Hazard Sensitivity in CEUS to Phi and PhiSS

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Sigma and Single-Station Sigma

- Ergodic Sigma: $\sigma = \sqrt{\phi^2 + \tau^2} = \sqrt{\phi_{SS}^2 + \phi_{S2S}^2 + \tau^2}$
- Removing the systematic site effects leads to single-station Sigma:

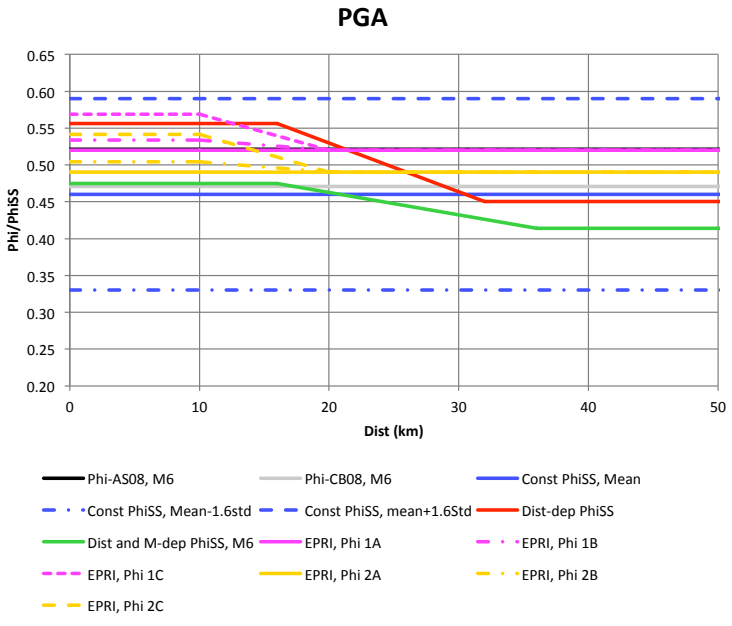
$$\sigma_{SS} = \sqrt{\phi_{SS}^2 + \tau^2}$$

Sigma Models

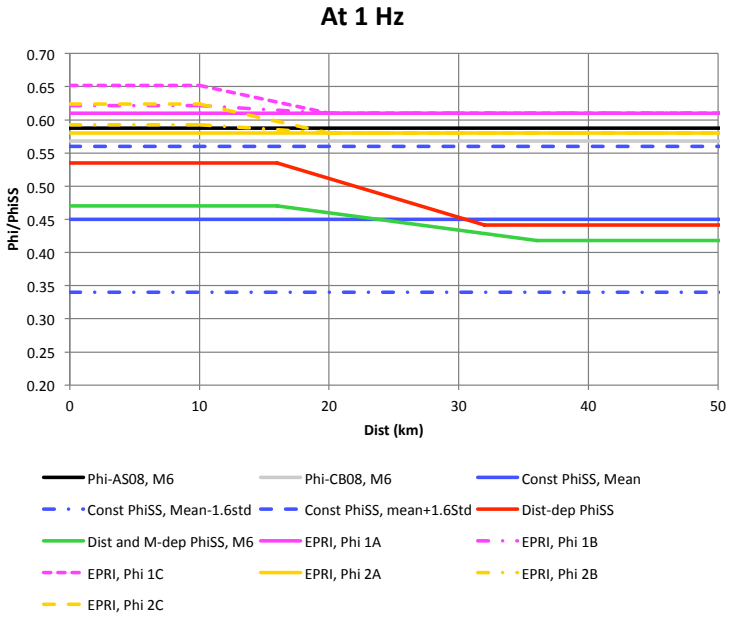
- **Tau**: EPRI (2006) CEUS model – WUS Tau applicable to CEUS

- **Phi/PhiSS:** A total of 13 models
  - PEGASOS constant PhiSS, mean values
  - PEGASOS constant PhiSS, mean – 1.6 std values
  - PEGASOS constant PhiSS, mean + 1.6 std values
  - PEGASOS distance-dependent PhiSS model
  - PEGASOS magnitude- and distance-dependent PhiSS model
  - AS08 Phi model (magnitude-dependent)
  - CB08 Phi model (constant)
  - 6 CEUS EPRI models for Phi based on WUS data

