An advanced monitoring infrastructure (ISNet) for seismic alert management in the Campania Region (Southern Italy)

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In the framework of an ongoing project financed by the Campania Region, a prototype system for seismic early and post-event warning is being developed and tested, based on a dense, wide dynamic seismic network (ISNet) and under installation in the Apennine belt region.

This poster reports the characteristics of the seismic network, focussing on the required technological innovation of the different seismic network components (data-logger, sensors and data communication).

The ISNet seismic network will be completed in two stages:

- Deployment of 30 seismic stations along the Campania-Lucania Apennine chain (to date almost completed);
- Setting up a radio communication system for fast and reliable data transmission, and installation of 12 additional seismic stations within end of 2006.

To ensure a highly dynamic recording range, each station is equipped with two types of sensors: a strong-motion accelerometer and a velocimeter.

Data acquisition at the seismic stations is performed using Osiris-6 model data-loggers made by Agecodagis (www.agecodagis.com). Each station is supplied with two (120

W) solar panels and two 130 Ah gel cell batteries, ensuring 72-h autonomy for the seismic and radio communication equipment. The site is also equipped with a GSM/GPRS programmable control/alarm system connected to several environmental sensors (door forcing, solar panel controller, battery, fire, etc) and through which the site status is known in real time.

The data are stored locally on the hard-disk and, at the same time, continuously transmitted by the SeedLink protocol to local acquisition/analysis nodes (Local Control Center) via Wireless LAN bridge. At each LCC site runs a linux *Earthworm* system which stores and manages the acquired data stream.

The real-time analysis system performs event detection and localization based on triggers coming from data-loggers and parametric information coming from the other LCCs. Once an event is detected, the system performs automatic magnitude and focal mechanism estimations. In the immediate post-event period, the RISSC performs shaking map calculations using parameters from the LCCs and/or data from the event database. The recorded earthquake data are stored into an event database, to be available for distribution and visualization for further off-line analyses.