

Hazard Sensitivity

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DCPP SSC Workshop 3: March 25, 2014

Overview

- GMPEs
- SSC Models
- Sensitivity Analysis
- Tornado Plots

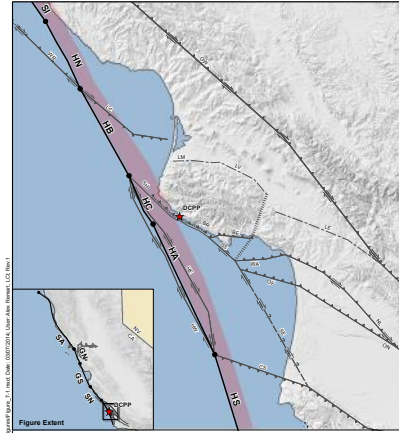
DCPP: GMPEs

- ASK (2014)
- BSSA (2014)
- CB (2014)
- CY (2014)
- ASB (2013)
- $V_{s30m}=760\text{m/s}$
- Default Z_1 and Z_{25} values
- Ergodic Sigma
- Equally Weighted

DCPP: SSC

- Outward-vergent (Inward Dipping)
 - OV [wt=0.4]
- Southwest-vergent (Main reverse faults dip NE)
 - SW [wt=0.3]
- Northeast-vergent (Main reverse faults dip SW)
 - NE [wt=0.3]
- Shoreline (2011)

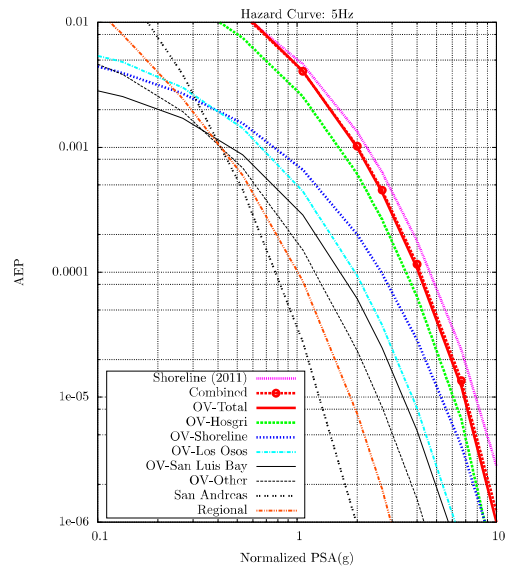
DCPP: SW-01 Fault



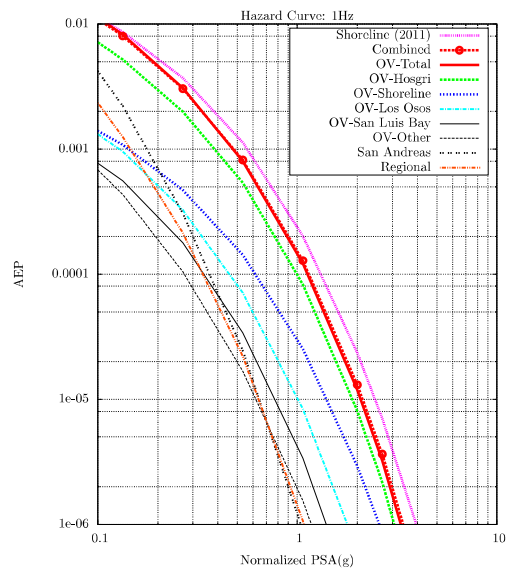
DCPP: Sensitivity Cases

- Recurrence (Time Dependence)
- Hosgri Fault Slip Rate
- Characteristic Maximum Magnitude
- Shoreline Fault Slip Rate
- Hosgri Fault Dip
- Tectonic SSC Models
- Los Osos Fault Slip Rate
- San Luis Bay (SLB) Fault Slip Rate
- Other Faults Slip Rate (Oceano, Wilmar Avenue, . . .)
- Maximum Magnitude (GR Model)
- San Andreas Fault
- Regional Fault
- WAACY
- Background Seismicity Zone

