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Correlation between strong motion parameters and observed damage following the 2003 Boumerdes earthquake.

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Like most strong earthquakes occurring near urban area, the 2003 Boumerdes, Algeria, earthquake (Mw6.9) caused thousands of deaths and severely damaged buildings. Based on the spatial distribution of damage and ground strong motion induced during the earthquake, a correlation between ground motion parameters and observed damage was explored. Strong motion parameters describing amplitude, frequency content, duration or parameters that reflect two or three important ground motion characteristics at the same time are calculated and presented as maps.

The distribution of each parameter is compared with the observed damage distribution in the epicenter area. Two parameters are identified to better correlate with damage space distribution caused by the earthquake: rms acceleration and Arias intensity. The result show that strong motion parameters describing more than one important ground motion characteristics correlate well with the damage distribution and better than parameters describing only one ground motion characteristic, for example the amplitude. In the other hand a comparison with macroseismic intensity map was done. A good correlation between the distribution of strong motion parameters and macroseismic intensity map is found in the area of large intensity values.