

## **RAF, the first Italian digital time-synchronized accelerometric network: its evolution and integration into transnational and European research infrastructures**

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The first stations of the Friuli Venezia Giulia (NE Italy) Accelerometric Network (RAF) were installed during 1993–1995 by the Department of Earth Sciences, University of Trieste (DST), now Department of Mathematics and Geosciences (DMG), in the framework of international scientific projects. From the very beginnings the network has been equipped with digital, three-component instruments, GMT time synchronized, mostly installed in small electricity transformer buildings. At the end of 1999, the configuration of the network changed. New more appropriate free-field sites were found near the original ones. RAF is today configured to record accelerations at several important sites in the seismic area of Friuli Venezia Giulia (FVG) and near its borders with Slovenia and Austria.

In order to improve the monitoring of seismic activities in the border regions and to enhance the collaboration between countries and seismological institutions in Central Europe, ARSO (Slovenia), OGS (Italy), University of Trieste (Italy) and ZAMG (Austria) established in 2001 the “South Eastern Alps Transfrontier Seismological Network”. In May 2014 the Transfrontier network, was formalized with the new name “Central and East European Earthquake Research Network” (CE3RN). Actually CE3RN counts 10 members.

In the year 2000, DST and the Civil Protection of Friuli Venezia Giulia (FVG-PC) signed an agreement for the RAF management and its use, not only for scientific studies, but also for civil defense purposes. Topics like the prompt estimate after an earthquake occurrence of the related damage level and its areal extent, the emergency management, the reconstruction planning, and the validation and updating of seismic hazard maps are being studied. Moreover, RAF recordings are used also for civil defense prevention purposes. This is accomplished through the computation of possible ground-shaking scenarios, studies of seismic source properties, site effects estimates and microzonation analyses. Thanks to a scientific agreement between the Italian Department of Civil Protection (DPC) and the Seismological research and Monitoring (SeisRaM) group of the DMG, since 2011 the RAF is fully integrated into the Italian National Accelerometric Network (RAN) managed by DPC.

Finally, the RAF, as one of the Italian research infrastructures, is part of the recently constituted Joint Research Unit EPOS-ITALIA.