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Hydrothermal alteration products at the Tolfa volcanic district (Latium, Italy): mineral and chemical features

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The Tolfa Volcanic District (Latium, Central Italy) shows variable and locally very intense hydrothermal alteration with sulfide mineralizations and alum and kaoline deposits intensely explored in the post-medieval period. The District is part of a volcanic complex of Pliocene-Pleistocene age that emplaced on a basement made of limestone, flysh and marine-to-continental sediments. The hydrothermal alteration products has received attention in the oldest literature (Field and Lombardi, 1972; Lombardi and Sheppard, 1977; Cortecci et al., 1982), providing some petrological and isotopic studies of sulfates and clays, with scattered and incomplete rock geochemistry composition as well. However, most recent studies (e.g., Cinti et al., 2011) essentially focused on the geochemistry of thermal springs, aquifers and pools.
Here, the Tolfa hydrothermal alteration area has a renewed attention.
We have conducted a field campaign in the area between Tolfa, Allumiere and Santa Severa. The field allows detecting various alunite, kaoline and mineralized limestone quarries, and one boiling pool as well. We also observed various degree of hydrothermal alteration and the argillified zones. The sedimentary basement with limestones, sediments and schist-like deposits described in the literature in the Fiorotta area. A total of 21 samples have been collected based on field observations and analyzed for mineralogical and petrological purposes. We use Optical and Electron Microscopy, X-Ray Dffraction, Infrared Spectroscopy, and Rock Geochemistry to characterize the alteration materials. The collected data are useful (i) to understand the quality and importance of the raw materials largely used in the past economy, and (ii) to compare hydrothermal alteration from extinct and quiescent volcanic districts, such as Campi Flegrei and Ischia. In such perspective, the collected samples are object of on-going study finalized to implement the data set. Therefore, the samples will be used in larger and long-term researches that we are developing.

Cited literature

Calderoni G, Ferrini V, Masi U (1985). Distribution and significance of Pb and Tl in the sulfides and host rocks from the hydrothermal mineralization of the Tolfa Mountains (Latium, Central Italy). Chemical Geology, 51, 29-39

Calderoni G, Masi U, Ferrini V (1986). Abundance and significance of Eu, Mn and Zn in the sulfides and host rocks from the hydrothermal mineralization of the Tolfa Mountains. Rend. Soc. Ital. Min. Petrol. Vol. 4l (2), 359-368.

Cortecci G, Lombardi G, Reyes E, Turi B (1981). A sulfur isotopic study of alunites from Latium and Tuscany, Central Italy. Mineralium Deposita, 16(1), 147-156.

Field C, Lombardi G (1972). Sulfur isotopic evidence for the supergene origin of alunite deposits, Tolfa district, Italy. Mineralium Deposita 7.2, 113-125.

Locardi E, Mittempergher M (1971). Exhalative supergenic uranium, thorium and marcasite occurrences in Quaternary volcanites of Central Italy. Bulletin of Volcanology 35(1), 173-184.

Lombardi G, Sheppard SMF (1977). Petrographic and isotopic studies of the altered acid volcanics of the Tolfa—Cerite area, Italy: the genesis of the clays. Clay Mineral, 12, 147-161.