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Toward EEW engineering applications: lead-time maps for the ISNet infrastructure in the Campanian region (southern Italy)

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Feasibility of Earthquake Early Warning Systems (EEWS) depends on the possibility of real-time estimation of event or ground motion features and, at the same time, on the ability to design earthquake engineering applications for real-time seismic risk mitigation. Rapid estimation of event's features (as magnitude and location) is currently under development by seismologists, the second issue requires particular attention of engineers. Among the information needed to evaluate the effectiveness of EEWS, there is the estimation of the available time to perform security actions before the arrival of the more energetic seismic phase at the site of interest. This interval is termed lead-time. The study presented here examines the feasibility of EEW referring to the Campanian (southern Italy) regional seismic network. In particular, considering events occurring in the area covered by the ISNet (Irpina Seismic Network) infrastructure and assuming a three-variate uniform distribution for the hypocenter coordinates, the minimum, maximum and average lead-times were computed. Also the uncertainties associated to the information provided by the ISNet have been considered in order to evaluate the available lead-time. Results of the analyses, presented in the form of maps, confirm that evacuation of buildings is hardly possible in the region; although the available warning time seems to be sufficient activate several types of security measures in selected critical structures/infrastructures.