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ABSTRACT BOOK

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«Geosciences for the environment, natural hazards and cultural heritage»

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CURATORI DEL VOLUME

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Fumarolic alteration products of three hydrothermal areas of Greece: Chemical characterization and environmental impact

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Samples of efflorescences and encrustations of hydrothermal origin have been collected at three fumarolic areas in Greece. The three sites are Sousaki, Thiafi (Methana) and Kokkino Nero (Kos) and all belong to the South Aegean Active Volcanic Arc. Samples were analysed for their mineralogical (XRD and SEM-EDS) and chemical composition. Solutions obtained from both mineralization with HNO_3 and leaching with distilled water, were analysed for major (ICP-OES), minor and trace metals (ICP-MS) and for sulfate contents (IC). Results show that their composition is mainly controlled by the petrological composition of the substrate (ultramafic rocks at Sousaki, felsic volcanic rocks at Methana and low-grade metamorphic rocks at Kos). The microenvironmental conditions (humidity, oxidizing or anoxic, exposed or sheltered from meteoric agents) as well as the rainfall regime of the area play also an important role. The presence of highly soluble sulfate minerals with elevated contents of many metals further underscores the significant influence of hydrothermal activity on elements' mobility. The sometimes very high concentrations in toxic elements like Al, As, Co, Cr, Ni evidence also a potential environmental impact.