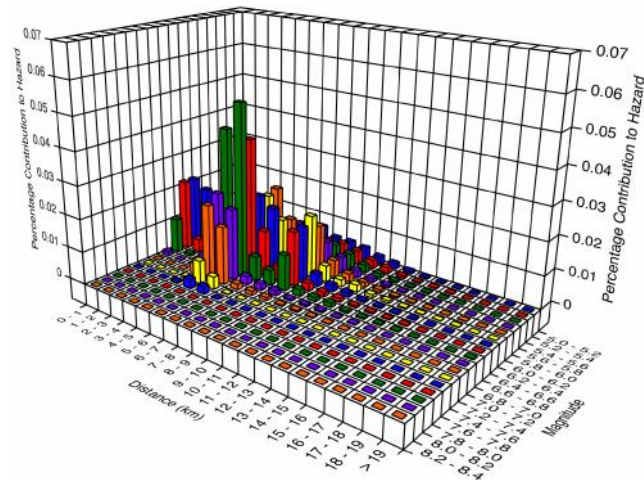
DCPP: 5 Hz by Fault Sources



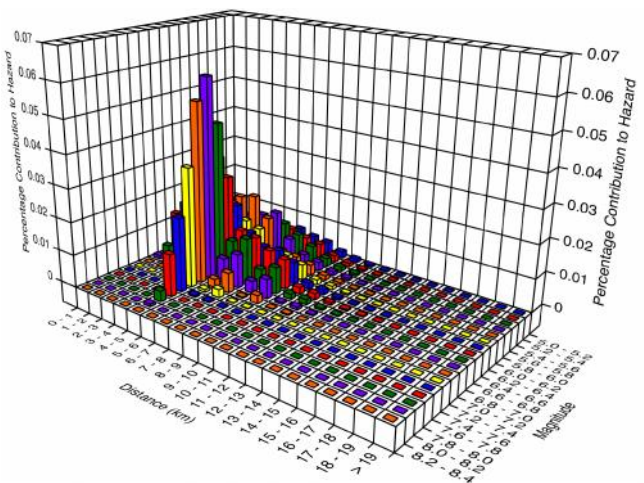
DCPP: 1 Hz by Fault Sources



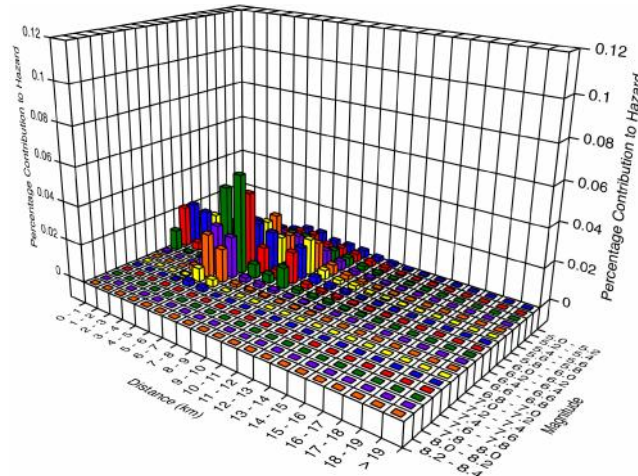
DCPP: OV, 5 Hz, (10⁻⁴) Deaggregation



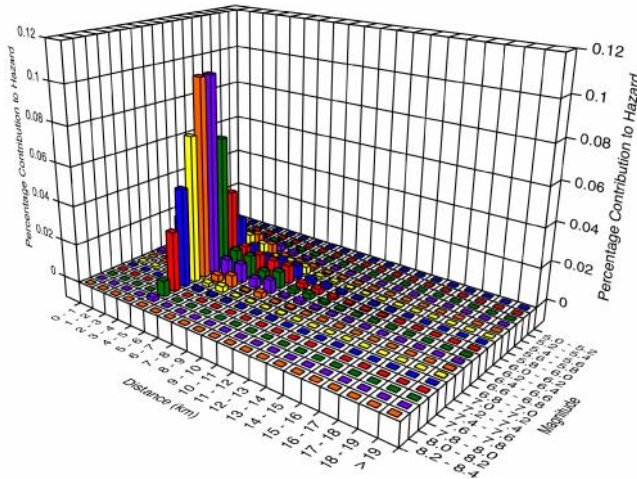
DCPP: Shoreline (2011), 5 Hz, (10⁻⁴) Deaggregation



