

**Digital Appendix for:  
Generation of synthetic spectrum-compatible bi-  
directional ground motions with specific  
directionality**

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<sup>2</sup>*Department of Urban Management, Kyoto University, Kyoto, Japan.*

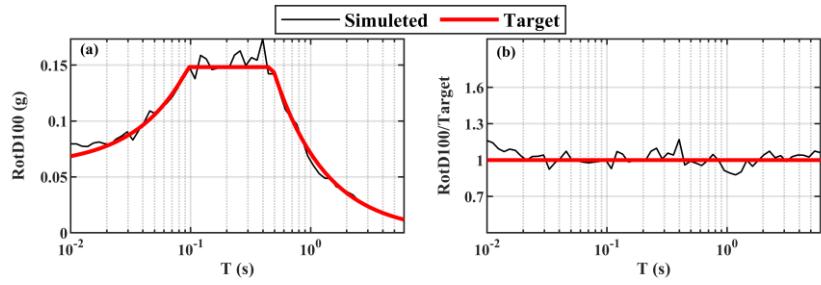
<sup>3</sup>*Disaster Prevention Research Institute, Kyoto University, Kyoto, Japan.*

<sup>4</sup>*Department of Civil and Environmental Engineering, Tohoku University, Sendai, Japan.*

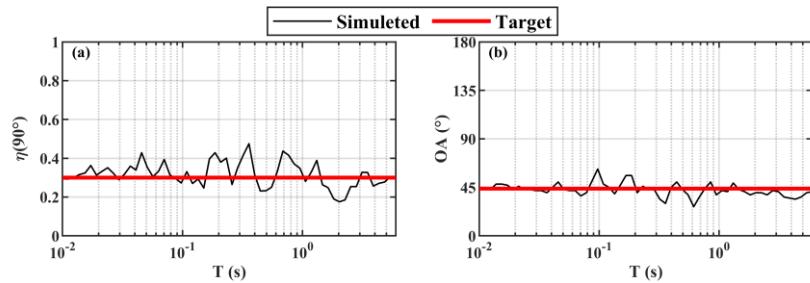
**Results obtained using the ASCE RotD100 response  
spectrum**

# No. 1

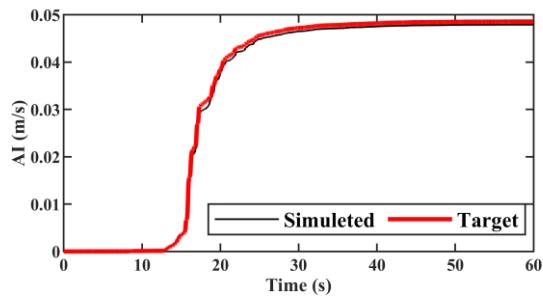
RotD100 response spectrum



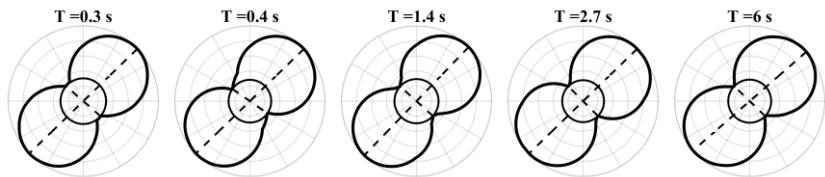
Directionality



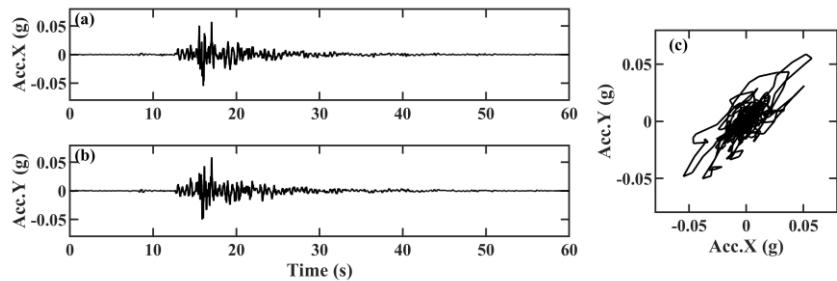
Arias intensity



Spectral demand over all horizontal directions

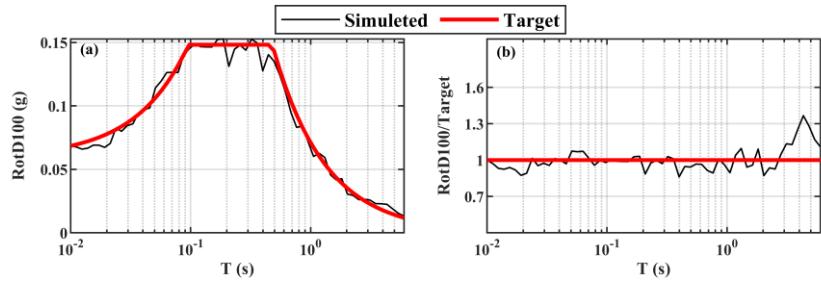


Acceleration time history

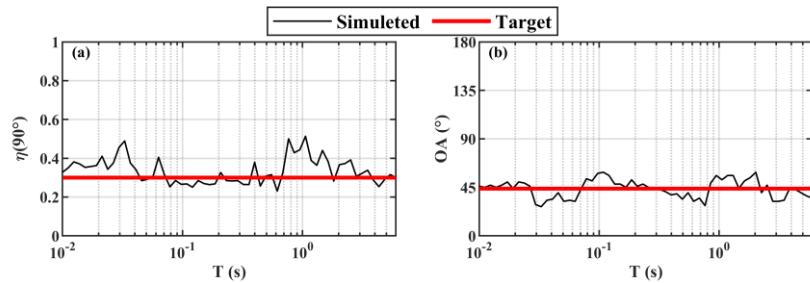


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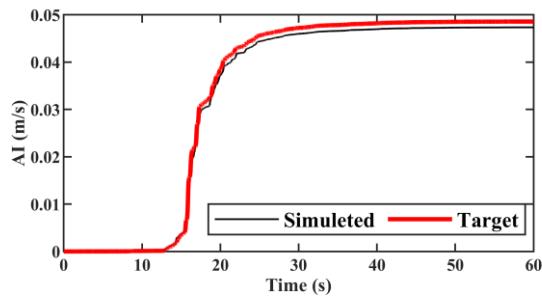
RotD100 response spectrum



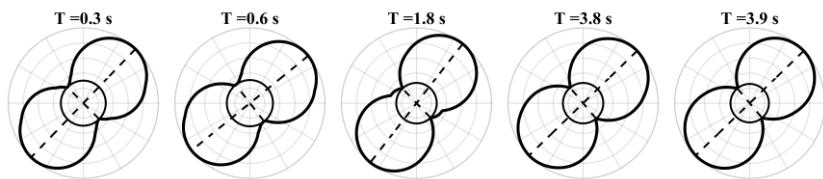
Directionality



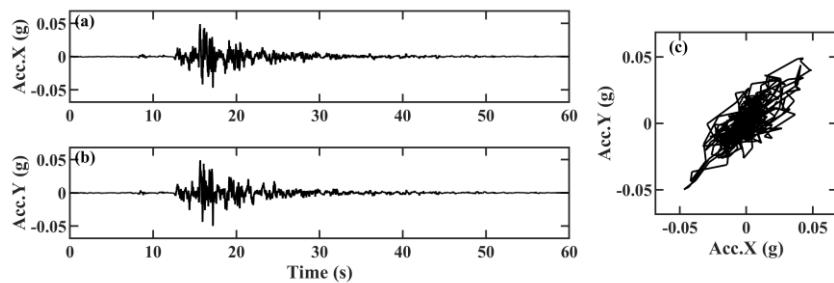
Arias intensity



Spectral demand over all horizontal directions

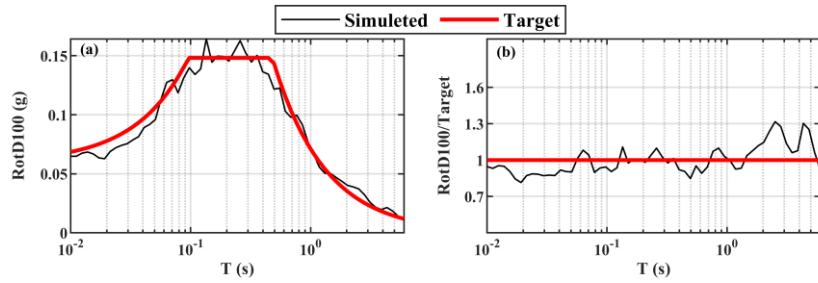


Acceleration time history

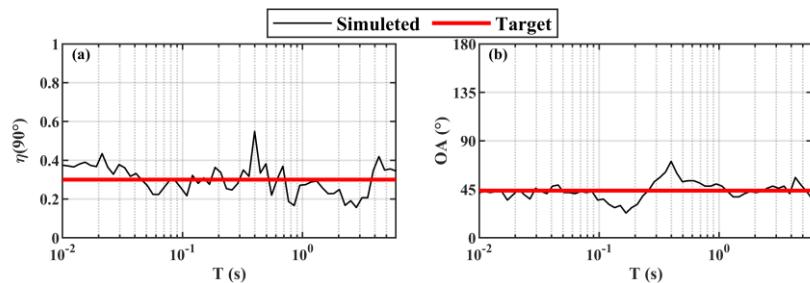


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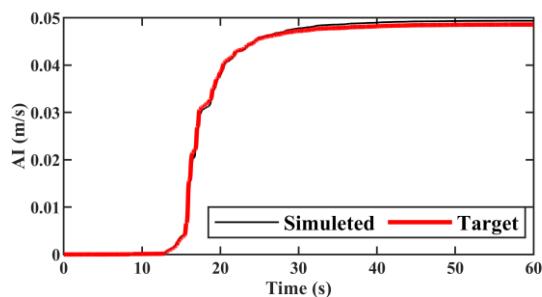
RotD100 response spectrum



