Artisanal and Semi-Mechanized Mining Sites in Burkina Faso (West Africa): A Neglected Window for Collecting Geoscientific Information

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ABSTRACT

Artisanal gold mining, commonly known as "gold panning", has become, along with semi-mechanized mining, one of the central activities in the economy of Burkina Faso. These activities are perceived both as a source of poverty reduction for part of the local population on the one hand, and as a cause of degradation of the social fabric and the environment on the other. While the social consequences of these activities in West Africa have been relatively well studied for years, the documentation on their environmental consequences is more fragmented. As for research work on sustainable initiatives to provide a technical framework for these farms, they are almost non-existent. These holdings appear as an overlooked window for gathering geoscientific information. However, they offer possibilities rich in information which one can exploit to improve the geological and metallogenic knowledge, especially in the environments deprived of outcrops and very disturbed by the anthropic action. So better exploration and better exploitation of these gold sites will enable us to achieve these objectives. The geoscientific information that can be collected on these sites requires a well-established collection methodology. This methodology includes geochemical and geophysical studies, SEM mineralogical analyses, remote sensing, isotopic tracing and characterization of gold using LA-ICP-MS analysis, studies of fluid inclusions, and geo-metallurgy. All this information collected on the mining sites will help us to establish and map metallogenic models for each site in order to establish exploration guides, as well as geo-environmental models to prevent and limit environmental consequences.

Keywords: Environment, Geosciences, Metallogeny, Semi-mechanized mine, Gold panning.