Relations between MaxRotD50 and some horizontal components of ground motion intensity used in practice

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This electronic supplement includes a CSV file with numeric values for the three period-dependent quantities shown in Figure 5, which permit to transform any of the seven other definitions of horizontal ground motion intensity to MaxRotD50 using Equations (1) and (2). These quantities are: (i) geometric mean of the ratio of MaxRotD50 to any of the seven other measures of intensities; (ii) standard deviation of the natural logarithm of the ratio of MaxRotD50 to any of the other measures of intensities; and (iii) the correlation between the natural logarithm of the ratio of MaxRotD50 to the other measures of intensities and the natural logarithm of the other measure of intensity.

The electronic supplement also contains additional figures. Figure S1 shows the ratios between MaxRotD50 and Max_{AR} for all records considered in this work. The figure also shows the geometric mean, the 16th and 84th percentiles, and the theoretical bounds of the ratio. Moreover, figures that are analogous to Figure 6 with the influence of site class, moment magnitude, and Joyner-Boore distance on the geometric mean ratio between MaxRotD50 and each of the other six definitions of the horizontal component of ground motion. The influences on the ratios between MaxRotD50 and RotD100, Max_{AR}, GMRotD50, GMRotI50, GM_{AR}, and Arbitrary are presented in Figures S2, S3, S4, S5, S6, and S7, respectively.
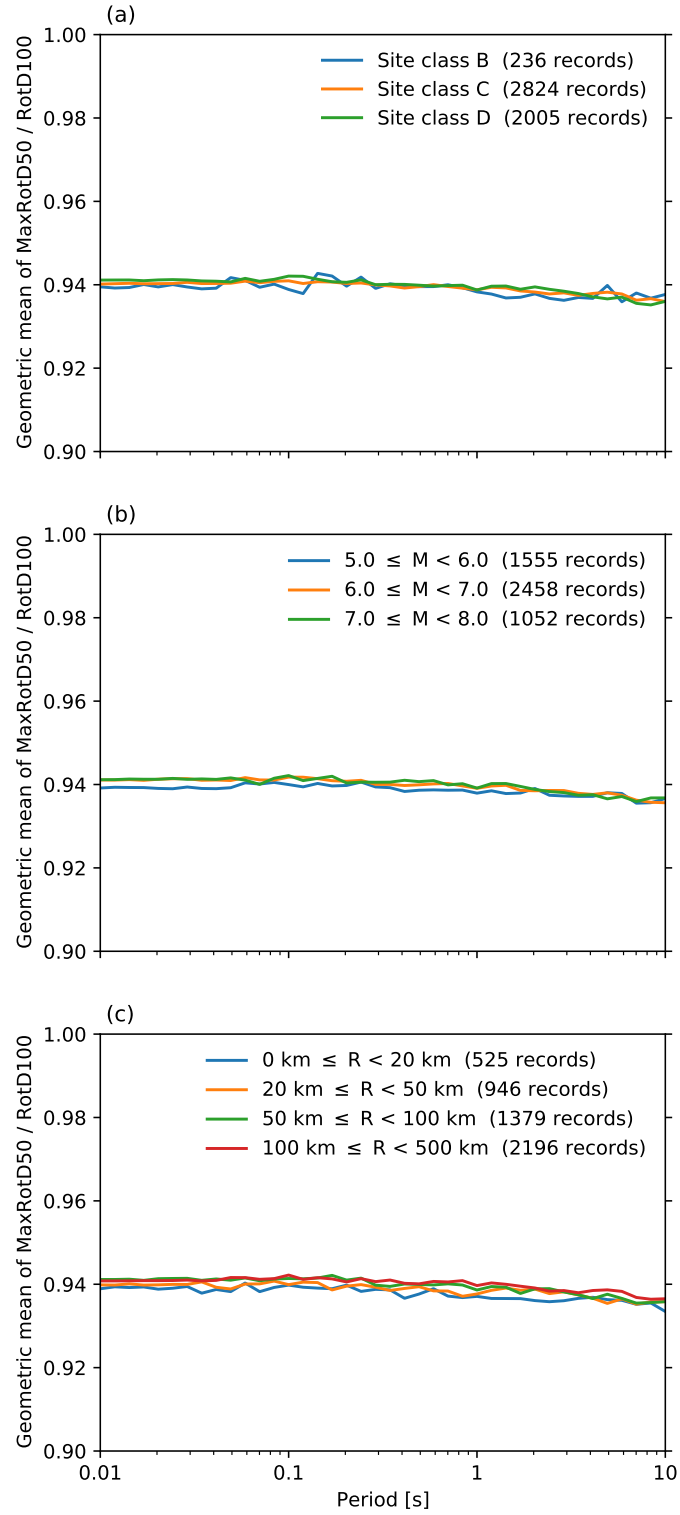
Table caption

Table S1: Period-dependent relations that are required to transform any of the other seven definitions of the horizontal component of ground motion to MaxRotD50.
