Use of Synthetic Accelerograms in Local Seismic Response Analyses at Near Field Sites

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Local Seismic Response (LSR) studies are considerably conditioned by the seismic input features due to the non-linear soil behavior under dynamic loading and the sub-surface site conditions (e.g., mechanical properties of soils and rocks and geological setting) [1][2]. The selection of the most suitable seismic input is a key point in LSR. Unfortunately, a few natural recordings are available at seismic stations in near field areas [3][4]. Then, synthetic accelerograms can be helpful in LSR analysis in urbanized near field territories. Synthetic accelerograms are generated by simulation procedures that consider adequately supported hypotheses about the source mechanism at the seismotectonic region and the wave propagation path towards the surface. Hereafter, mainshocks recorded accelerograms at near field seismic stations during the 2016-17 Central Italy seismic sequence have been compared with synthetic accelerograms calculated by EXSIM code [5] [6]. The outcomes show that synthetic signals can reproduce the high-frequency content of seismic waves at near field areas. Then, in urbanized near field areas, synthetic accelerograms can be fruitfully used in Microzonation studies.

References

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