

Chemical and isotopic ($^{87}\text{Sr}/^{86}\text{Sr}$ and $^{143}\text{Nd}/^{144}\text{Nd}$) fingerprinting of a stratigraphic sequence from the Acerno lacustrine basin (Southern Apennines, Italy)

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Middle Pleistocene sedimentary sequences from Central and Southern Italy are punctuated by several tephra layers ascribable to eruptive centers of the Roman Province such as Sabatini, Vico, Vulsini, Alban Hills, Ernici and Roccamonfina. Although in this time-span there is very few evidence in the field of deposits from the explosive activity of the Campania volcanoes (Campania Volcanic Zone), several distal tephra findings testify to the recurrence of pyroclastic products similar in composition to those erupted later on from Neapolitan volcanoes (Ischia, Campi Flegrei, Somma-Vesuvius). In the frame of the FUTURE (PRIN 2017) research project, geochemical and isotopic ($^{87}\text{Sr}/^{86}\text{Sr}$ and $^{143}\text{Nd}/^{144}\text{Nd}$) data have been acquired on whole rock, glass shards and separated minerals (feldspar and pyroxene phenocrysts) from twenty tephra layers embedded within the lacustrine sediments (dated between 560 and 490 ka) of the Acerno Basin, a tectonic palaeolake located in the southern Apennines (Italy). The main objective of this work was to combine already acquired geochemical data (major element compositions reported in [1], from which a tentative attribution to Latial and Campania Volcanic Zone sources had been brought forth, with new geochemical and isotopic data. The determination of Sr and Nd isotopic compositions is a powerful tool to support traditional geochemical identification or even be a correlation tool itself to identify the possible volcanic sources.

The data produced in this work strengthen the correlations proposed by [1]. The volcanic record preserved in the Acerno lacustrine sequence can be attributed to the Middle Pleistocene volcanic activity generated from the Roman Province volcanoes, having almost all tephra layers the imprint of a Latial source with only a few exceptions belonging to the Campania region. However, the isotopic data, integrated with trace element abundances determined through laser ablation ICP-MS, represent a full geochemical characterization of the tephra levels, that will allow us to enhance the current knowledge on the Middle-Upper Pleistocene record.