



Modified ERT instrumentation for geo-scientific surveys in the historical centre of Mesagne (Brindisi, Southern Italy)

Giovanni Leucci, Lara De Giorgi, Fabrizio Terenzio Gizzi, and Raffaele Persico

Institute for Archaeological and Monumental Heritage IBAM-CNR-Italy (g.leucci@ibam.cnr.it)

The town of Mesagne is one of the sites at greatest geological risk in the north Salento peninsula. In the last few decades, the historical centre of Mesagne has been affected by a series of subsidence events, which have, in some cases, resulted in the partial collapse of buildings and road surfaces. The last event was in the January 2014. It caused subsidence phenomenon in a wide area and many families have been forced from their homes. These events have had both social repercussions, causing alarm and emergency situations, and economic repercussions in terms of the expense of restoration. In order to determine the causes of the ground subsidence events, integrated geophysical surveys were undertaken in the historical centre of Mesagne. In addition, the analysis of several wells allowed the 3D model reconstruction related both to the geology and to the groundwater depth in the surveyed areas. With the purpose of estimating the dimensions of the phenomenon and its possible relationship with both specific environmental conditions (for instance groundwater depth variation) and anthropic conditions (for instance the losses in water supply and sanitation) some geophysical measurements were repeated in the time. For this purpose a modified ERT instrumentation together GPR were used. The study led to the production of a detailed description of the subsidence causes that allows a quick action to restore security conditions in the area.