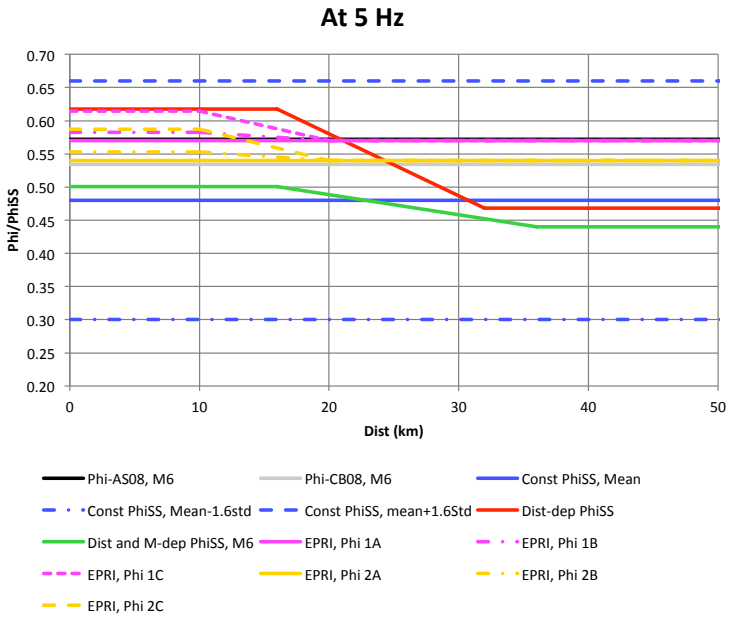
Comparison of Phi and PhiSS Models



Comparison of Phi and PhiSS Models (cont'd)



Comparison of Phi and PhiSS Models (cont'd)



Simplified SSC Model

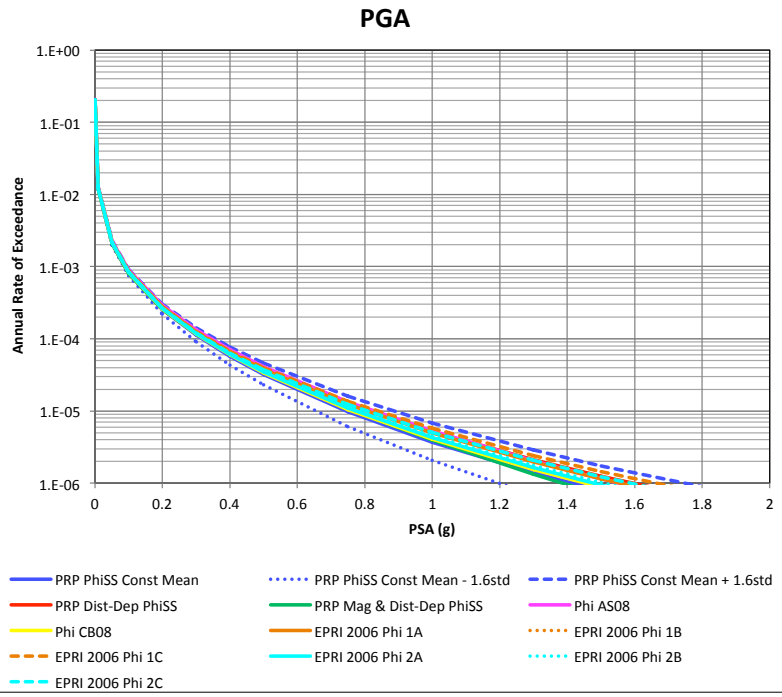
- Gridded seismicity – USGS 2002
- New Madrid seismic zone - USGS 2008
- Charleston seismic zone – USGS 2008

Test Sites

Hazard Results at **Chattanooga** – at PGA

RT 100,000 yrs:

