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Ground Motion Scaling in Northern Egypt

We present the empirical scaling relationships for the high-frequency ground motion in northern Egypt. Regression is carried out on more than 650 short period vertical seismograms recorded by the Egyptian National Seismographic Network,with Mw from 2.6 to 4.08 and hypocentral distance up to 550 km. The peak ground velocities are measured in selected narrow-frequency bands between 1.0 and 12.0 Hz. Results are presented to estimate the propagation term, peak filtered velocity, duration and source excitation. The best fit model to parameterize the regression results, quantified the attenuation, following the general power law:
Q(f) = 320 f0.49
for, g(r) = r-0.9 for r < 45 km.
g(r) = r-0.6 for r > 45 km.
and k = 0.05 sec, which indicates that, almost all the seismicity within the study area are intra-plate and reflects a high attenuation at the upper most part of the crust, due to faulting or lithologic heterogeneity.
Key words:
Ground-motion scaling, regression.

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