



## A strong-motion network in Northern Italy (RAIS): data acquisition and processing

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The necessity of a dense network in Northern Italy started from the lack of available data after the occurrence of the 24th November 2004, MI 5.2, Salò earthquake. Since 2006 many efforts have been made by the INGV (Italian National Institute for Geophysics and Volcanology), department of Milano-Pavia (hereinafter INGV MI-PV), to improve the strong-motion monitoring of the Northern Italy regions. At the end of 2007, the RAIS (Strong-Motion Network in Northern Italy) included 19 stations equipped with Kinematics Episensor FBA ES-T coupled with 5 20-bits Lennartz Mars88/MC and 14 24-bits Reftek 130-01 seismic recorders. In this step, we achieved the goal to reduce the average inter-distances between strong-motion stations, installed in the area under study, from about 40 km to 15 km. In this period the GSM-modem connection between the INGV MI-PV acquisition center and the remote stations was used.

Starting to 2008, in order to assure real-time recordings, with the aim to integrate RAIS data in the calculation of the Italian ground-shaking maps, the main activity was devoted to update the data acquisition of the RAIS strong-motion network. Moreover a phase that will lead to replace the original recorders with 24-bits GAIA2 systems (directly produced by INGV-CNT laboratory, Rome) has been starting.

Today 11 out of the 22 stations are already equipped by GAIA2 and their original GSM-modem acquisition system were already replaced with real-time connections, based on TCP/IP or Wi-Fi links. All real time stations storage data using the MiniSEED format. The management and data exchange are assured by the SEED-Link and Earthworm packages. The metadata dissemination is achieved through the website, where the computed strong motion parameters, together the amplification functions, for each recording station are available for each recorded events. The waveforms, for earthquake with local magnitude higher than 3.0 are now collected in the ITalian ACcelero-metric Archive (<http://itaca.mi.ingv.it>).