

RENDICONTI *Online* della *Società Geologica Italiana*

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Il Pianeta Dinamico: sviluppi e prospettive a 100 anni da Wegener
Congresso congiunto SIMP-AIV-SoGeI-SGI

Firenze, 2-4 Settembre 2015



ABSTRACT BOOK

Edited by

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Bonazzi P., Cappelletti P., Carosi R., Cidu R., Cioni R., Cosentino
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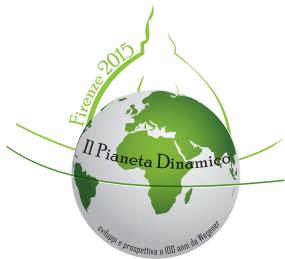
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Timing of the shift from leucite-free (Tuscan Magmatic Province) to leucite-bearing (Roman Magmatic Province) magmas in Italy

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Keywords: Geochronology, leucite-free Tuscan Magmatic Province, leucite-bearing Roman Magmatic Province.

Mio-Pleistocene magmatism in Italy roughly drifted diachronously eastward first, from Tuscan archipelago to the Tuscan coastline, and then southeastward along the Tyrrhenian border of the peninsula. The early activity is Miocene to Pliocene in age, with leucite-free ultrapotassic to shoshonitic igneous rocks confined in the Corsica to Southern Tuscany - Northern Latium domains, whilst the leucite-bearing and associated rocks are Pleistocenic in age and do occur from Northern Latium (Vulsini District) till Neapolitan region (Vesuvius volcano). To help deciphering the mechanism that governed the shift from leucite-free (Corsican- and Tuscan-type) to leucite-bearing (Roman-type) ultrapotassic magmas a detailed re-evaluation of the geochronological data is needed. We focus our attention on the area that includes Southern Tuscany and Northern Latium, where a growing number of recent age data on Plio-Pleistocene leucite-free (Tuscan-type) ultrapotassic and associated rocks highlights short periods of intense volcanic activity separated by long periods of quiescence, before hidden in the folds of data often imprecise or inaccurate. Recent data on Cimini Volcanic District evidence a period of activity for the main volcanic edifice from 1.36 to 1.29 Ma (Laurenzi et al., 2014). A new ⁴⁰Ar-³⁹Ar age of 0.85 Ma was obtained on a lava flow of Torre Alfina volcano, while the few data on Radicofani are around 1.3 Ma (Conticelli et al., 2010). ⁴⁰Ar-³⁹Ar dating of rocks from Mt. Amiata evidence that the domes were emplaced in a short interval of time, from 301 to 294 ka, whilst one of the final lava flows is about 60 ka younger. These ages, coupled with previously published data on the Amiata basal formation, limit to few ka the climax of volcanic activity. The oldest Roman-type ultrapotassic rocks of the area under consideration are from the Vulsini District ("Pliniane di Base" Auct.) at 0.59 Ma (Conticelli et al., 2010). The data since now available evidence the presence of two time windows without volcanic activity, one from about 1.29 (Cimini, Radicofani) to 0.85 Ma (Torre Alfina), and the other from about 0.85 to 0.59 Ma (Vulsini). The Monte Amiata volcanic rocks, leucite-free similarly to the older Tuscan-type rocks, display a hybrid nature derived by contamination with newly arrived mafic Roman-type magmas, and coexist in time with Roman-type leucite-bearing rocks.

Conticelli S., Laurenzi M.A., Giordano G., Mattei M., Avanzinelli R., Melluso L., Tommasini S., Boari E., Cifelli F. & Perini G. 2010. Leucite-bearing (kamafugitic/leucititic) and -free (lamproitic) ultrapotassic volcanic rocks and associated shoshonites in the Italian Peninsula: constraints on petrogenesis and geodynamics. *J. Virtual Expl.*, 36, paper 21.

Laurenzi M.A., Mattioli M., Bonomo R., Ricci V. & Vita L. 2014. ⁴⁰Ar-³⁹Ar geochronology and evolution of the Cimini Volcanic District (Central Italy). *Rend. Online Soc. Geol. It.*, 31(1), 444.

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