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# TesTerra: mineralization and prehistoric peopling in Friulian mountains (Eastern Alps - Italy) between the middle of the 5th and the 3rd millennium B.C.

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## Résumé

The metalliferous deposits of the region are very diverse in terms of geological genesis and mineral species present. They are largely constituted by copper minerals (malachite, azurite), lead and zinc (blende and galena), fluorite and, to a lesser extent, iron minerals; their exploitation has already been confirmed for the Middle Ages and probably already in the Roman age and in prehistoric times. The only site of great extension and intense exploitation is the lead-zinc site of Raibl (Cave del Predil, Tarvisio).

As part of the Interreg V-A Italy-Austria 2014-2020 project TesTerra, research on metallurgical activities is rediscovering ancient shafts and tunnels, identifying materials from prehistoric sites that are remnants of metallurgical activity, such as spoon crucibles, nozzles, and smelting forms, mapping the oldest metal artifacts, and analyzing samples extracted from the deposits and metal objects.

The westernmost area of the territory has given back a copper awl dated, according to the structure of origin, to the middle of the V millennium B.C. and at the moment there are about twenty artefacts, including axes and daggers, variously distributed at geographical level and datable to the III millennium B.C. The antiquity of the the awl opens wide and important perspectives on the diffusion of metallurgy through the Eastern Alps and directs the research towards the identification of the origin of the raw material used and the recognition of the paths of diffusion of the knowledge of metallurgic practices and raw materials.

In order to answer the questions that arise from this research perspective, outcrops and evidence of metallurgic activities in the mountain territory, mostly referable to the provinces of Udine and Pordenone, that may have been potentially exploited during prehistoric phases, have been georeferenced. The research analyzes both historical data and those coming from the TesTerra project in order to weave a web of relationships with the distribution of the artefacts. Relationships and spatial data are managed within the GIS to read in an integrated way the information, however partial, related to the development of metallurgy. During pre and protohistory the mountain territories become areas of attraction with respect to natural resource exploitation, mobility, and connections within the Eastern Alps region.

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In this research framework, a first mapping of the known evidences related to the mountain environment becomes functional to investigate the territorial relationship between outcrops and evidences of metallurgical activities.

**Mots-Clés:** TesTerra, mineralization, prehistoric peopling, Friulian mountains, Eastern Alps, Italy, middle of the 5th and the 3rd millennium B.C.