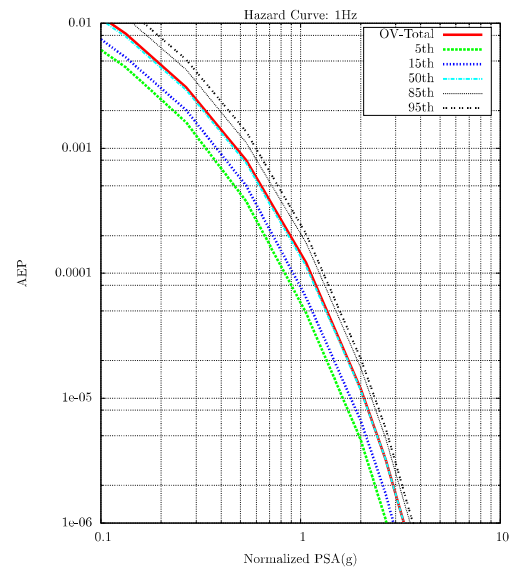
DCPP: OV, 1 Hz, (10^{-4}) Deaggregation



DCPP: Shoreline (2011), 1 Hz, (10^{-4}) Deaggregation

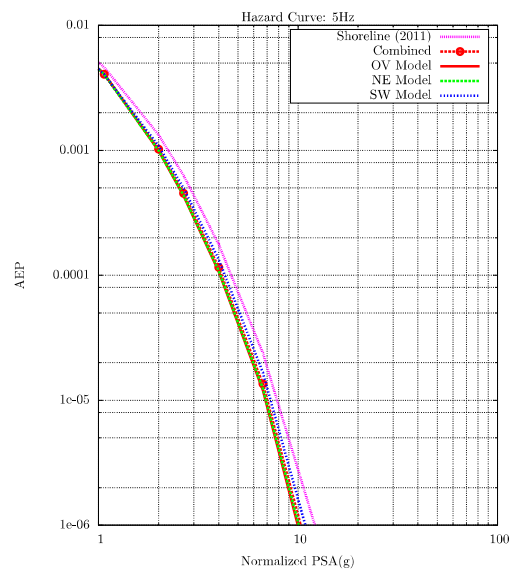


DCPP: Fractile (OV, 1 Hz)



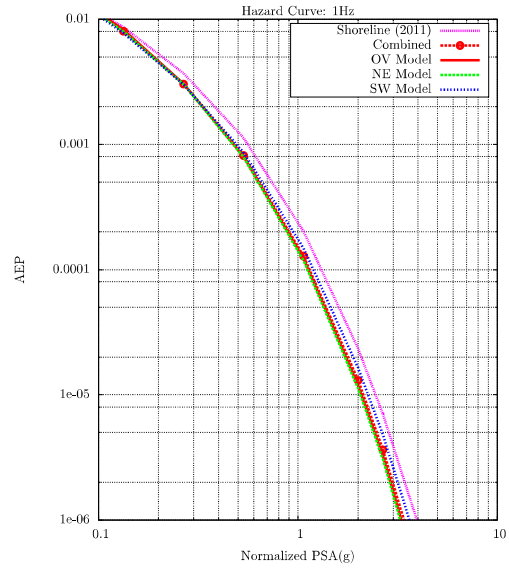
DCPP: Tectonic Models

- OV [0.40]
- SW [0.30]
- NE [0.30]
- Shoreline (2011)



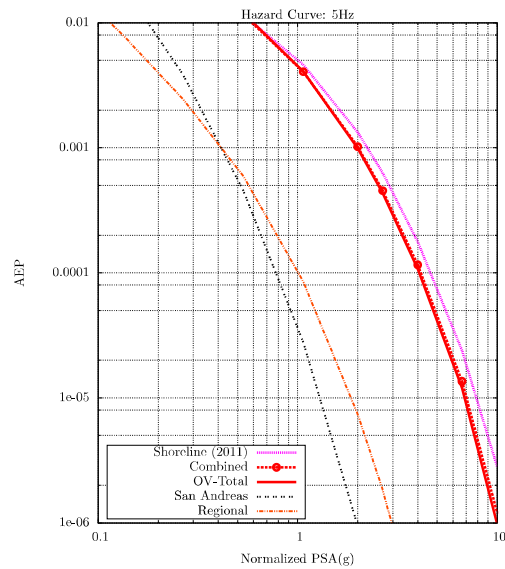
DCPP: Tectonic Models

- OV [0.40]
- SW [0.30]
- NE [0.30]
- Shoreline (2011)