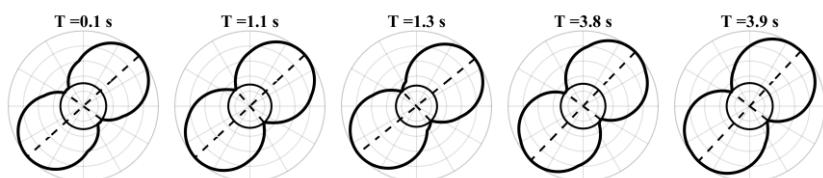
Directionality



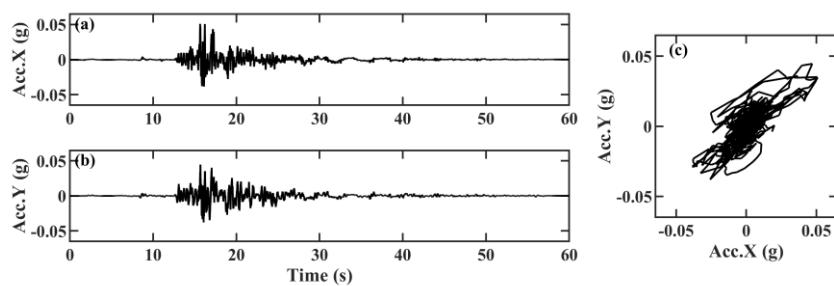
Arias intensity



Spectral demand over all horizontal directions

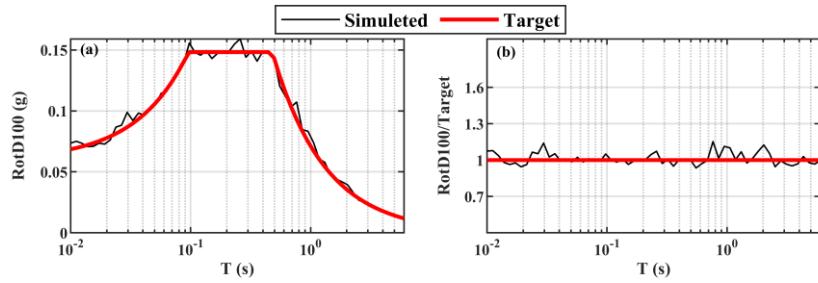


Acceleration time history

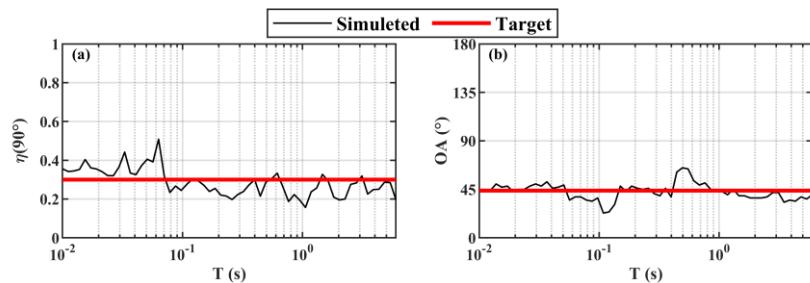


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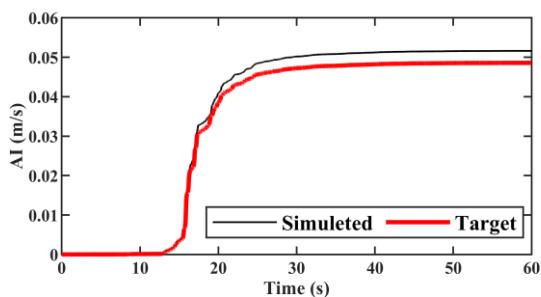
RotD100 response spectrum



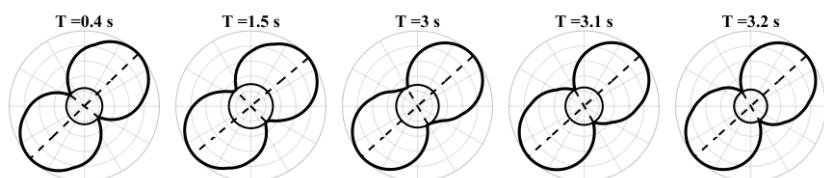
Directionality



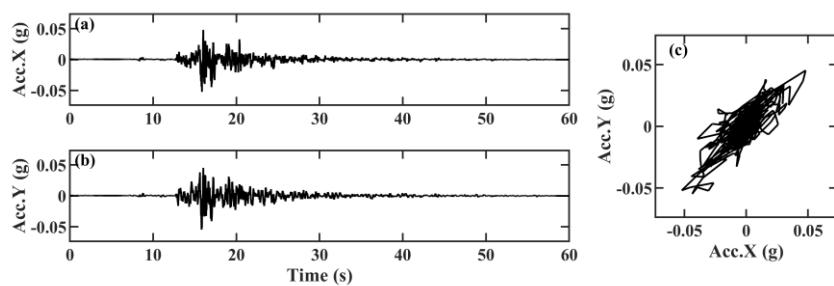
Arias intensity



Spectral demand over all horizontal directions

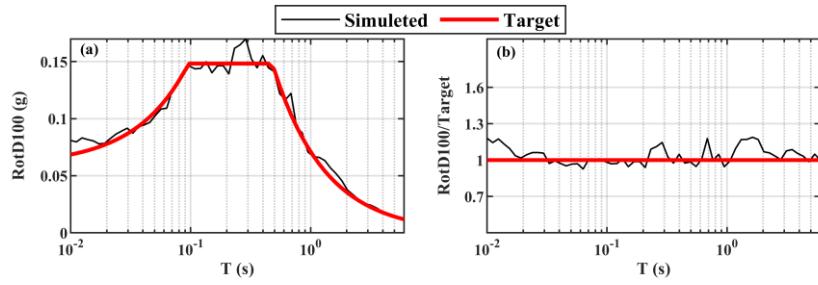


Acceleration time history

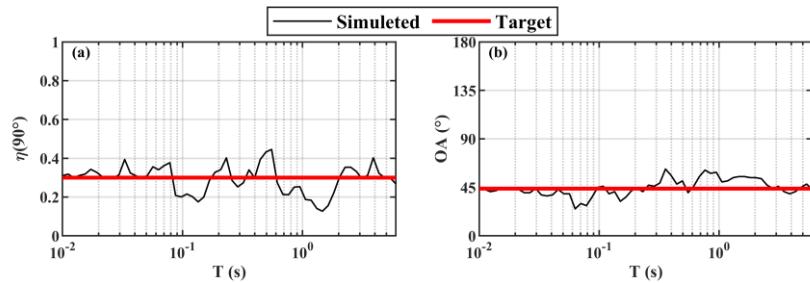


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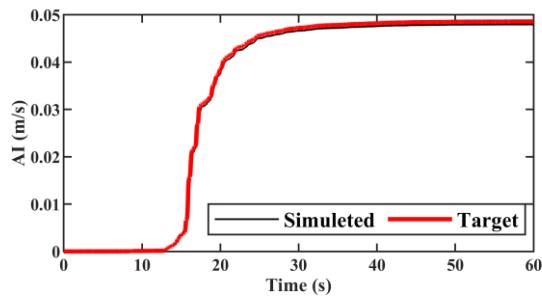
RotD100 response spectrum