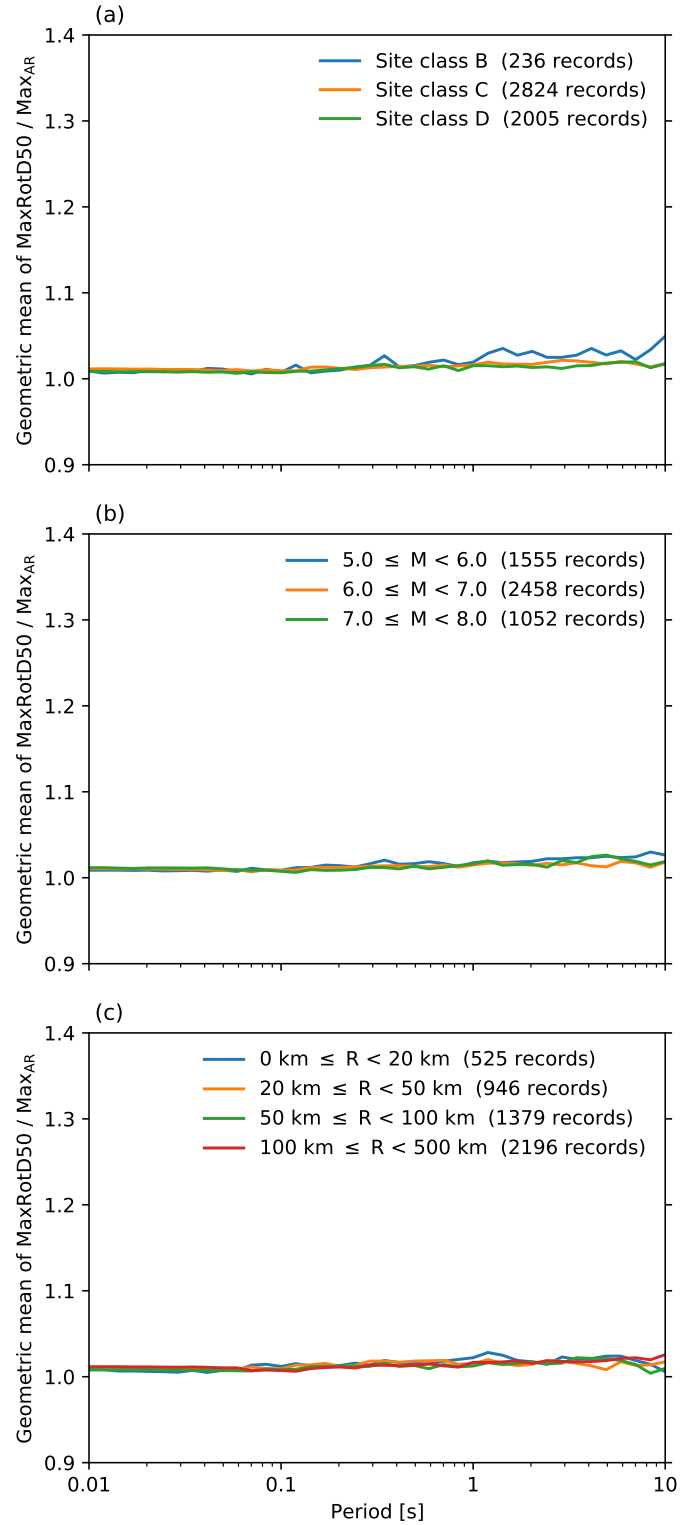(Filename: Table_S1.csv)
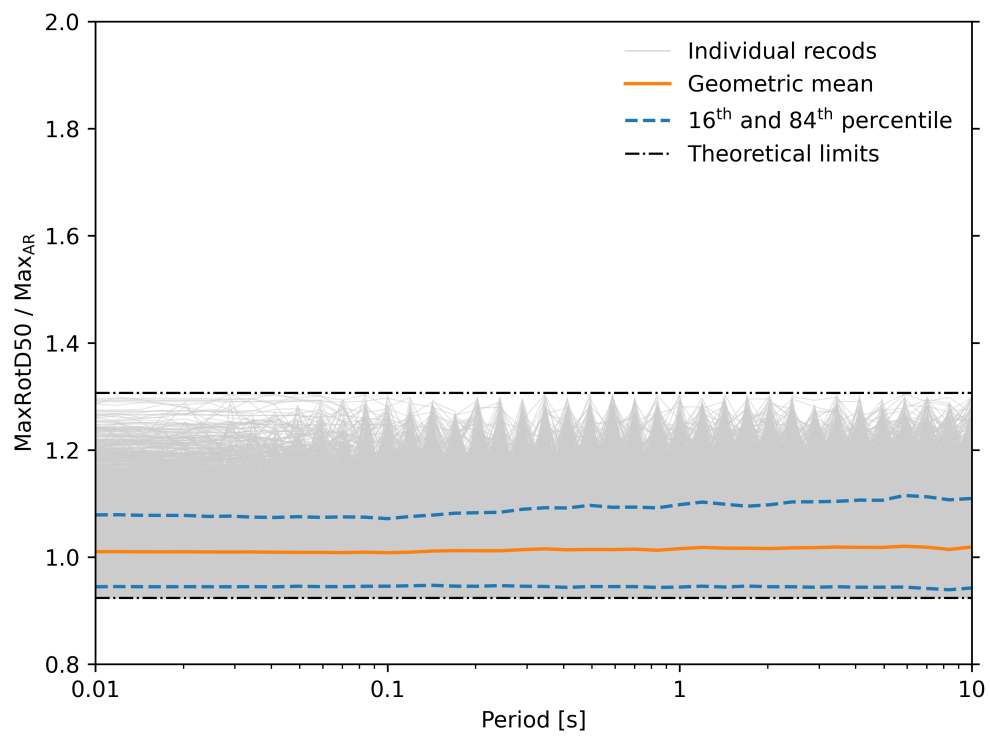
Figure S1: Ratios between MaxRotD50 and Max$_{AR}$ for all records in the database.
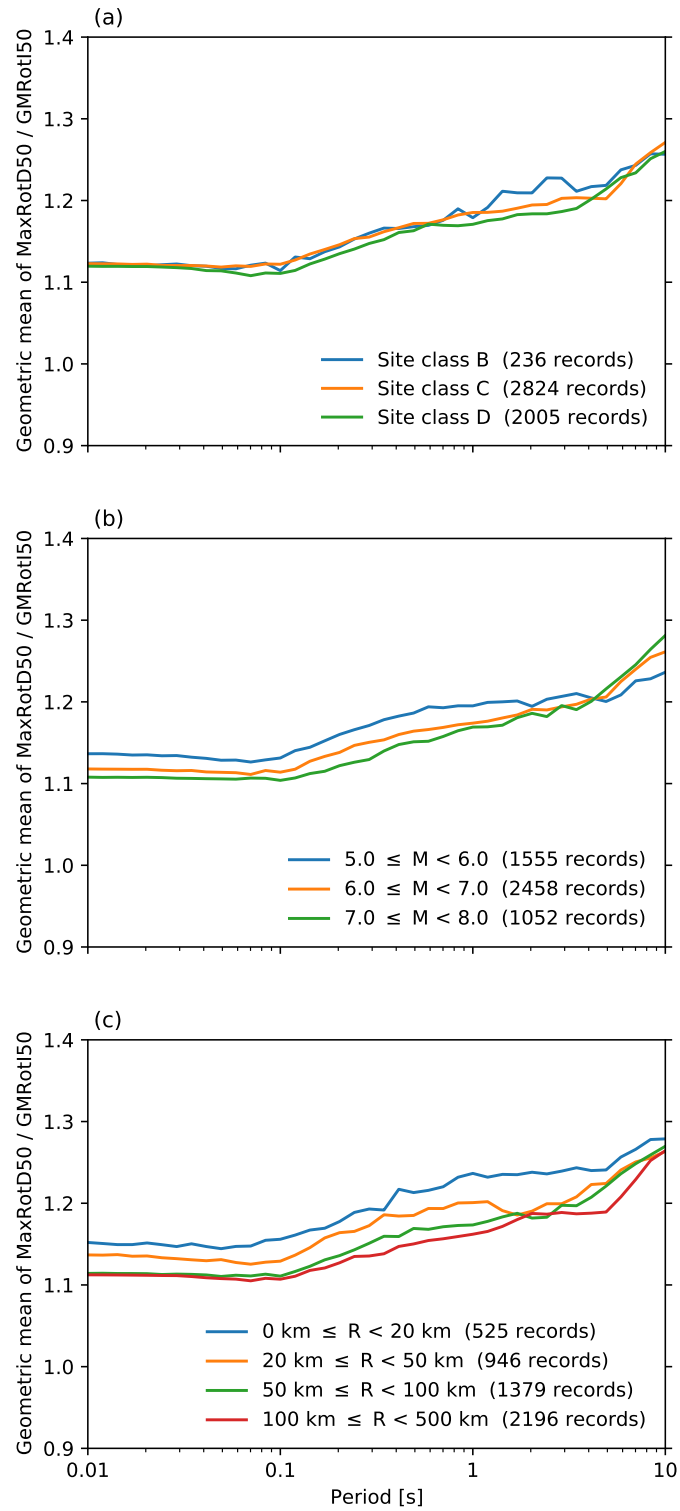
Figure S2: Influence of (a) NEHRP site class, (b) moment magnitude, and (c) Joyner-Boore distance on the geometric mean of the MaxRotD50/RotD100 ratio. The number of records in each bin is presented in parentheses.

Figure S3: Influence of (a) NEHRP site class, (b) moment magnitude, and (c) Joyner-Boore distance on the geometric mean of the MaxRotD50/Max$_{AR}$ ratio. The number of records in each bin is presented in parentheses.
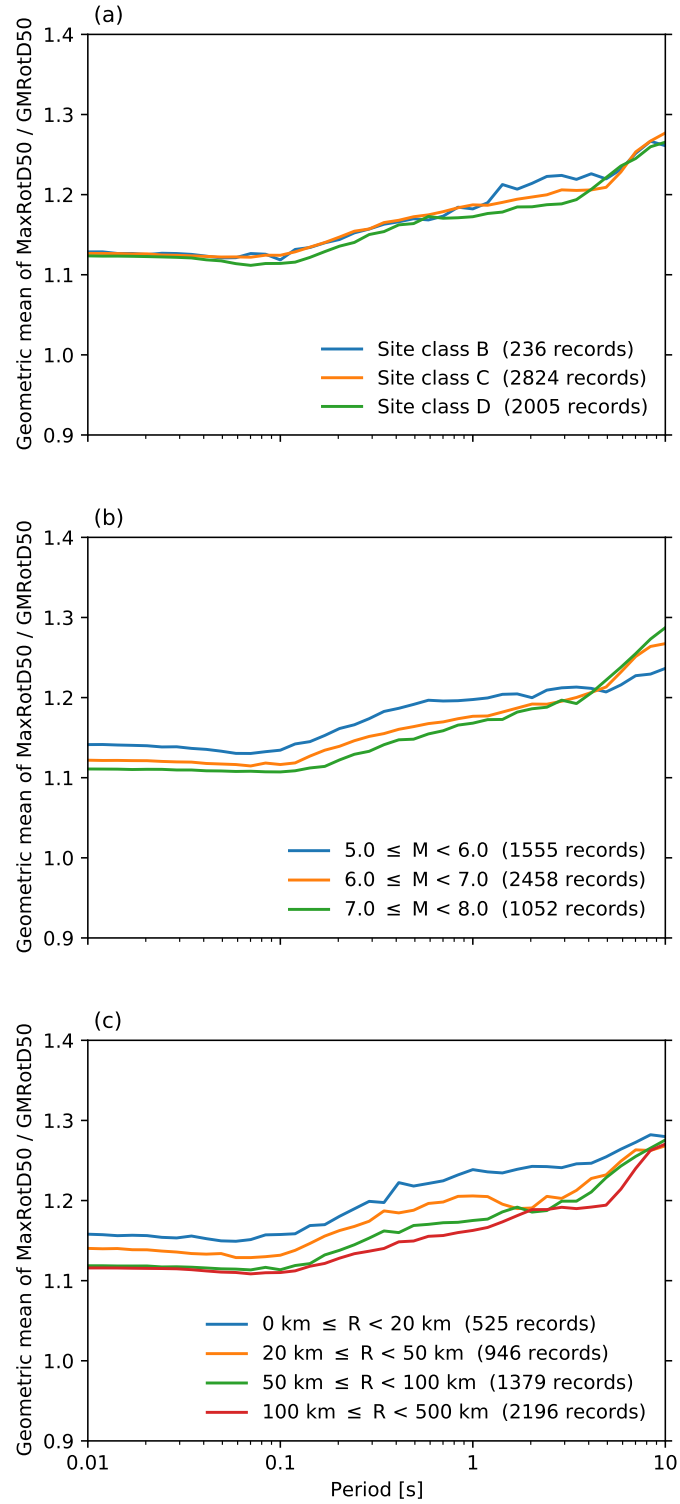
Figure S4: Influence of (a) NEHRP site class, (b) moment magnitude, and (c) Joyner-Boore distance on the geometric mean of the MaxRotD50/GMRotD50 ratio. The number of records in each bin is presented in parentheses.