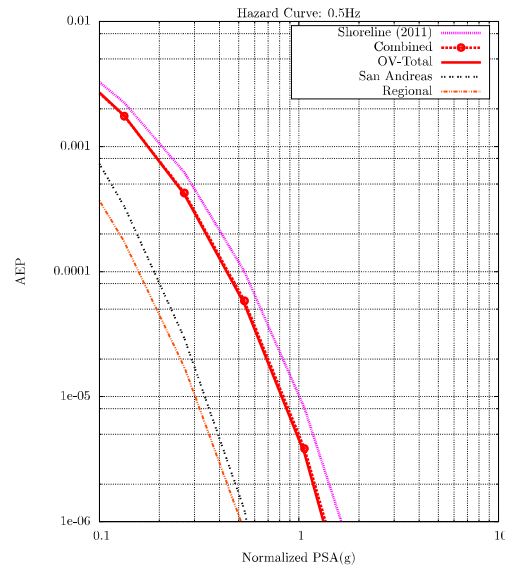
DCPP: Additional Faults

- San Andreas Fault
- Regional Faults



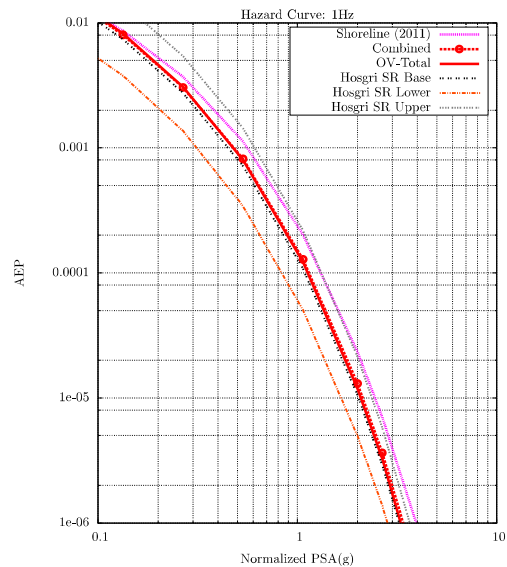
DCPP: Additional Faults

- San Andreas Fault
- Regional Faults



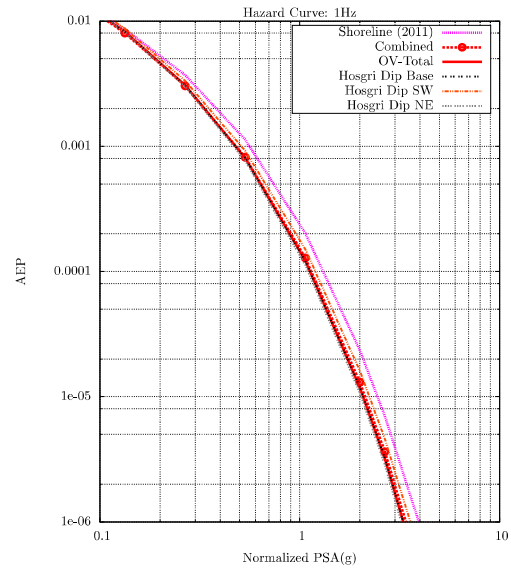
DCPP: Hosgri Slip Rate

- Base, Lower, Upper Slip Rates



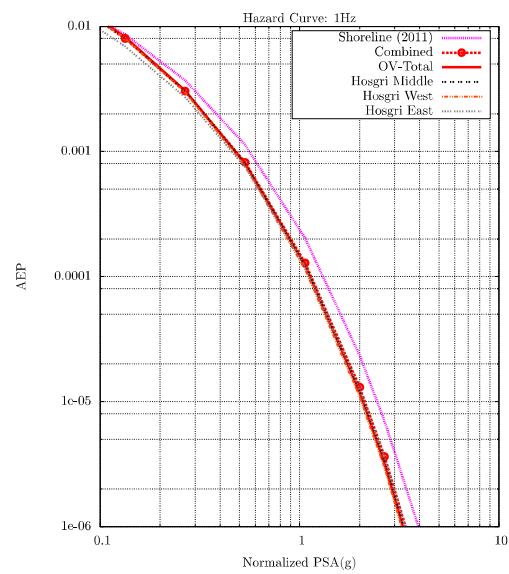
DCPP: Hosgri Dip

- Base, SW, NE



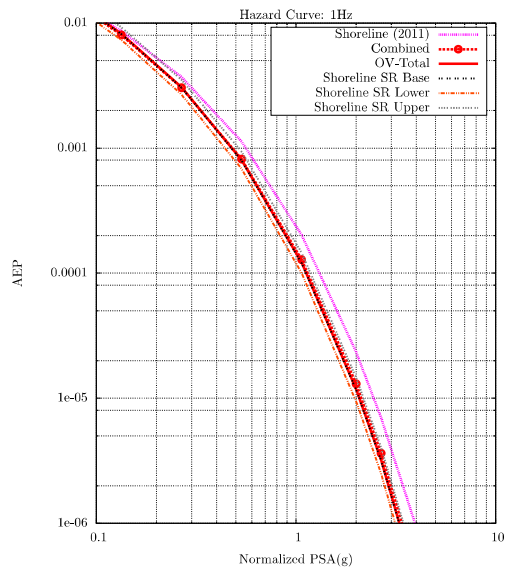