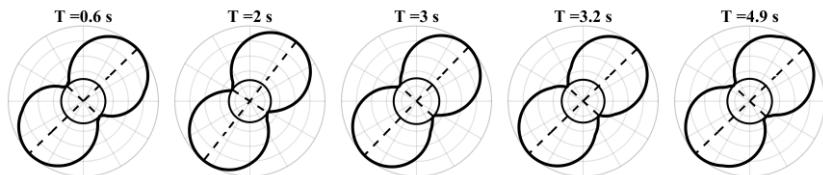
Directionality



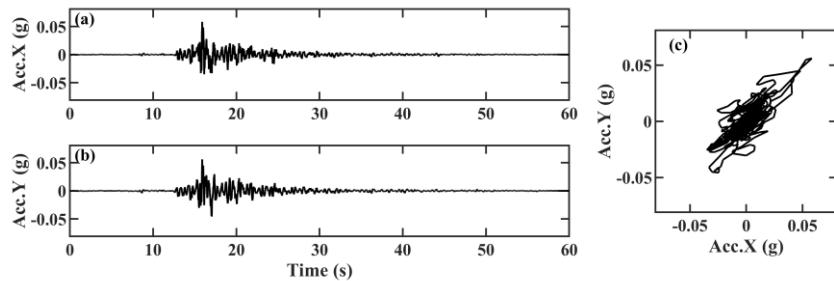
Arias intensity



Spectral demand over all horizontal directions

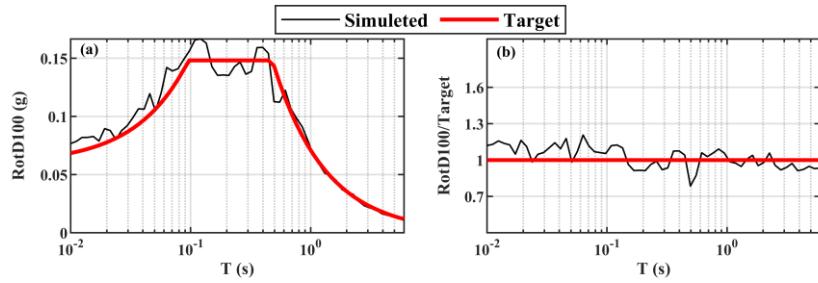


Acceleration time history

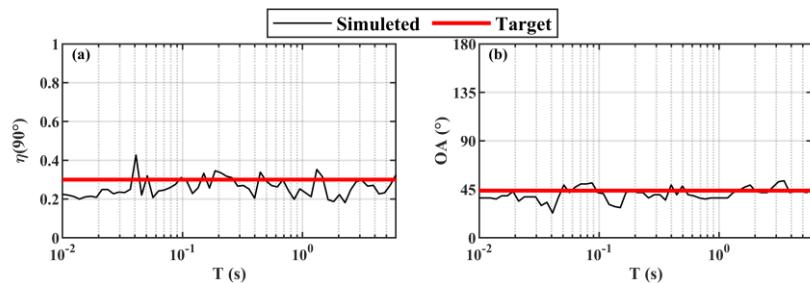


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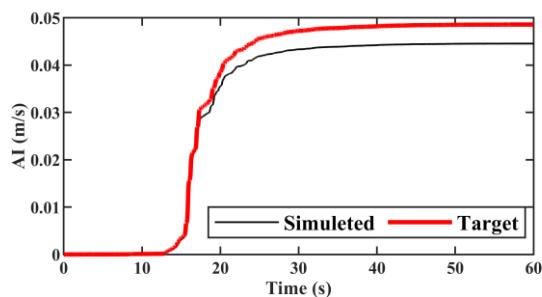
RotD100 response spectrum



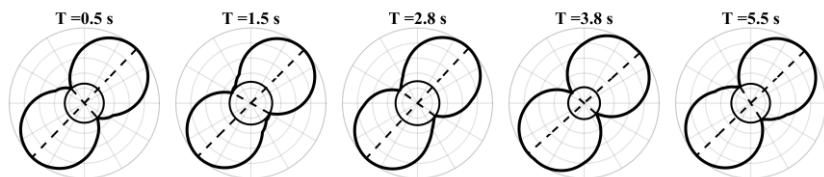
Directionality



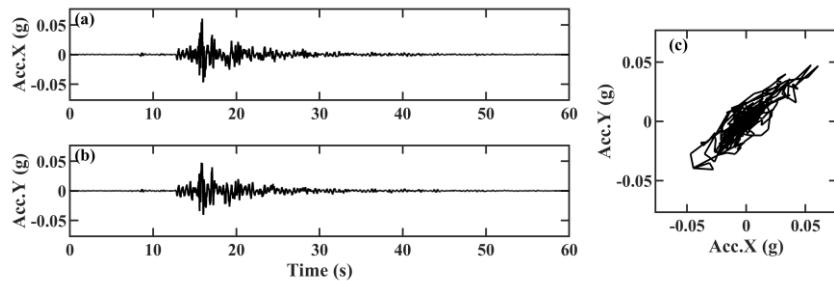
Arias intensity



Spectral demand over all horizontal directions

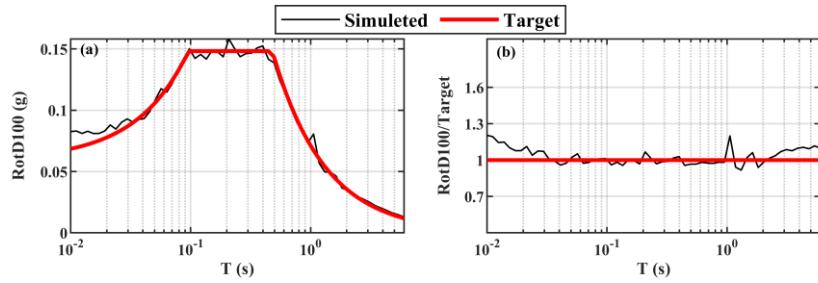


Acceleration time history

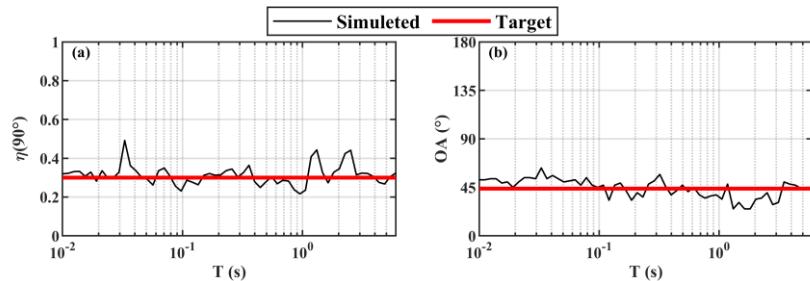


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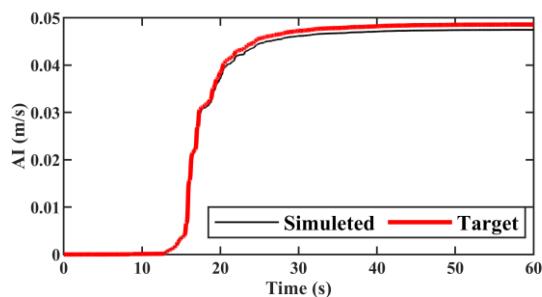
RotD100 response spectrum



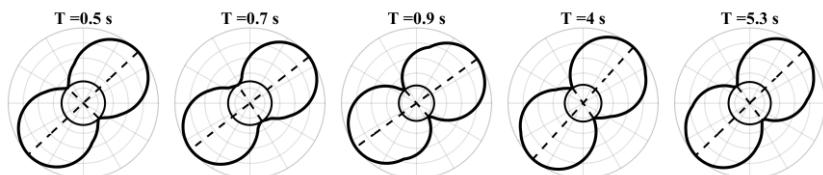
Directionality



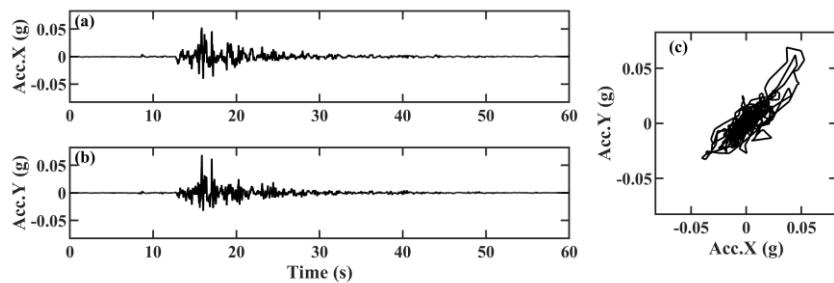
Arias intensity



Spectral demand over all horizontal directions

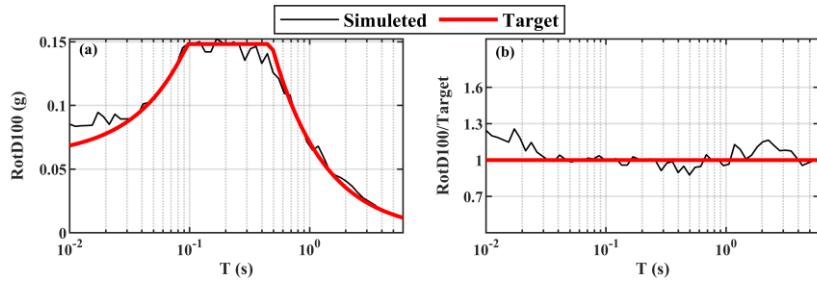


Acceleration time history

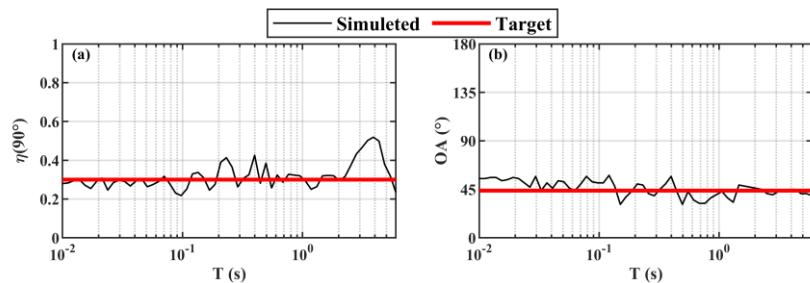


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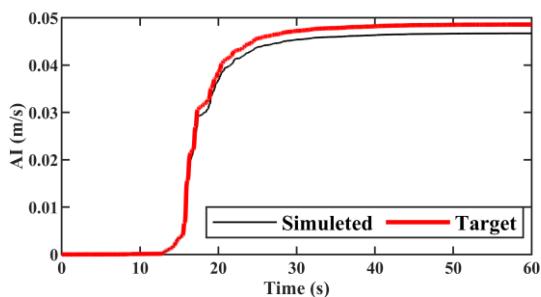
RotD100 response spectrum



