



## The Italian Strong Motion Network (RAN)

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A network for the strong motion monitoring of the territory allows recording data that provide an excellent opportunity to study the source, path, and site effects on the ground motions, specifically in near source area, for updating seismic hazard map and consequently construction codes and earthquake resistant design.

Strong motion data also help to increase the effective preparation and response to seismic emergencies and the ability of a community to quickly recover from the damages of an earthquake contributes to lower the seismic risk usually measured in term of casualties and economic losses.

The Italian network for monitoring the strong movement of the national territory (RAN) is the result of a fruitful cooperation over the last 16 years between the Italian government, the regions and local authorities and now counts more than 500 stations.

Over the years, as a priority the DPC has focused mainly on the expansion of the network in terms of the number of measurement points and technological improvement of instrumentation as well as the data transmission system. A data acquisition centre was implemented in which the Antelope software collects, processes and archives, automatically, the data of the RAN and of the external strong motion networks that contribute to the database of the RAN. Recently the DPC has dedicated specific resources to improve the response of the network, in particular, in case of emergency. The efficiency of the network on a daily basis is not less than 95% and temporary networks were installed in the epicentral area within 24 hours after the earthquake and connected to the data acquisition centre in Rome.

A fast seismic data analysis is essential to provide useful information to Authorities which make decisions immediately after a strong earthquake occurrence. During a strong earthquake, the modern accelerometers are the only instruments which can provide near source high-quality data that are important both for scientific and for civil protection purposes. Automatic and fast techniques have been developed by the University of Trieste for the automatic real-time strong motion data analysis. These techniques have been installed and customized in the data acquisition centre of the Department of Civil Protection of Italy (DPC) to process the quasi real-time data of the Italian Strong Motion Network (RAN) and to exploit information from RAN stations during seismic emergencies for Civil protection purposes.

RAN counts more than 500 stations covering all the Italian territory. Two local networks, the Friuli Venezia Giulia Accelerometric Network (RAF), located in NE Italy, and the Irpinia Seismic Network (ISNet), contribute their data into the RAN data acquisition system. The performance of the network and of the fast automatic strong motion data analysis during the Emilia 2012 sequence is analyzed.