DCPP: Hosgri Location

- Middle, West, East



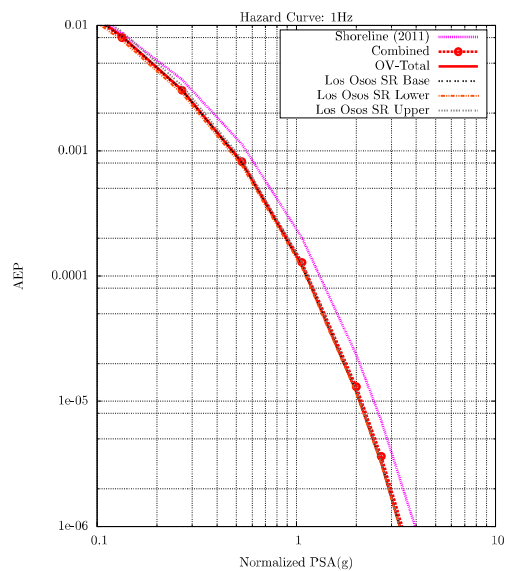
DCPP: Shoreline Fault Slip Rate

- Base, Lower, Upper



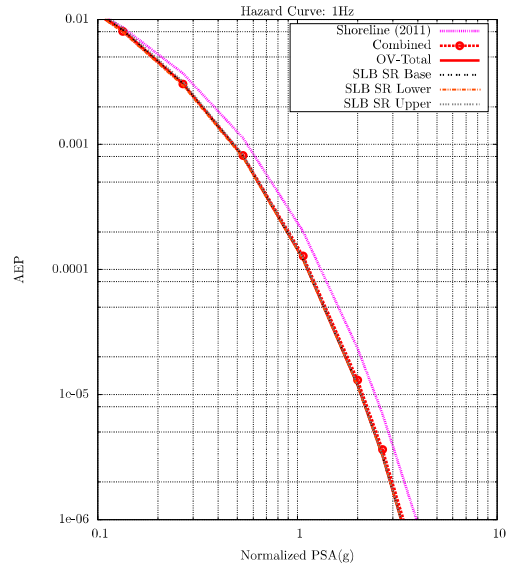
DCPP: Los Osos Fault Slip Rate

- Base, Lower, Upper



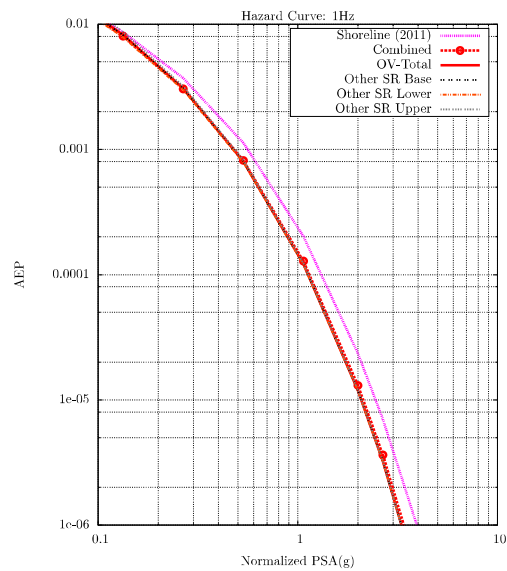
DCPP: SLB Fault Slip Rate

- Base, Lower, Upper



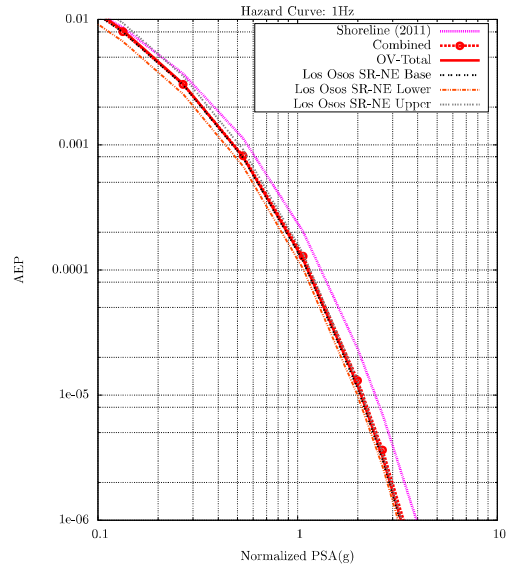
DCPP: Other Faults Slip Rate

- Base, Lower, Upper