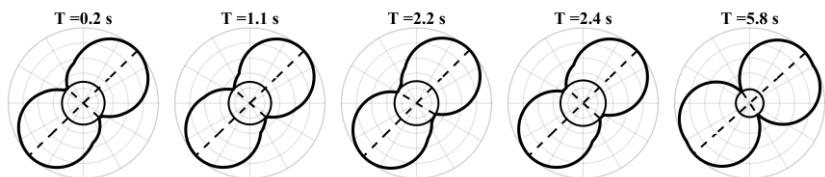
Directionality



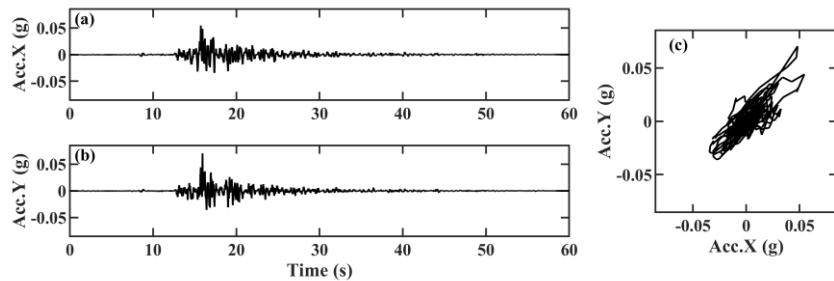
Arias intensity



Spectral demand over all horizontal directions

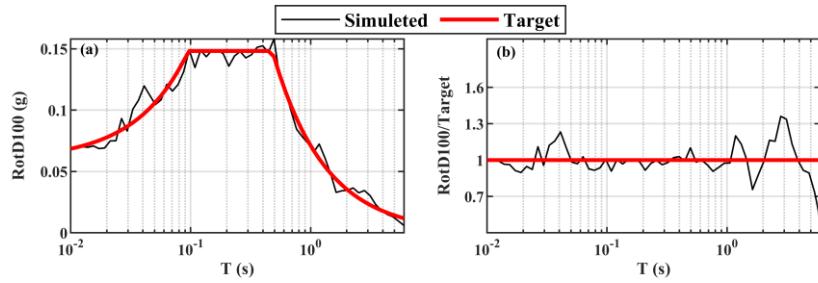


Acceleration time history

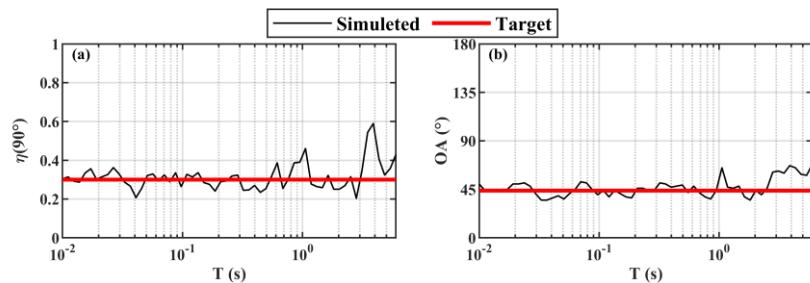


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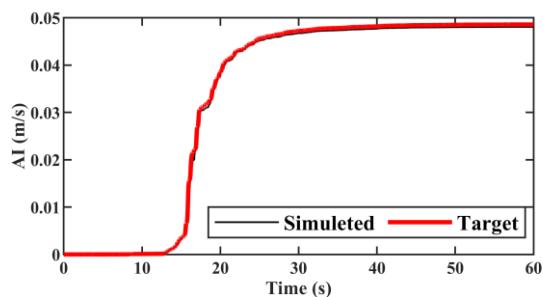
RotD100 response spectrum



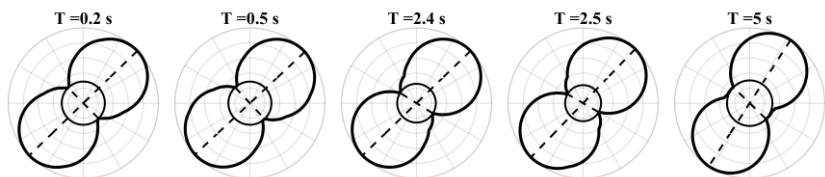
Directionality



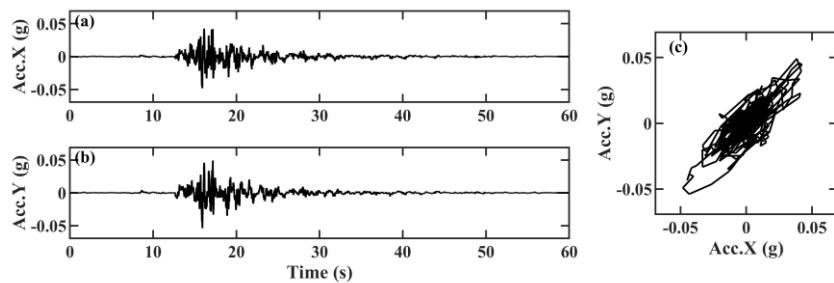
Arias intensity



Spectral demand over all horizontal directions

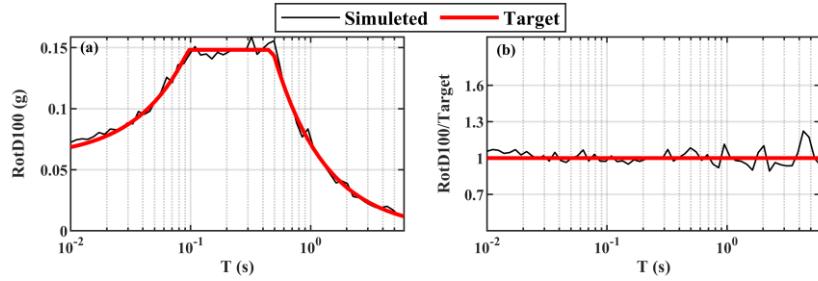


Acceleration time history

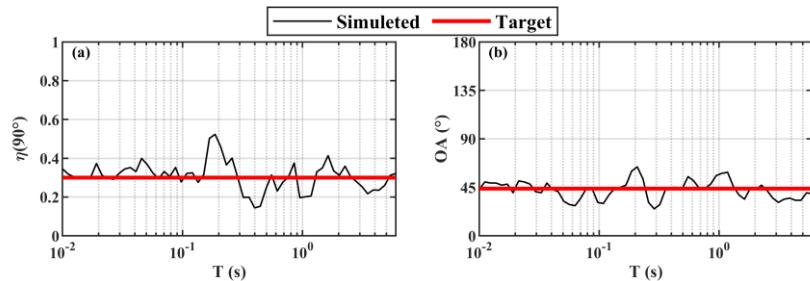


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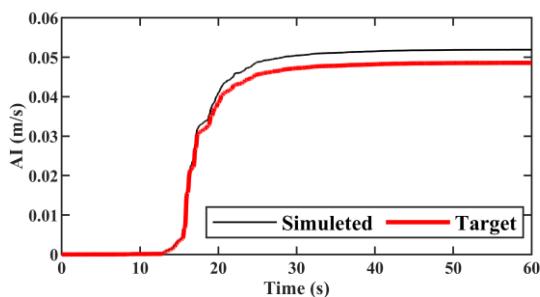
RotD100 response spectrum



