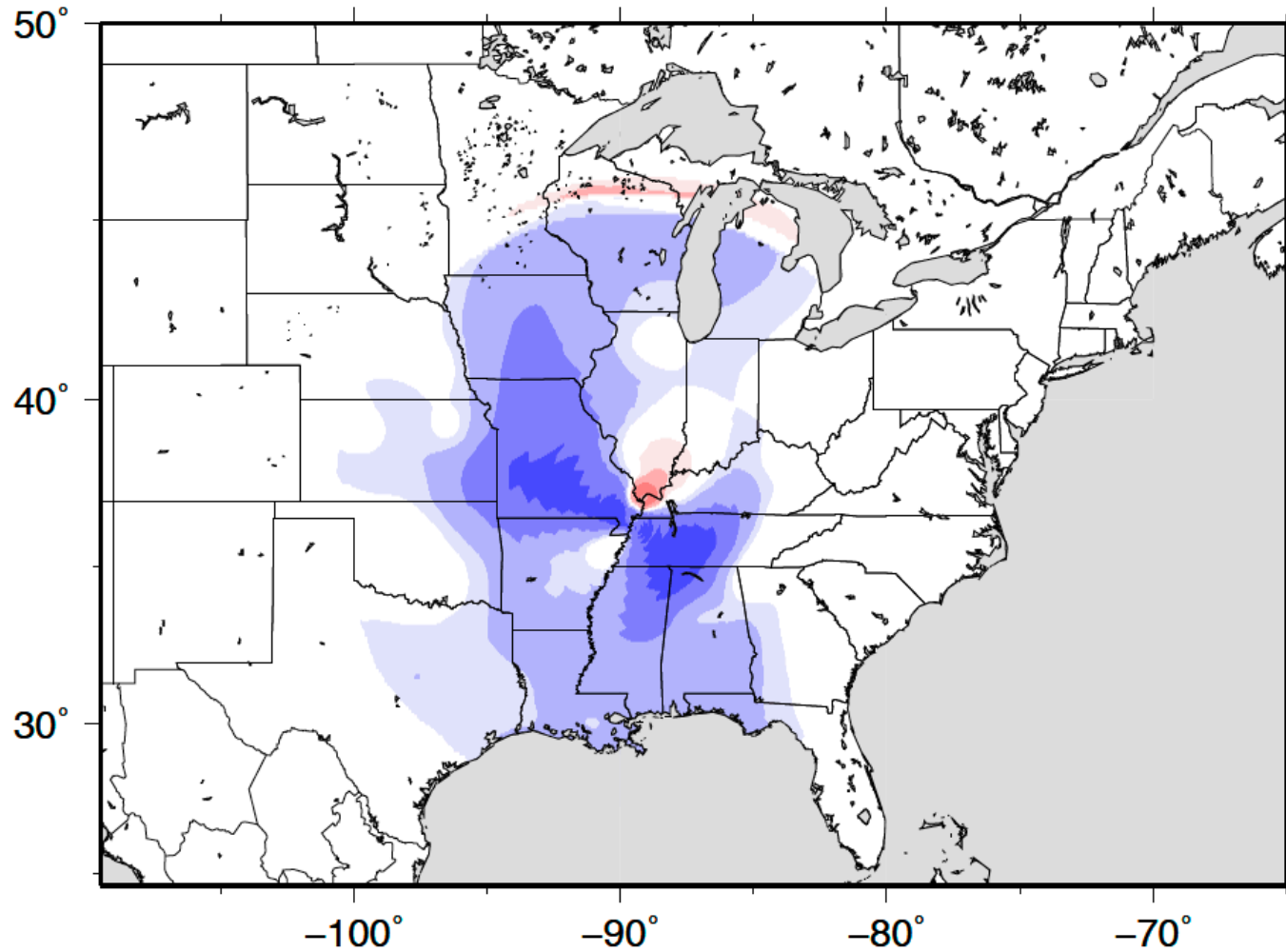


dPGA(%)

