



Parametric study of the basin edge effect, acting up to the Hyogo-Ken Nanbu earthquake.

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The basin edge effect, i.e. the interference of the direct S wave with the surface wave diffracted off the basin edge has been invoked by many authors to explain the damage distribution during the January 17, 1995 Hyogo-Ken Nanbu earthquake. We propose to revisit this explanation thanks to results of numerical experiments obtained with the spectral element method in 2D geometry. Our results confirm that the amplification of horizontal motion close the basin edge can be twice as large as the one measured in the center of the basin. This additional amplification is shown to depend strongly on the edge geometry and on frequency, due to physical dispersion of diffracted surface waves. In particular we obtain maximal amplification around 3 Hz, at frequencies critical for buildings.