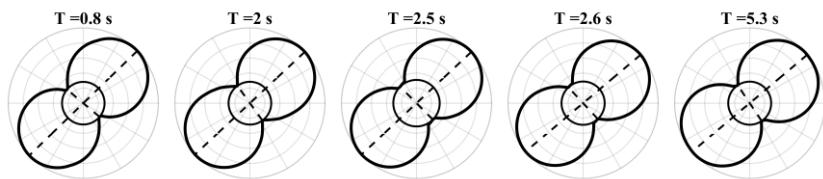
Directionality



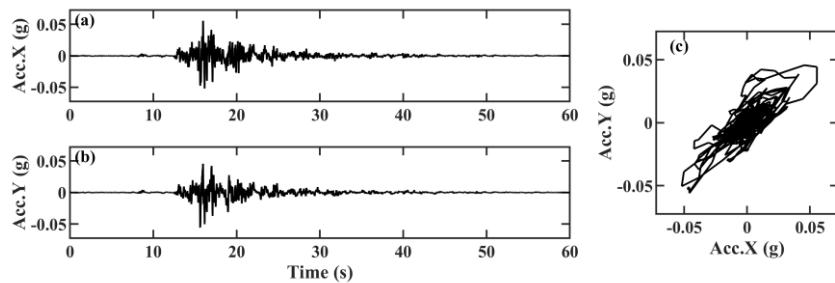
Arias intensity



Spectral demand over all horizontal directions

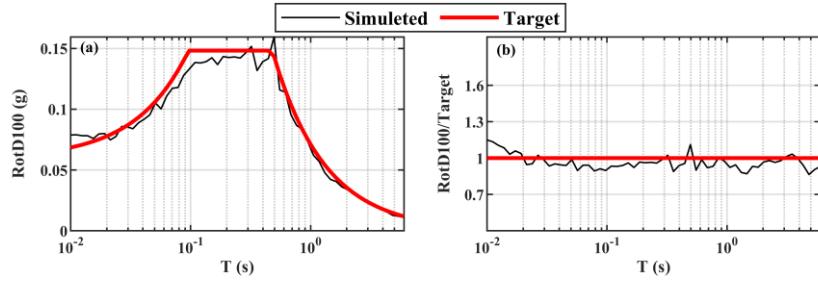


Acceleration time history

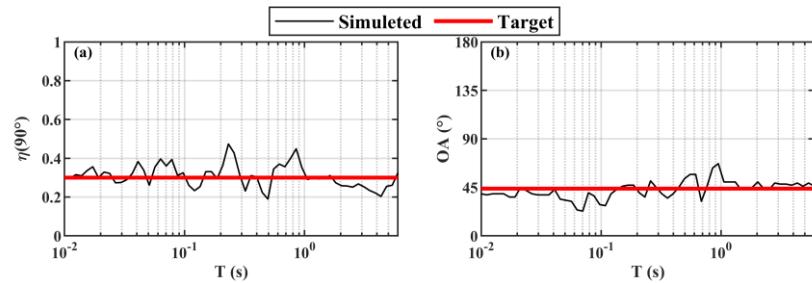


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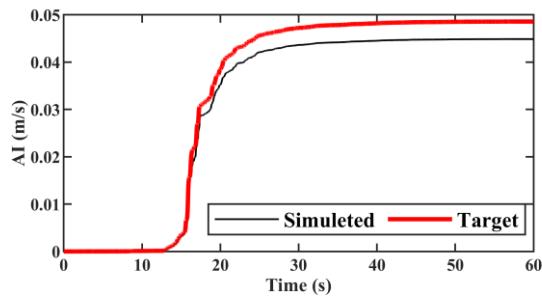
RotD100 response spectrum



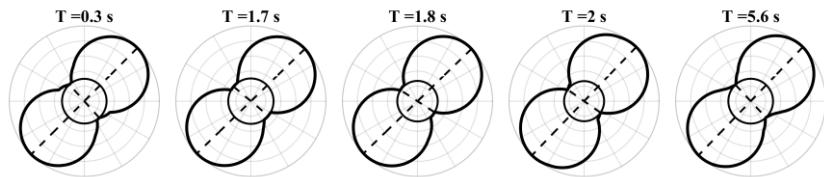
Directionality



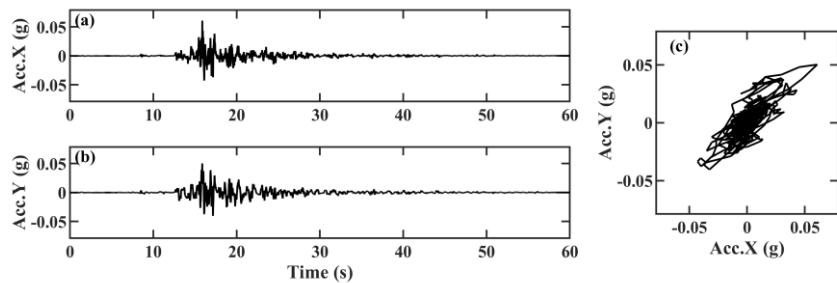
Arias intensity



Spectral demand over all horizontal directions

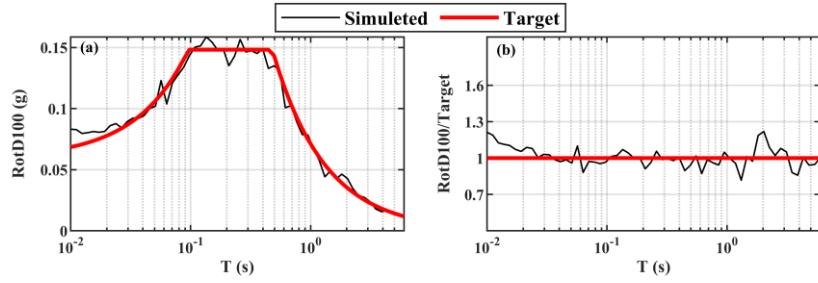


Acceleration time history

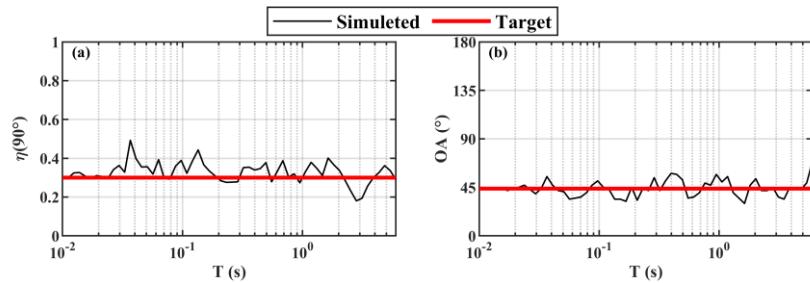


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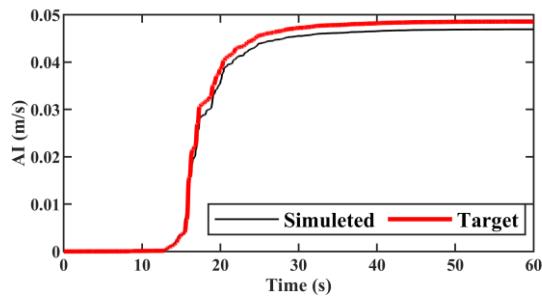
RotD100 response spectrum



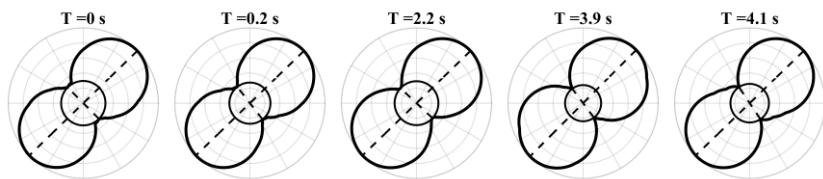
Directionality



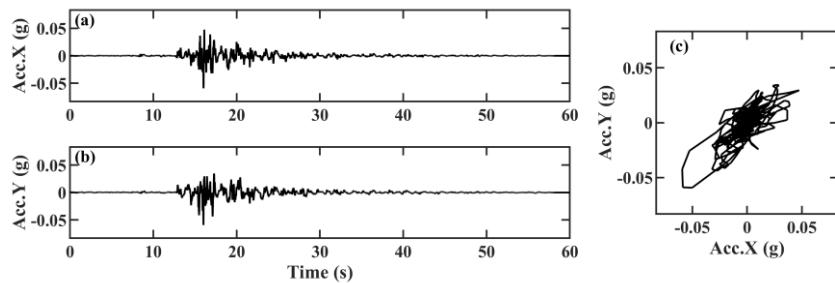
Arias intensity



Spectral demand over all horizontal directions

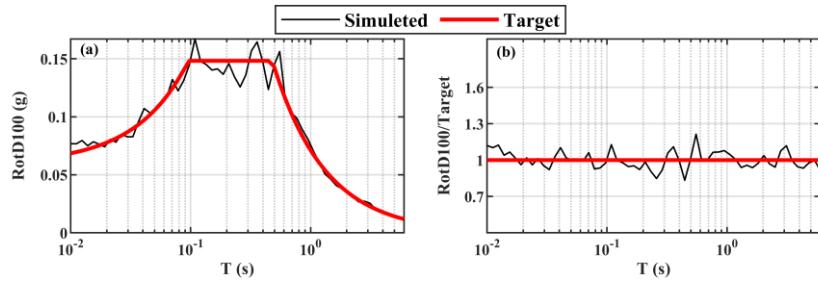


Acceleration time history

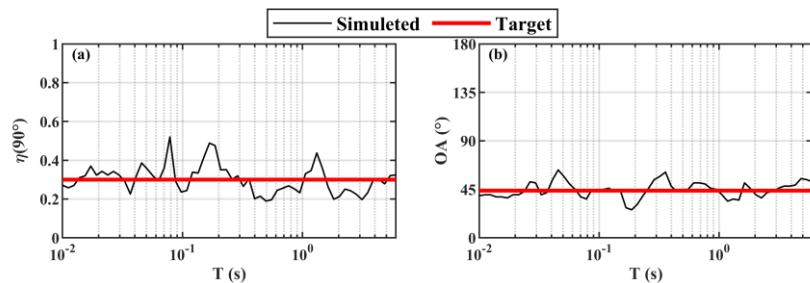


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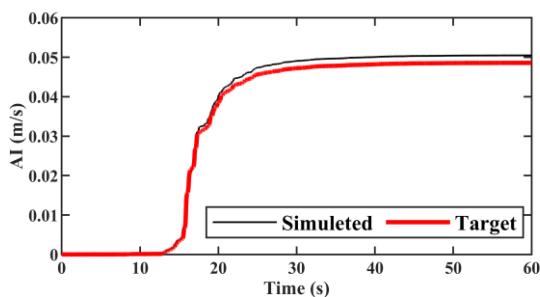
RotD100 response spectrum