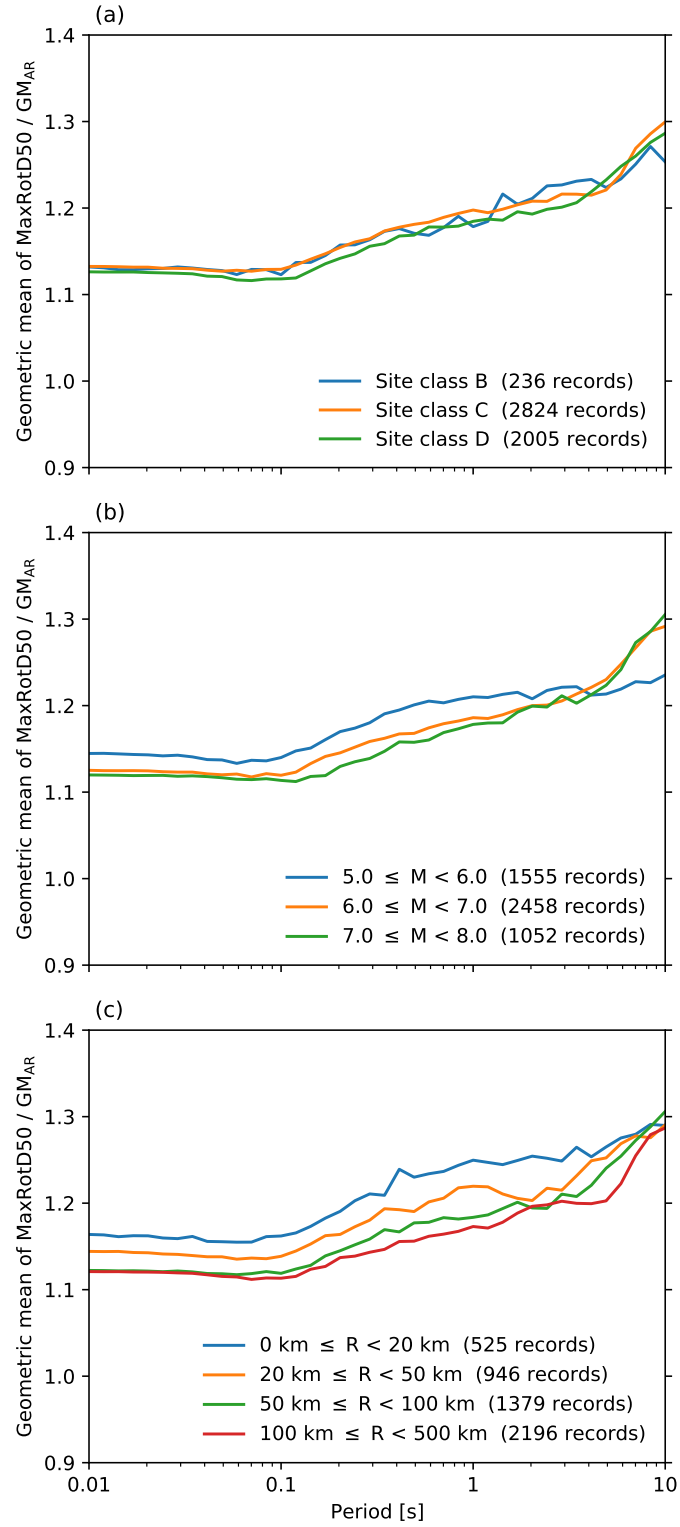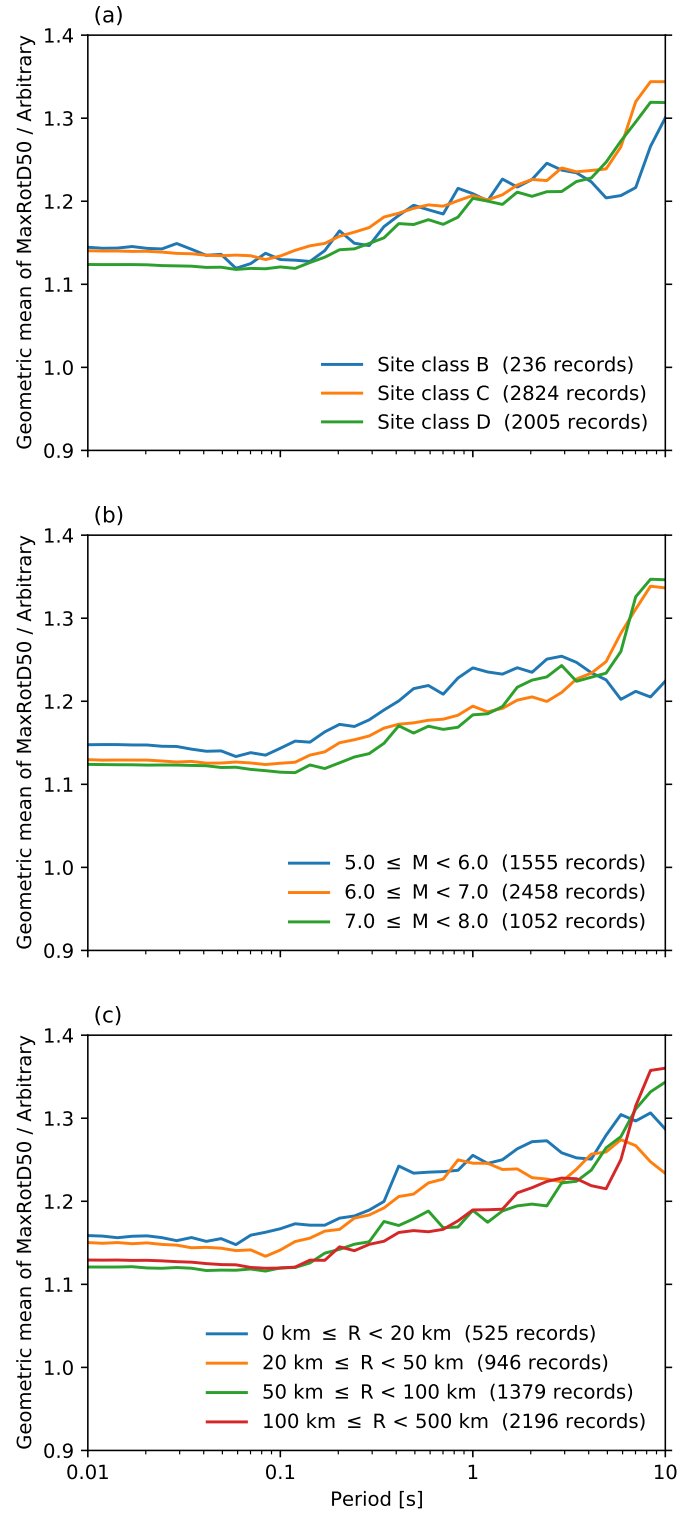
Figure S5: Influence of (a) NEHRP site class, (b) moment magnitude, and (c) Joyner-Boore distance on the geometric mean of the MaxRotD50/GMRotI50 ratio. The number of records in each bin is presented in parentheses.

Figure S6: Influence of (a) NEHRP site class, (b) moment magnitude, and (c) Joyner-Boore distance on the geometric mean of the MaxRotD50/GM$_{AR}$ ratio. The number of records in each bin is presented in parentheses.

Figure S7: Influence of (a) NEHRP site class, (b) moment magnitude, and (c) Joyner-Boore distance on the geometric mean of the MaxRotD50/Arbitrary ratio. The number of records in each bin is presented in parentheses.