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The new urban strong motion array along the Crati Valley.

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The Italian Strong Motion Network (RAN Rete Accelerometrica Nazionale) currently comprises 705 stations strategically distributed throughout Italy. Following the seismic events in L'Aquila in 2009, the Civil Protection Department is also working on a project for the implementation of new accelerometric arrays in urban and sub-urban areas along the main Italian basins.

Presently, operational arrays include those in Central and Southern Italy, such as the Aterno Valley Array, Sulmona Basin Array, and in-hole accelerometers in San Giuliano di Puglia. In December 2023, a new accelerometric array was installed in the Crati Valley.

Crati Valley is located in high seismic area of northwestern Calabria, between Cosenza and Rende, and it is recognized as the Crati Basin—an extensional basin dating back to the Plio-Olocene period. The valley is delineated by north-south-trending normal faults (Brozzetti et al., 2017; Tortorici et al., 1995), serving as the boundary between the Sila and Coastal Range Mountain ranges. The Crati Basin, stretching over 60 km, is flanked by the Catena Costiera ridge to the west and the Sila Massif to the east.

In instrumental time the area is characterized by meager seismicity, but historically, the Crati Basin experienced moderate-to large $M > \sim 6.0$ (1870, $l_o = 10$ MCS; 1854, $l_o = 10$ MCS; 1184, $l_o = 9$ MCS) and moderate earthquakes (1767, $l_o = 8$ MCS; 1835, $l_o = 10$ MCS; 1886, $l_o = 7$ MCS; 1913, $l_o = 8$ MCS).

The array in the Crati Valley is composed of 7 stations arranged linearly both longitudinally and transversely along the valley, covering a total extension of 5 km. The average spacing between seismic stations is approximately 2 km. The reference site is located in the old part of the city of Cosenza and was already a part of the national accelerometric network.

The new accelerometric array in the Crati Valley contributes to ongoing seismic monitoring efforts, enhancing our understanding of site response and seismic hazards in the region.