



## **Deep piping phenomena in the Abruzzo region (Central Italy) and the related hazard**

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Karst phenomena in the Abruzzo region are widespread present due to the diffusion of carbonatic outcrops, instead the sinkholes phenomena strict sense in the plain areas are still less known and studied.

Several landforms, in the past supposed to be related to karst phenomena, could be due to deep piping phenomena triggered by sudden and catastrophic events.

Ancient chronicles indicate that these phenomena are related to high magnitude seismic events; examples are the collapses during the 1703 Aquila earthquake and 1915 Avezzano earthquakes in the Fucino Plain.

Piping sinkholes could have been triggered by these ancient earthquakes, sub-circular ponds, that lie in several plains of the Abruzzo region, could represent these piping sinkholes actually water filled.

Areas affected by these phenomena are intermountains tectonic valleys bordered by direct or strike-slip regional faults and filled by thick alluvial deposits (i.e. Sulmona and Fucino plains).

In some river valleys, showing a NW-SE Apennine trending, sinkholes are located on thick alluvial and lacustrine deposits and should not be related to karst phenomena. Several sinkhole prone areas are aligned along the Aterno river valley fault; this fault is a direct Apennine regional master fault several ten of kilometres long and with a strike of some tens of meters.

Hereby we present the first results of the Abruzzo region sinkholes census and some elaborations on the sinkhole prone areas.