**Electronic Supplement to**

**Relations Between Some Horizontal-Component Ground-Motion Intensity Measures Used In Practice**

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This Electronic Supplement contains figures of GMIM ratios not shown in the main article because of space limitations and because they are not essential for the story told in the main article; they are given here for completeness. It also has links to two zip files containing tables of average ratios and the coefficients of fits to the ratios, using the function in equation (1) of the paper. The tables are in csv format.

**Figures**

Figure S1. The  ratio for all events and for five magnitude bins. The values shown are the geometric means of the ratios for each record, with the 95% confidence intervals given by the bars. The ratio  is not particularly useful in engineering practice, but of some interest none-the less. The increase in the ratios with period is probably due to the stronger correlation of the motions between the components, which can lead to pronounced linear polarization, as noted by Boore et al. (2006), Beyer and Bommer (2006), and Boore (2010).

Figure S2. The  ratio for all events and for five magnitude bins. The values shown are the geometric means of the ratios for each record, with the 95% confidence intervals given by the bars.

Figure S3. The  ratio for all events and for five magnitude bins. The values shown are the geometric means of the ratios for each record, with the 95% confidence intervals given by the bars. The ratio is always less than unity, as it must be given the definition of .

**Average Ratios Archives**

**Download**: *average\_ratios\_of\_gmims.zip* [zipped plain text, csv format files; xx Kb]. The magnitude range and distance ranges used in computing the averages is given by Mmin and Mmax and Rmin and Rmax in the filename. Each file contains columns of the minimum and maximum magnitude and distance ranges, periods, the number of records used in computing the averages, and then pairs of columns for each GMIM ratio. The first column for each ratio is the geometric mean for each ratio (computed as the antilog of the arithmetic means of the logarithms of the ratios), and the second column is the standard deviation of the natural logarithms (base e) of the ratios. The units of distance and period are km and s, respectively. All other quantities are dimensionless.

**Coefficients of the Magnitude and Distance Regressions of the Ratios Archive**

**Download**: *m\_r\_regression\_coefficients\_ratios\_of\_gmims.zip* [zipped plain text, csv format files; xx Kb]. The coefficients of equation (1) in the text are contained in the individual csv files in the zip file. The filenames indicate which ratio of GMIMs is in each file. The names have been abbreviated (e.g., “D50GMAR” represents “”) but the meaning should be obvious. Each file contains columns of period, number of records, and then three columns for each of the coefficients in equation (1); the first column in each set of three is the coefficient from the regression, the second column is a smoothed version of the coefficients, computed as the running mean of 11 points centered at each frequency (except for the end points, where the number of points is reduced linearly as the end member periods are reach), and the third column is the standard error of the coefficient. The units of period are s. All other quantities are dimensionless.