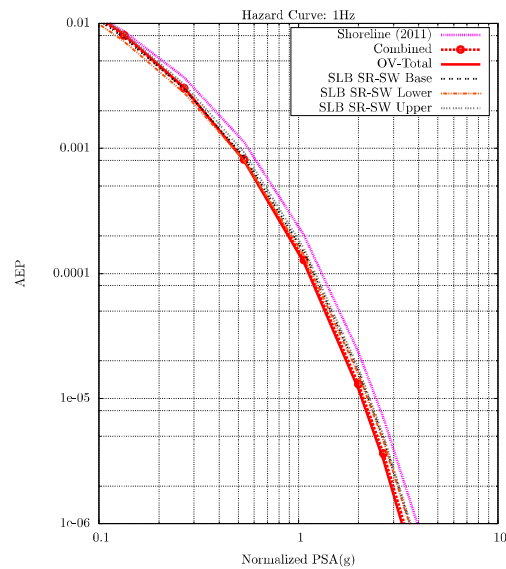
DCPP: Los Osos Slip Rate (NE)

- Base, Lower, Upper
(Range of NE Model)



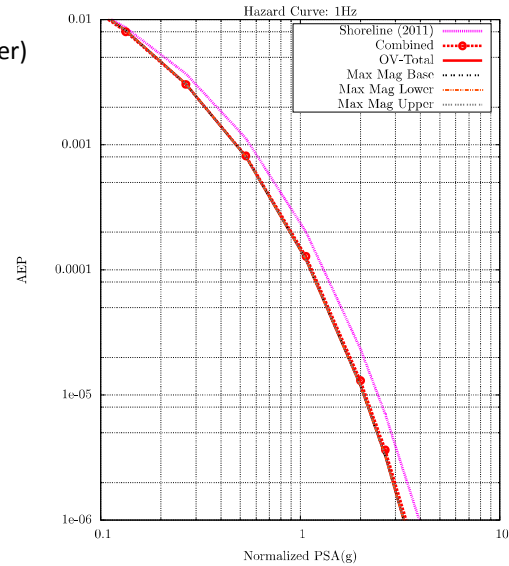
DCPP: SLB Slip Rate (SW)

- Base, Lower, Upper
(Range of SW Model)



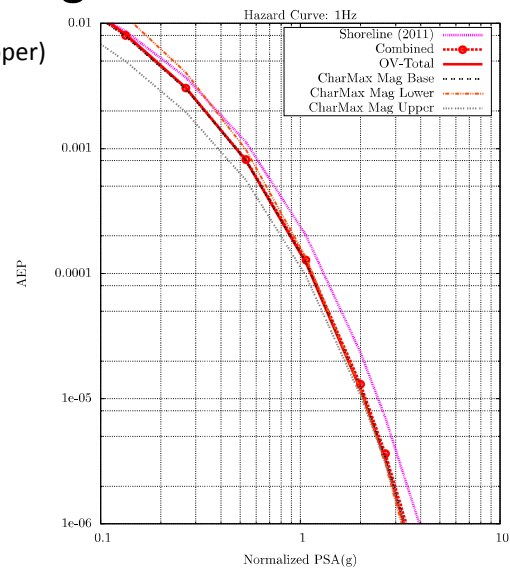
DCPP: Maximum Magnitude

- Max Mag (Base, Lower, Upper)



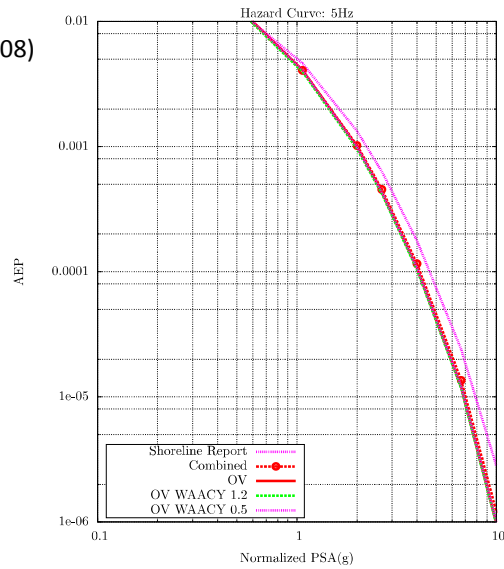
DCPP: Characteristic Maximum Magnitude

- Char Mag (Base, Lower, Upper)