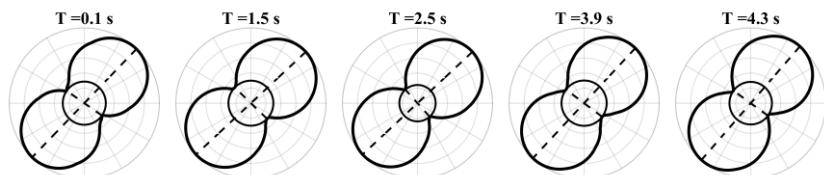
Directionality



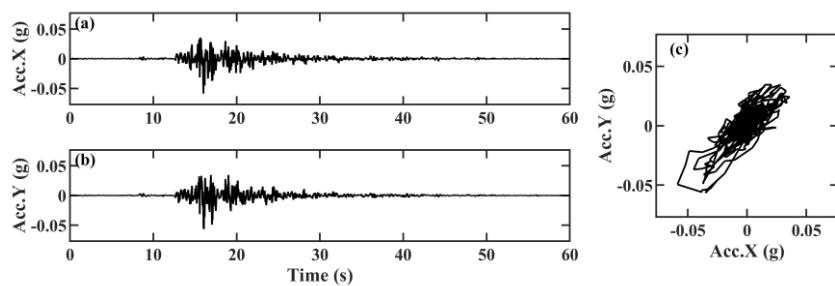
Arias intensity



Spectral demand over all horizontal directions

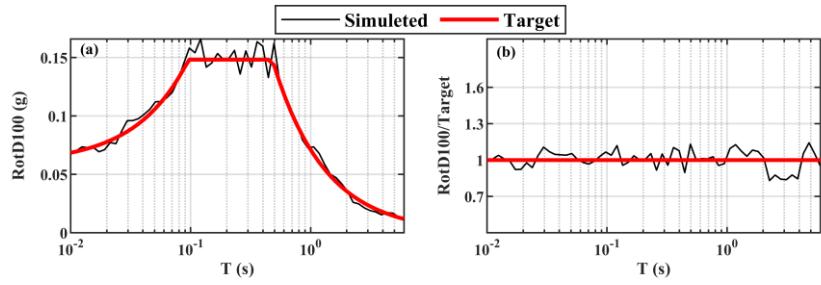


Acceleration time history

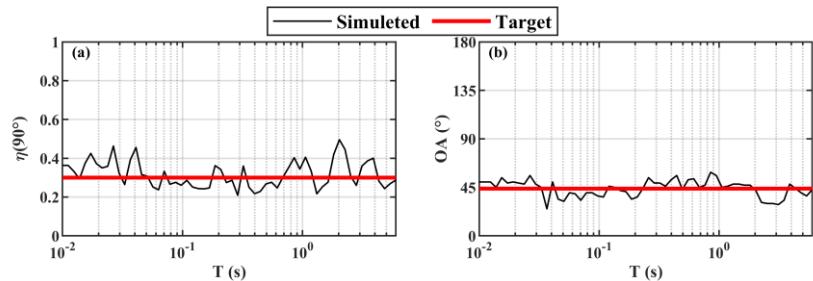


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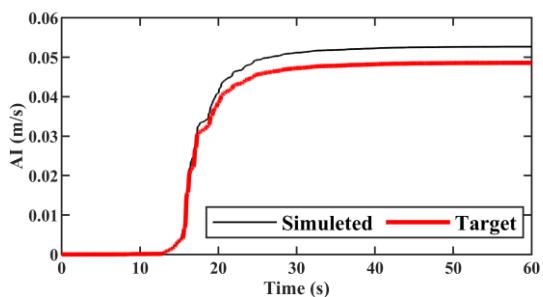
RotD100 response spectrum