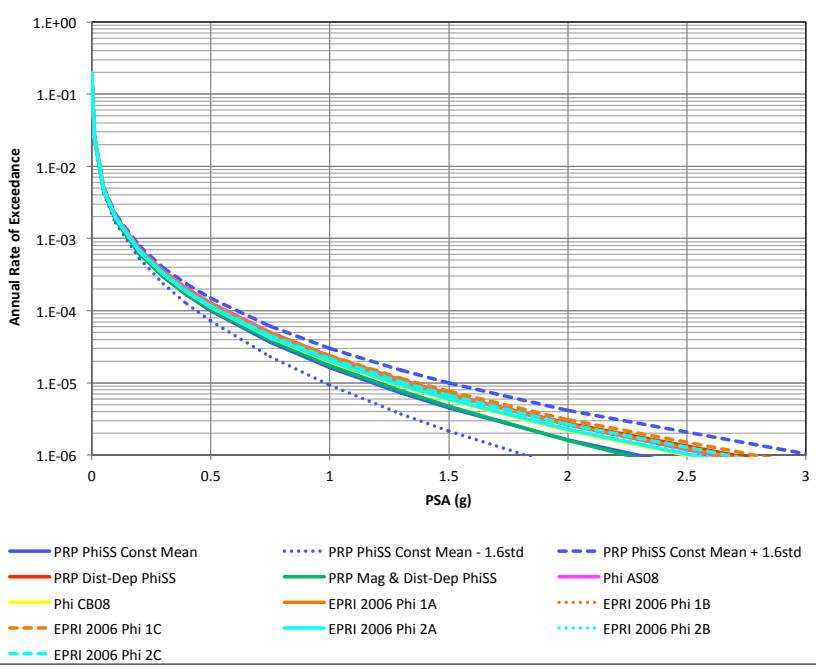
Mbar = 6.14
Rbar = 19 km
Epsbar = 1.26



Hazard Results at **Chattanooga** – at 5 Hz

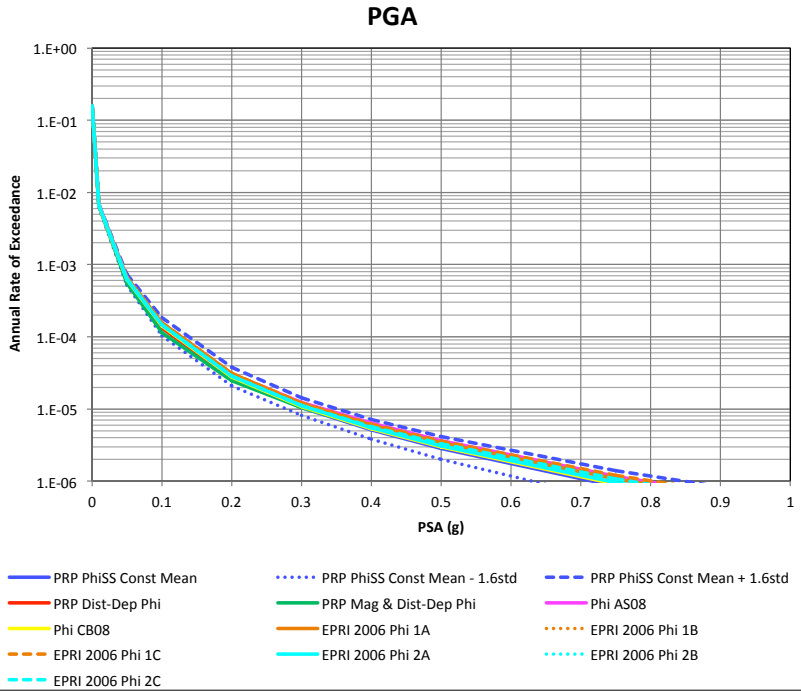
RT 100,000 yrs:

Mbar = 6.15
Rbar = 20 km
Epsbar = 1.42



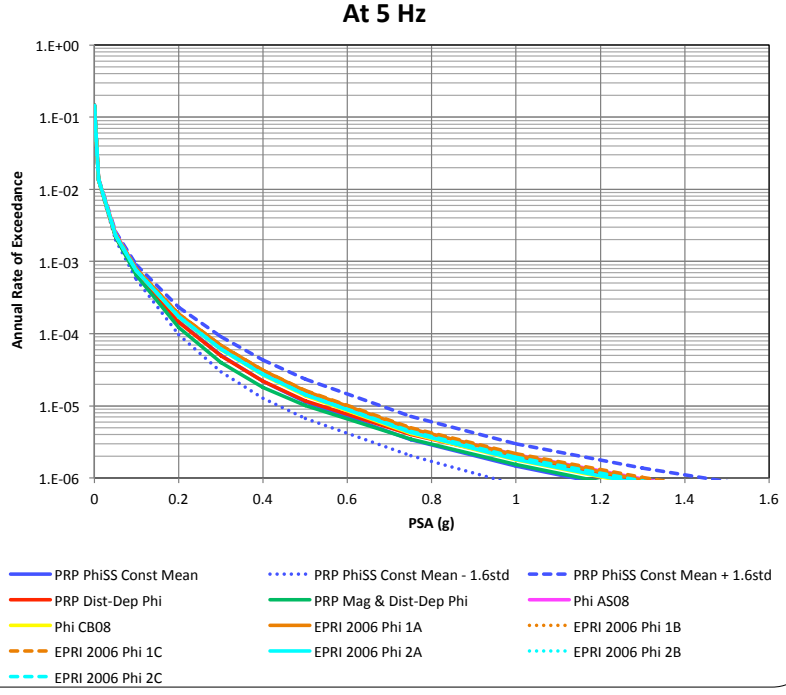
Hazard Results at **Savannah** – at PGA

RT 100,000 yrs:
Mbar = 5.92
Rbar = 26 km
Epsbar = 0.74

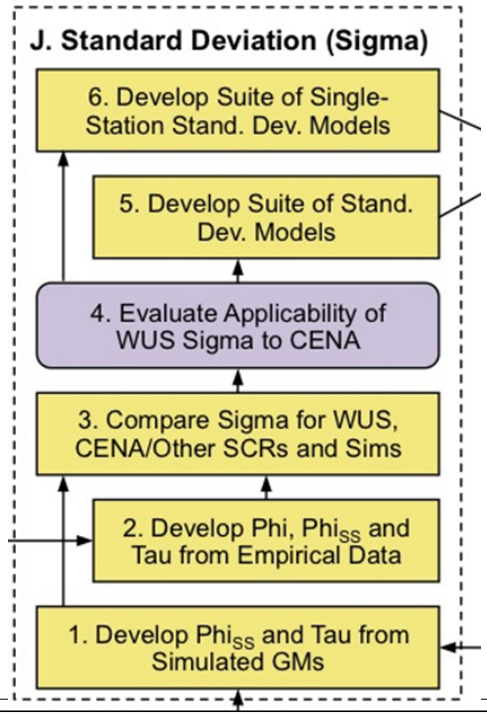


Hazard Results at **Savannah** – at 5 Hz

RT 100,000 yrs:
Mbar = 6.3
Rbar = 46 km
Epsbar = 1.3



Status Update on Sigma WG Tasks



No progress due to delays in receiving the small-to-moderate magnitude data for WUS and the CENA data.