# Sensitivity tests 2-4: Effect of clustered-only seismicity on hazard



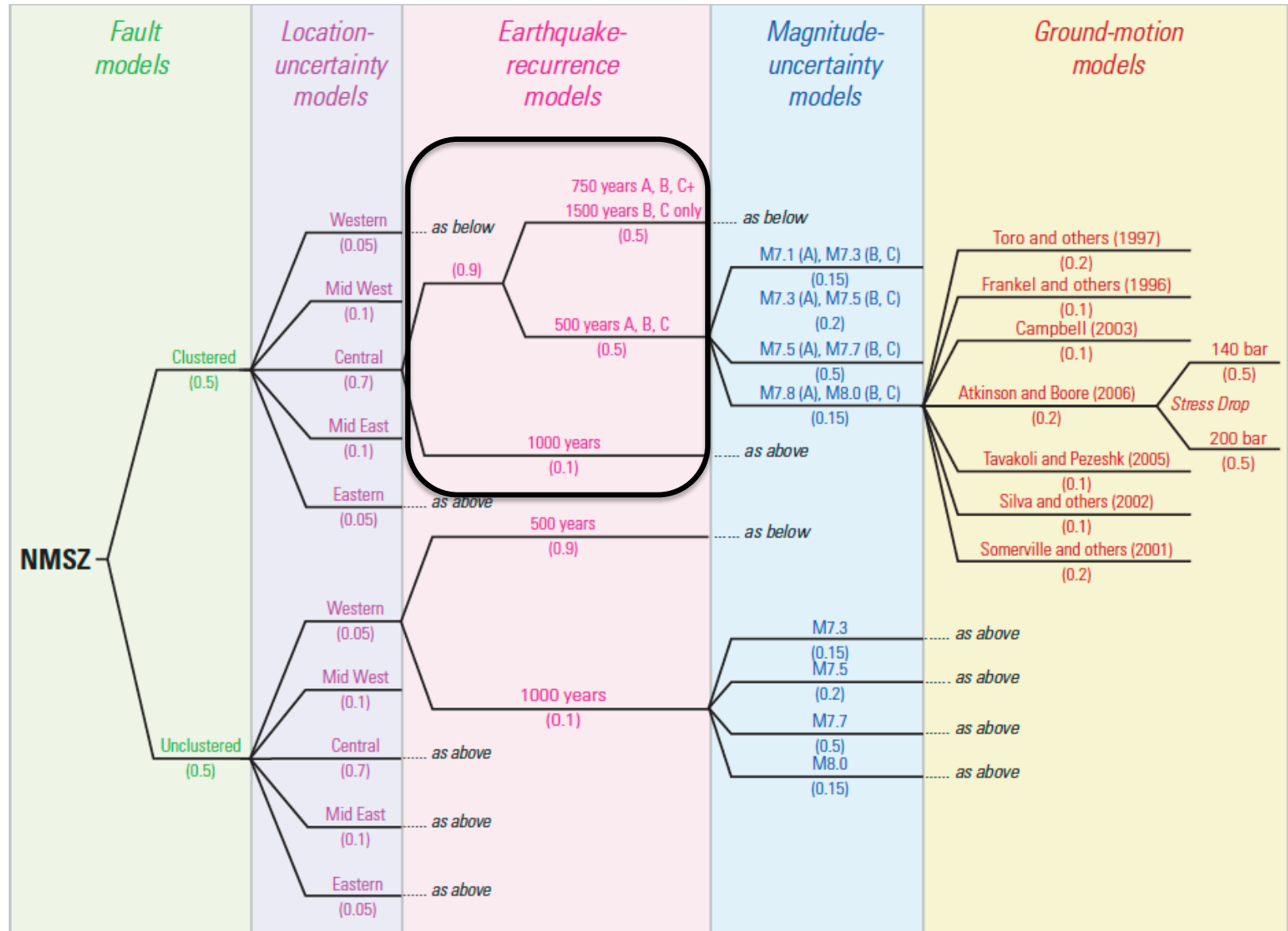
# Sensitivity tests 2-4: Effect of clustered-only seismicity on hazard



