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SEISMIC ATTENUATION RELATIONS AT DEPTH USING BOREHOLE DATA IN LSST ARRAY, HUALIEN

B. Hernandez (1), J. Albaric (1), Y. Fukushima (2), R. Bossu (1)

(1) CEA/DASE Laboratoire de Detection et de Geophysique, (2) SHIMIZU CORPORATION

Using 51 events recorded at 10 accelerometric stations from two of the three vertical borehole of the LSST array, Hualien, we performed a regression analysis in order to derive an attenuation relationship at underground sites with depth ranging from the surface down to 53 m in depth. Analysis were conducted on both peak ground acceleration and acceleration response spectra. Results show that, compared with surface ground motion, acceleration at underground sites are lower by a factor 1 to 4 according to the depth and the frequency. Ratios between the receiver responses obtained at different depths provided average transfer functions. Those were compared with transfer functions calculated by averaging ratios of observed response spectra between each depth and the surface. A good agreement between the two techniques was found. Finally, theoretical transfer functions were estimated using one-dimensional SH modeling. They are in good agreement with the data.