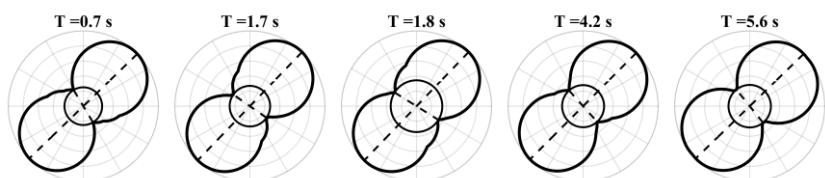
Directionality



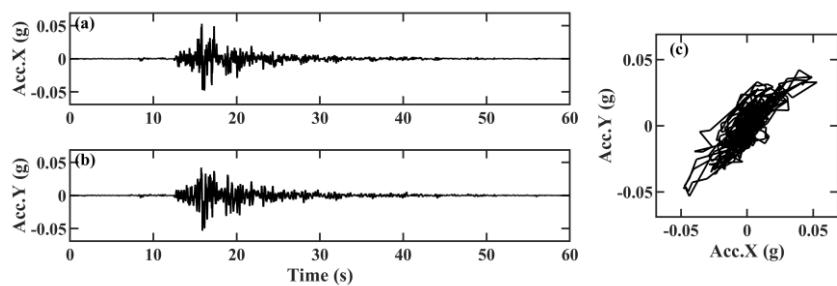
Arias intensity



Spectral demand over all horizontal directions

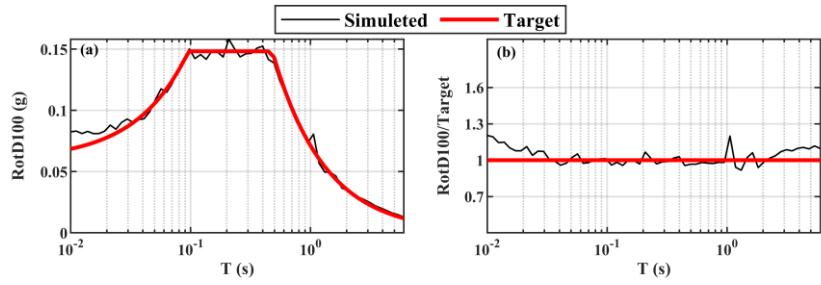


Acceleration time history

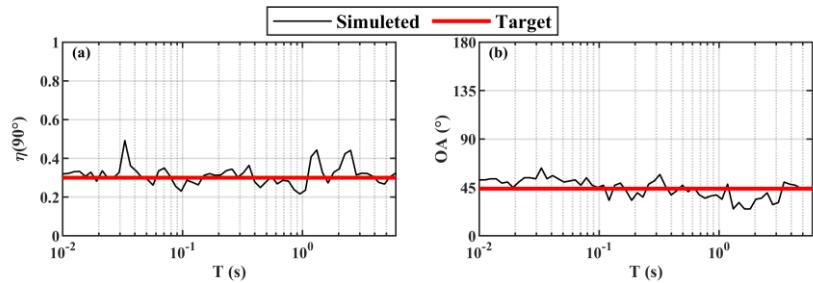


# No. 15

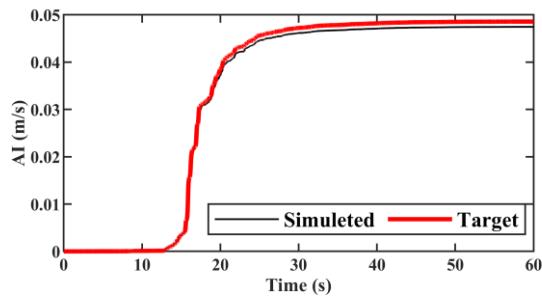
RotD100 response spectrum



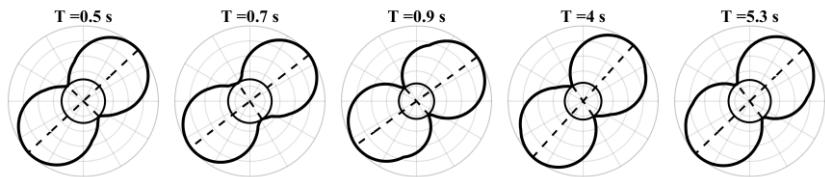
Directionality



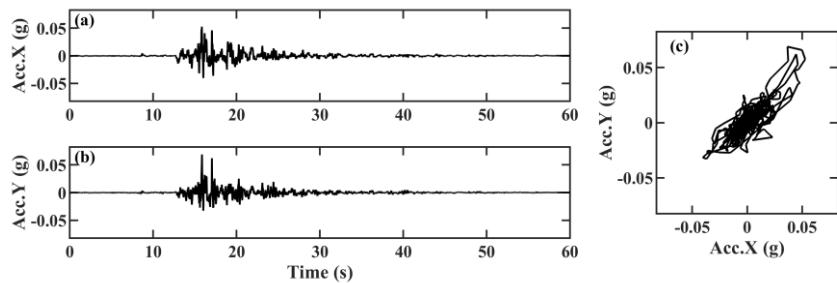
Arias intensity



Spectral demand over all horizontal directions

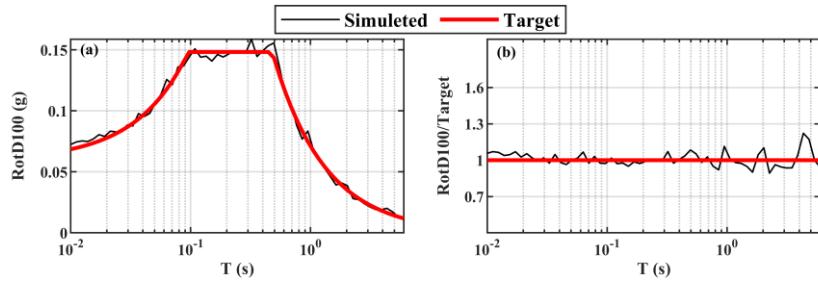


Acceleration time history

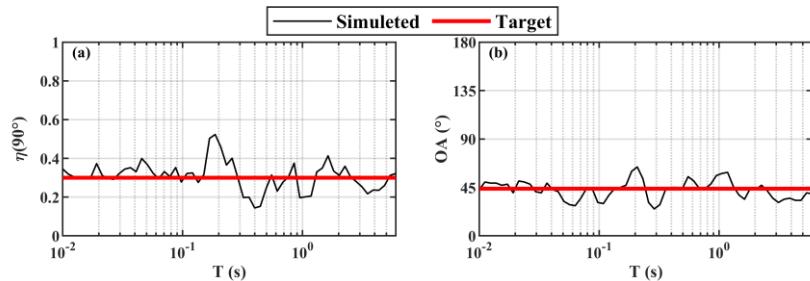


# No. 16

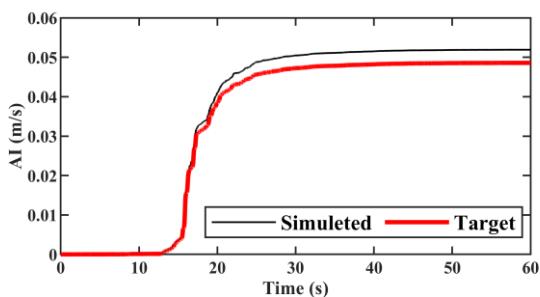
RotD100 response spectrum



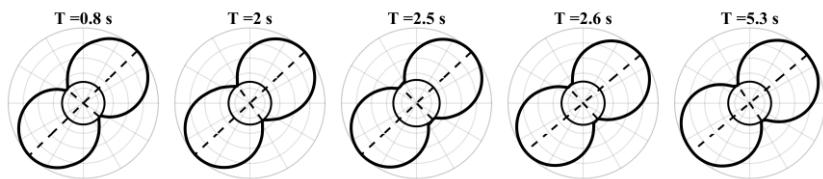
Directionality



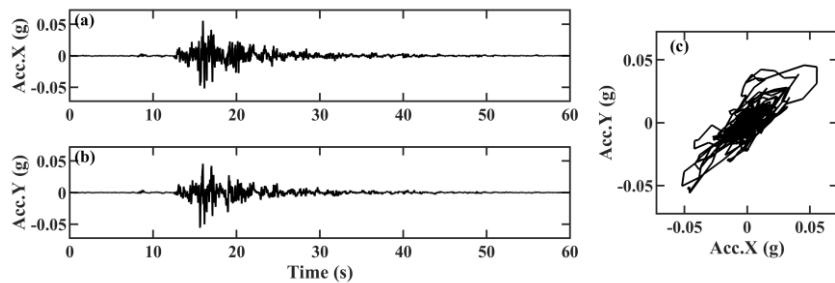
Arias intensity



Spectral demand over all horizontal directions

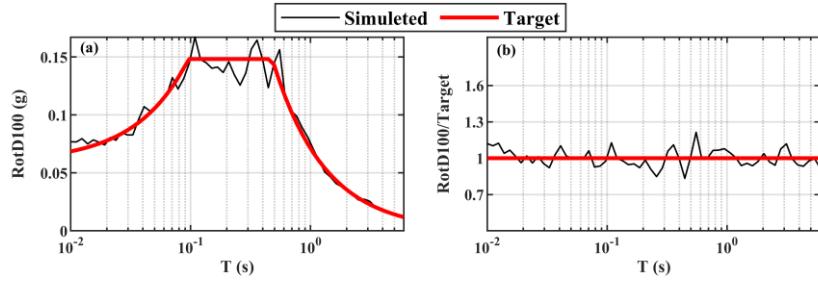


Acceleration time history

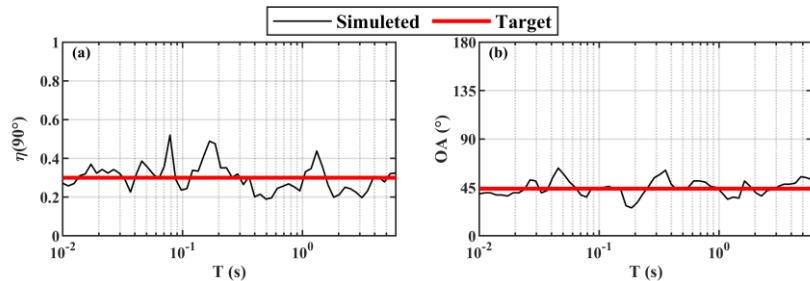


# No. 17

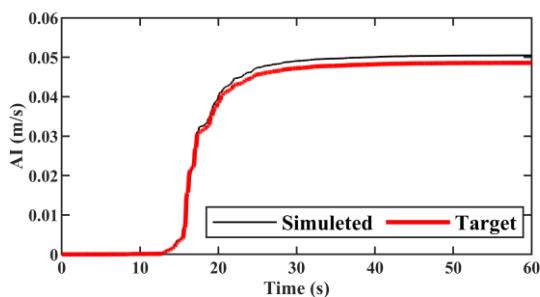
RotD100 response spectrum



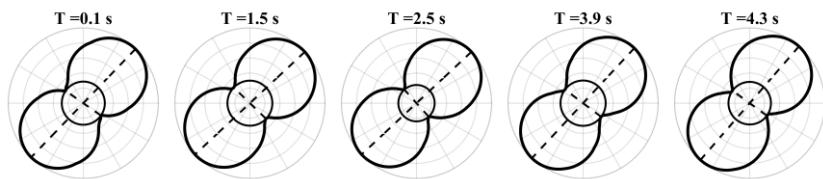
Directionality