$dPGA(\%)$



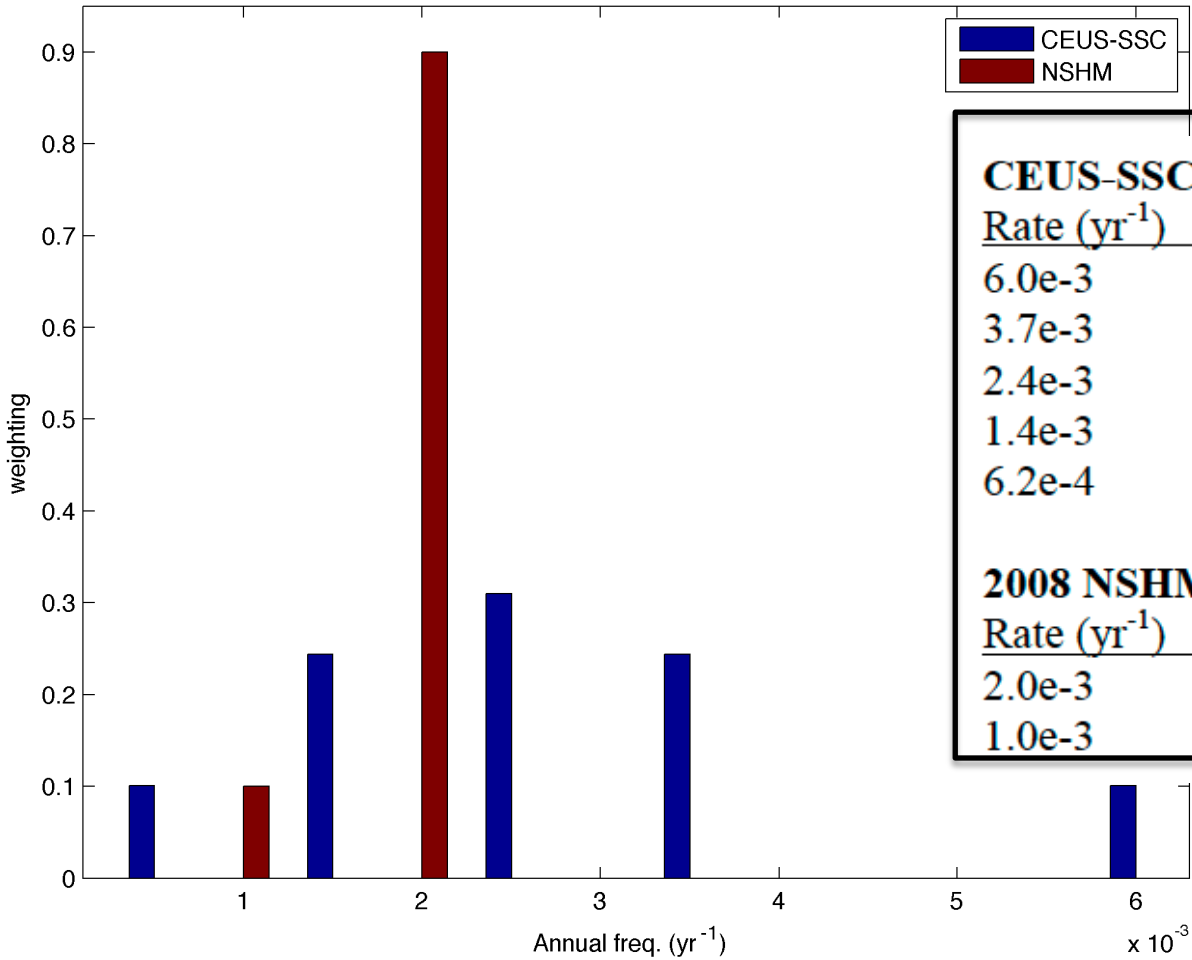
# Sensitivity test 3: CEUS-SSC earthquake rate distribution