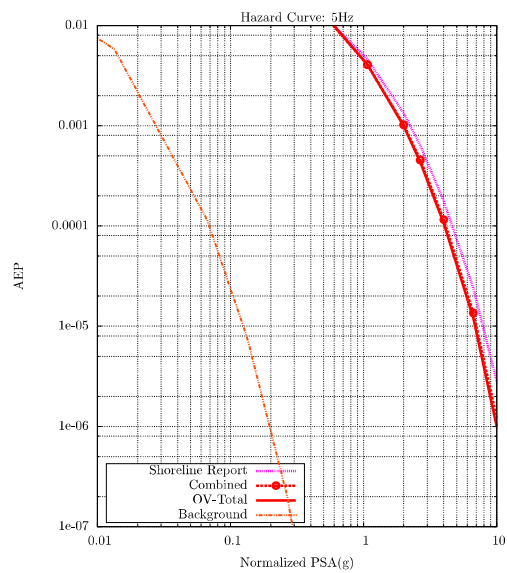


DCPP: WAACY Model

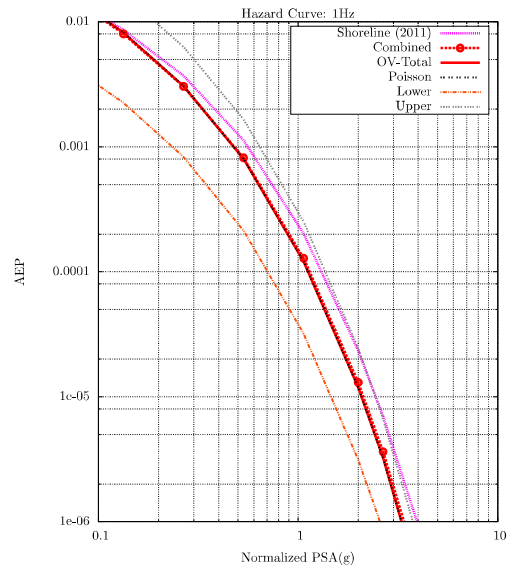
- $B_{tail}=1.2, 0.5$ (Wesnousky, 2008)



DCPP: Background



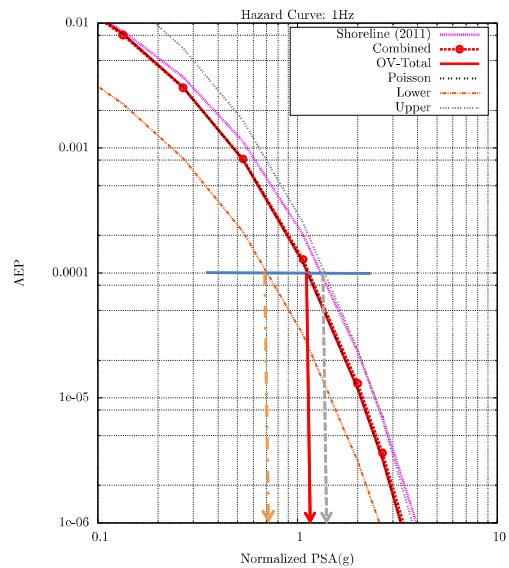
DCPP: Recurrence (Time Dependent)



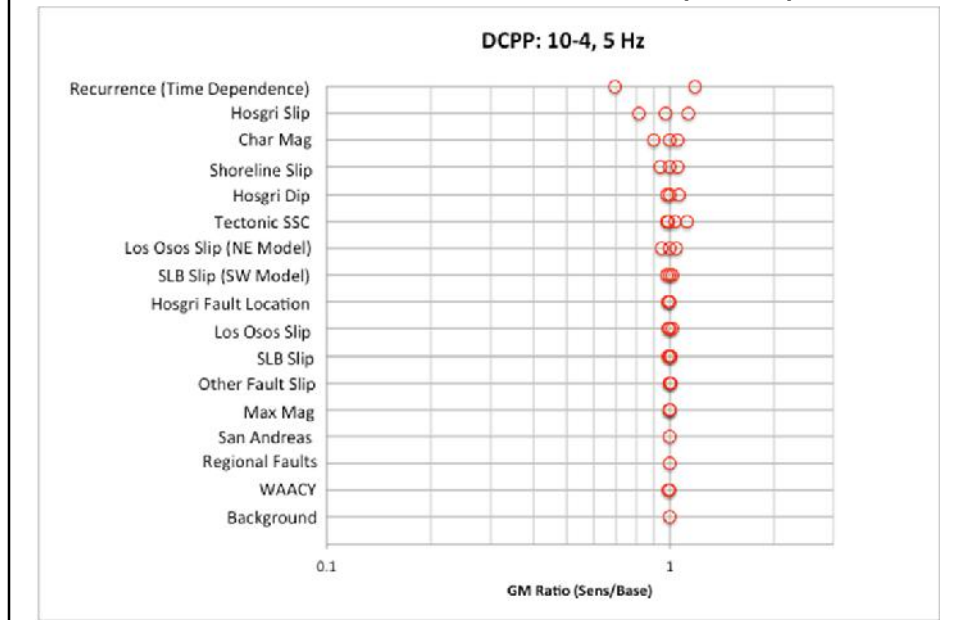
DCPP: Tornado Plot Ratios

$$\text{GM Ratio} = \text{GM}_{\text{upper}} / \text{GM}_{\text{Poisson}}$$

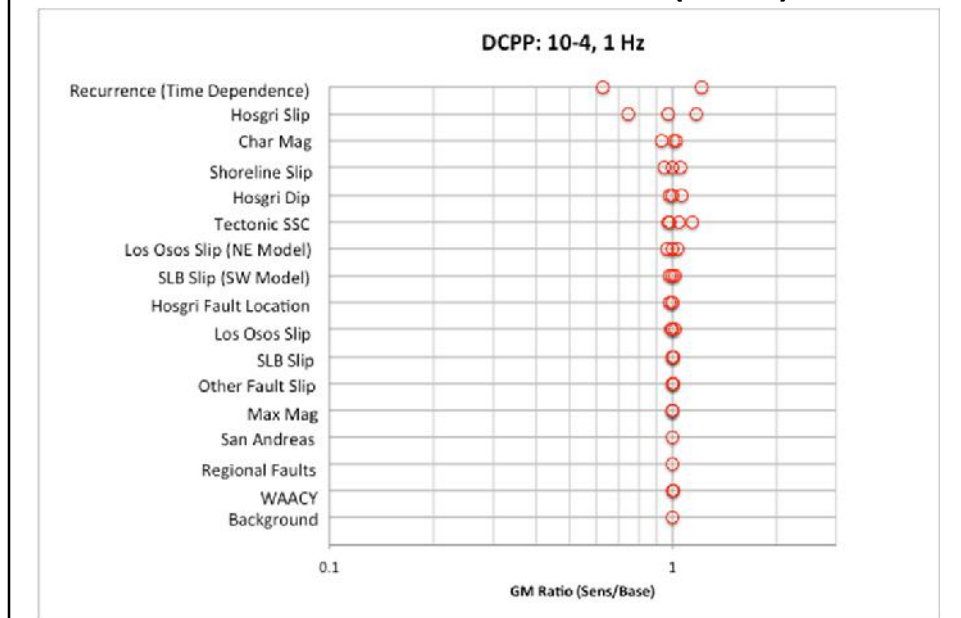
$$\text{GM Ratio} = \text{GM}_{\text{lower}} / \text{GM}_{\text{Poisson}}$$



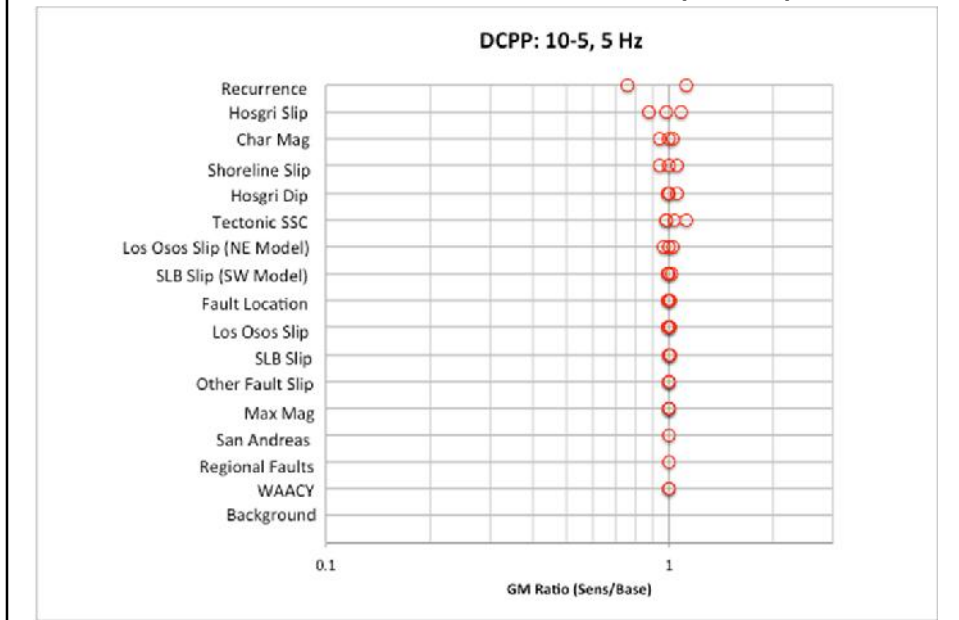
DCPP: Tornado 5 Hz (10^{-4})



DCPP: Tornado 1Hz (10^{-4})



DCPP: Tornado 5 Hz (10^{-5})



DCPP: Tornado 1Hz (10^{-5})