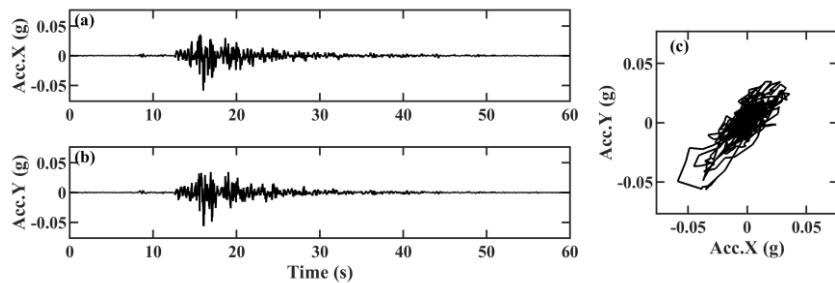
Arias intensity



Spectral demand over all horizontal directions

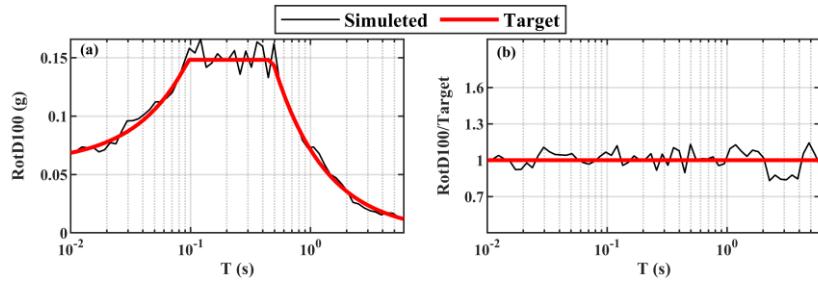


Acceleration time history

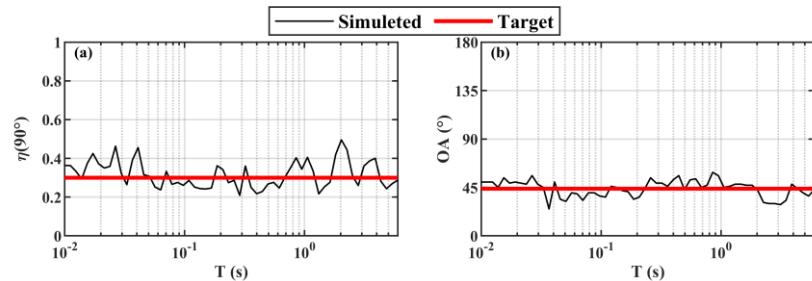


# No. 18

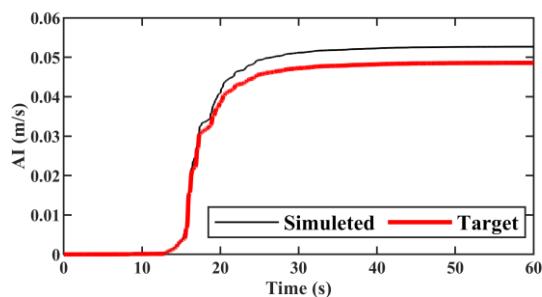
RotD100 response spectrum



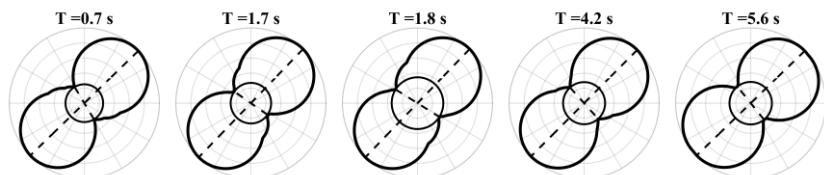
Directionality



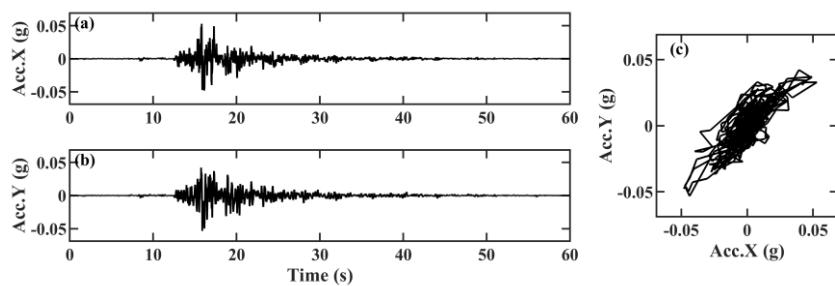
Arias intensity



Spectral demand over all horizontal directions

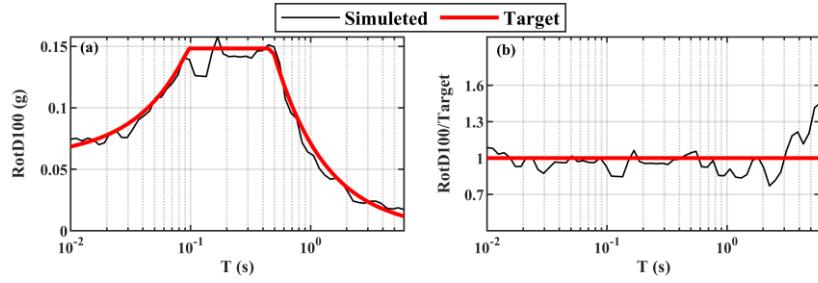


Acceleration time history

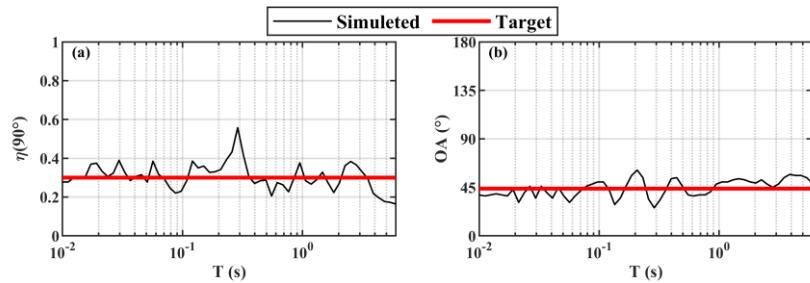


# No. 19

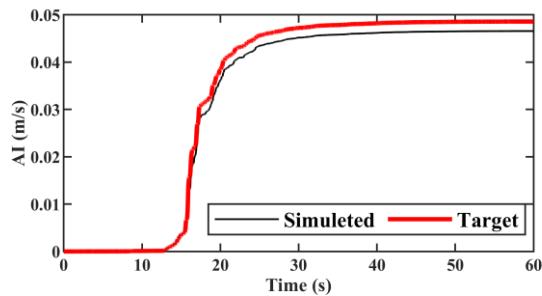
RotD100 response spectrum



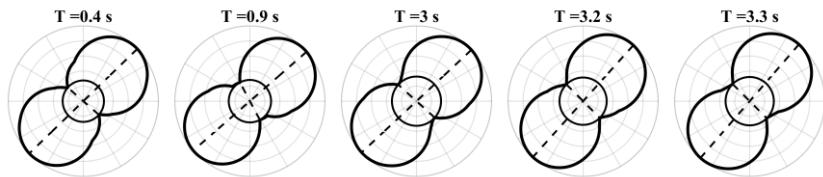
Directionality



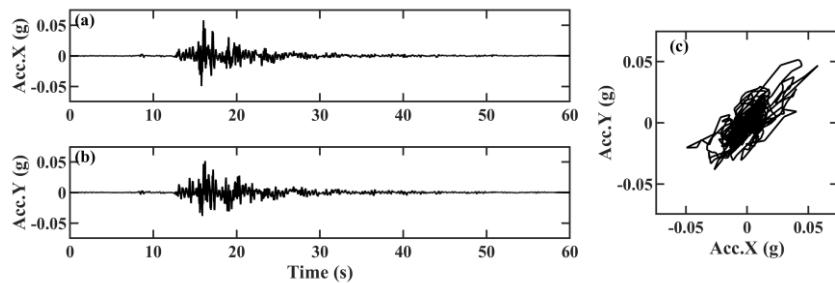
Arias intensity



Spectral demand over all horizontal directions

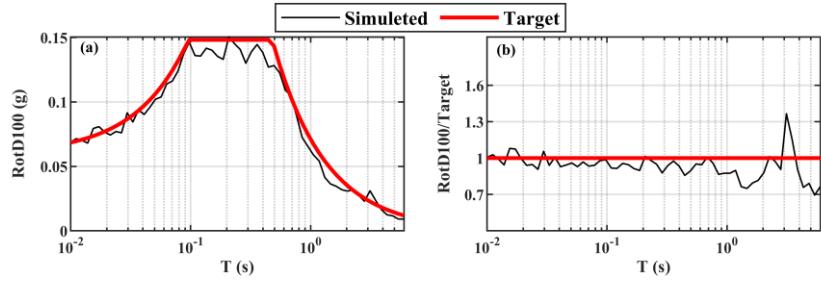


Acceleration time history

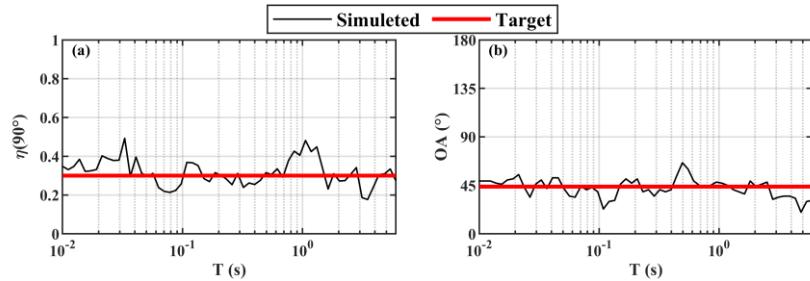


# No. 20

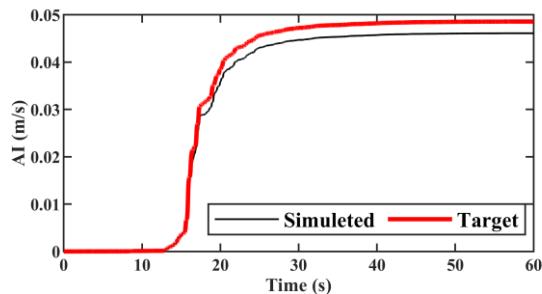
RotD100 response spectrum



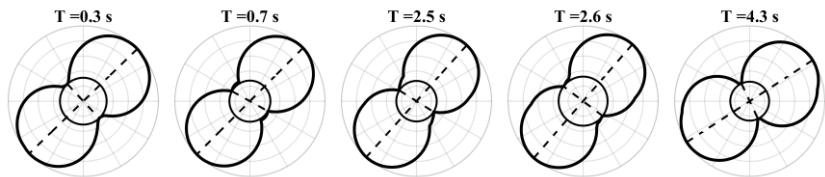
Directionality



Arias intensity



Spectral demand over all horizontal directions



Acceleration time history

