Comparison of Preliminary Draft NGA-West2 GMPEs

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# Model Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>AS</th>
<th>BSSA</th>
<th>CB</th>
<th>CY</th>
<th>Id</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnitude</td>
<td>Mw</td>
<td>Mw</td>
<td>Mw</td>
<td>Mw</td>
<td>Mw</td>
</tr>
<tr>
<td>Top of Rupture</td>
<td>$Z_{\text{tor}}$</td>
<td>$Z_{\text{tor}}$</td>
<td>$Z_{\text{tor}}$</td>
<td>$Z_{\text{tor}}$</td>
<td>$Z_{\text{tor}}$</td>
</tr>
<tr>
<td>Style of Faulting</td>
<td>RV,NM,SS</td>
<td>RV,NM,SS</td>
<td>RV,NM,SS</td>
<td>RV,NM,SS</td>
<td>RV,NM,SS</td>
</tr>
<tr>
<td>Dip</td>
<td>Yes</td>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Downdip Fault Width</td>
<td>Yes</td>
<td></td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closest Distance to Rupture</td>
<td>$R_{\text{rup}}$</td>
<td>$R_{\text{rup}}$</td>
<td>$R_{\text{rup}}$</td>
<td>$R_{\text{rup}}$</td>
<td>$R_{\text{rup}}$</td>
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<tr>
<td>Hor Dist. to Surface Proj.</td>
<td>$R_{\text{jb}}$</td>
<td>$R_{\text{jb}}$</td>
<td>$R_{\text{jb}}$</td>
<td>$R_{\text{jb}}$</td>
<td>$R_{\text{jb}}$</td>
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<tr>
<td>Hor Dist. perpendicular to Strike</td>
<td>$R_x$, $R_y$</td>
<td>$R_x$</td>
<td>$R_x$</td>
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<tr>
<td>Hanging Wall Model</td>
<td>Yes</td>
<td>$(R_{\text{jb}})$</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Vs30m</td>
<td>Vs30</td>
<td>(760m/s)</td>
<td>Vs30, $(S_j)$</td>
<td>Vs30</td>
<td>Vs30$\geq$450</td>
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<tr>
<td>Depth to Vs</td>
<td>$Z_{1.0}$</td>
<td></td>
<td>$Z_{2.5}$</td>
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<td>$Z_{1.0}$</td>
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<tr>
<td>Hypocentral Depth</td>
<td></td>
<td></td>
<td>$H_{\text{hyp}}$</td>
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<td></td>
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<tr>
<td>Vs30m for Reference Rock</td>
<td>1100</td>
<td>760</td>
<td>1100</td>
<td>1130</td>
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</tbody>
</table>
Vertical Strike-Slip

- Magnitude = 5, 6, 7, and 8
- Distance = 1 – 200 km
- Dip = 90
- Width = 3.2 (M5), 10 (M6), 15 (M7,8) km
- Hypocentral Depth = 75% Fault Width
- Top of Rupture = 0 km
- Vs30m = 760 m/sec
Vertical Strike-Slip: PGA
Vertical Strike-Slip: T=0.2sec
Vertical Strike-Slip: T=1.0sec
Dipping Reverse Surface Fault

- Magnitude = 5, 6, and 7
- Distance = 1 – 200 km
- Dip = 45
- Downdip Width = 3.2 (M5), 10 (M6), 20 (M7) km
- Hypocentral Depth = 75% Fault Width
- Top of Rupture = 0 km
- Vs30m = 760 m/sec
Dipping Reverse Surface Fault: PGA

M5.0, PGA

M6.0, PGA

M7.0, PGA
Dipping Reverse Surface Fault: T=0.2sec
Dipping Reverse Surface Fault: T=1.0sec
Dipping Reverse Buried Fault

- Magnitude = 5, 6, and 7
- Distance = 1 – 200 km
- Dip = 45
- Downdip Width = 3.2 (M5), 10 (M6), 20 (M7) km
- Hypocentral Depth = 75% Fault Width
- Top of Rupture = 6 km
- Vs30m = 760 m/sec
Dipping Reverse Buried Fault: PGA

M5.0, PGA

M6.0, PGA

M7.0, PGA
Dipping Reverse Buried Fault: T=0.2sec
Dipping Reverse Buried Fault: $T=1.0\text{sec}$
Magnitude Scaling

SS, R=30km, PGA

SS, R=30km, T=0.2s

SS, R=30km, T=1.0s
Sigma Values

Graphs showing sigma values for different magnitudes, distances, and periods.
Sigma Values

SS, M7, PGA

SS, M7, T=0.2s

SS, M7, T=1.0s