# Sensitivity test 3: CEUS-SSC earthquake rate distribution

Simplified USGS-red, CEUS-SSC blue



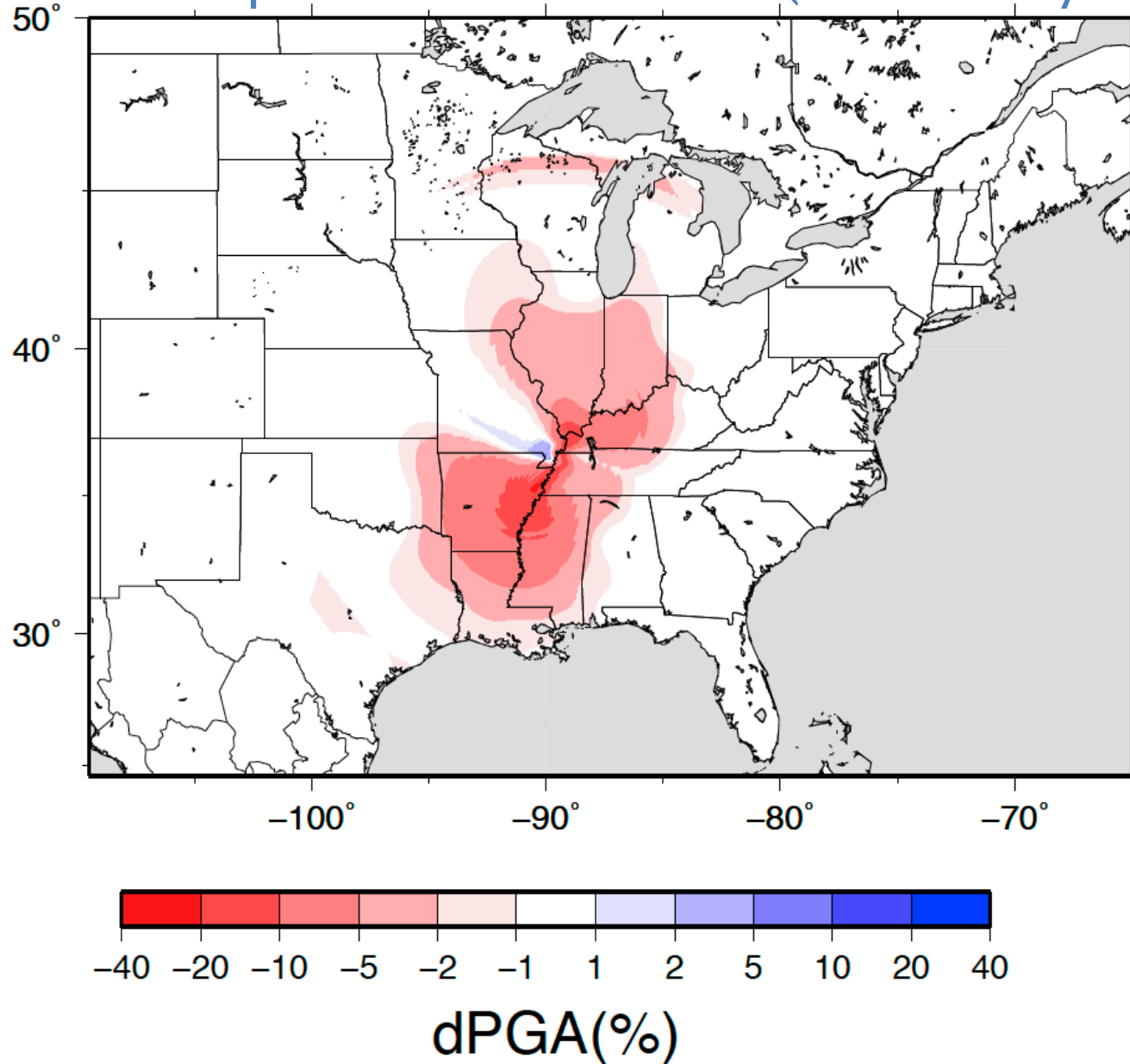
<b>CEUS-SSC</b>		
Rate (yr <sup>-1</sup> )	Weight	Recurrence (yr)
6.0e-3	0.101	166
3.7e-3	0.244	270
2.4e-3	0.310	416
1.4e-3	0.244	714
6.2e-4	0.101	1612

<b>2008 NSHM</b>		
Rate (yr <sup>-1</sup> )	Weight	Recurrence (yr)
2.0e-3	0.9	500
1.0e-3	0.1	1000

1612 yr   714 yr   416 yr   270 yr   166 yr

# Percent differences in CEUS-SSC earthquake N.M. rate distribution compared to NSHMP 08 (2% PE 50 years- PGA)



# DISCUSSION

- Branch for New Madrid turned-off?, Weight?
- Remove unclustered branch?
- Changes to recurrence model?

Comments: